Persuasion and Gender: Experimental Evidence from Two Political Campaigns*

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Abstract

Despite time, effort, and money spent in electoral campaigns, particularly in negative campaigns, there is little empirical evidence that political advertising has persuasive effects and no evidence that negativity works. To reconcile academic research with political practice, we analyze the impact of negative vs positive electoral campaigning separately on male and female voters. We exploit a survey and a field experiment in two electoral races for mayor in Italy. Our treatments consist of negative and positive campaigning done with online advertising tools (videos, texts, slogans) in the survey experiment, and with a large canvassing run in the field experiment. In both experiments, stark gender differences emerge. Females vote less for the opponent and more for the incumbent when exposed to the opponent's negative campaign. Exactly the opposite occurs for males. Our results suggest that the zero average effect of an electoral campaign can mask sizable, opposing effects for different groups of voters.

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Persuasion is recognized to be a rewarding art, particular in politics. Money spent in electoral campaigns to persuade potential voters have been constantly increasing. The Washington Post calculated that in 2016 more than two billion dollars were raised and used in the electoral campaign by the two US Presidential candidates, Hillary Clinton ($1.4B) and Donald Trump ($958M). Meanwhile many academic researchers and political practitioners have debated on how political elites can manage to persuade voters (Green and Gerber, 2004; Rush, 2012; Issenberg, 2012; Jacobson, 2015). Yet, surprisingly little empirical evidence supports the view that electoral campaigns have general persuasive effects on voters, as shown by Kalla and Broockman (2018) with a meta-analysis of field experiments.[1]

A common feature of these, supposedly persuasive, political campaigns is the large use of negative messages. In fact, a key decision in political persuasion is whether to run a negative electoral campaign against the rivals or to go positive and concentrate on self-promotion (Geer, 2006; Mattes and Redlawsk, 2014). Ever since the first negative ("Daisy") ad pioneered in 1964 by Lyndon B. Johnson, the US campaigns have become increasingly more negative, both in the tone of the electoral messages and in the share of negative versus positive content (Geer, 2012). Yet again, no empirical evidence supports the view that negative electoral campaigns are effective in persuading voters (see Lau et al., 2007 for a meta-analytic assessment).[2]

[1]Contributions to this large literature include, among others, Gerber and Green (2000), Gerber, Green, and Shachar (2003), Nickerson (2008), and Dewan, Humphreys, and Rubenson (2014). Typically, these studies rely on either small scale experiments for partisan ads, or on large scale non-partisan campaigns for turnout. For studies that implemented (randomized) partisan campaigns in the field, see Gerber et al. (2011), Kendall, Nannicini, and Trebbi (2015), Pons (2018), and Braconnier, Dormagen, and Pons (2017).

[2] In their seminal experiment on negative campaigning, Ansolabehere et al. (1994) find that a negative ad reduced average voting intentions by 5%. Arceneaux and Nickerson (2010), in a field experiment, show that canvassing is effective in influencing voters, but find little evidence of a differential effect of negative and positive campaigning. Studies that use aggregate or survey data and classification of negativity for actual campaigns find either no effect 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,

To try to reconcile academic research with political practice, in this paper we analyze the distinct persuasive effects that negative and positive electoral campaigns may have on different individuals. Personal traits of the receivers of the electoral messages are important in determining how effective political persuasion can be.[3] During the last decade, the wealth of information about eligible voters available in large commercial and administrative database and the introduction of randomized controlled trials (also known as A/B tests in the consulting industry) have allowed political candidates to microtarget their messages, based on the observable characteristics of the potential voters, such as gender, age, education, but also individual choices on food, TV shows, cars, and so on.[4] These techniques have been exploited to optimize the campaign in a continuous effort to obtain more donations and to get out the vote among partisan voters.

A natural difference across individuals that may command different persuasive effect of negative vs positive campaigning is the gender of voters. Advertisers have long used different arguments to convince female and male buyers.[5] Should we expect similar gender differences to emerge in response to more or less aggressive political communication strategies?[6]

1999; Goldstein and Freedman, 2002). Other studies suggest that the effectiveness of negative campaigns may depend on the civility of the message (Kahn and Kenney, 1999; Fridkin and Kenney, 2008) and on its focus, e.g., policy vs. personal attacks (Fridkin and Kenney, 2004; Brooks and Geer, 2007).

[3]Not all voters are equally influenced by a negative electoral campaign. Its effect may depend for instance on the voters partisanship (Ansolabehere and Iyengar, 1997; Kahn and Kenney, 1999; Glaeser et al., 2005) or tolerance for political attacks (Fridkin and Kenney, 2011).

[4]Issenberg (2012) provides an historical description of electoral campaigning in the US, discussing the introduction of big data and randomized controlled trials.

[5]Studies on consumer behavior suggest that ads relating the advertised product to success over others positively affect males' intention to purchase (Prakash, 1992). On the contrary, males seem less likely to be convinced by marketing campaigns emphasizing the quality of the product (Vilela and Nelson, 2006).

[6]Few existing studies address the potential gender difference in the behavioral response to the tone of electoral campaigns. Goldstein and Freedman (2002) exploit National Electoral Study data and report no gender difference in the effect of campaign attacks on electoral participation. Using survey and observational data, Fridkin and Kenney (2011) show instead that females are less tolerant than males to (both civil and

To tackle this question, we experimentally study gender differences in the response to competitive persuasion in two political campaigns. We exploit a survey experiment in the field and a large scale field experiment during two different electoral campaigns in Italy, and analyze the effect of positive vs negative campaigning on turnout and voting behavior of male and female voters. Unlike most contributions in this literature, we randomized an entire campaign strategy rather than a single campaign tool, in order to increase the magnitude of the persuasive effect, as emphasized by Kalla and Broockman (2018).

First, we ran a survey experiment during the 2011 electoral race for mayor in Milan, which featured a female incumbent facing a main (male) opponent. We randomized several items of the opponent's electoral campaign—videos, letters, slogans—in a positive vs negative tone. For this election, we were also able to exploit a natural experiment occurred during the campaign to examine the effect of an attack by the (female) incumbent to the (male) main opponent on voters' perceptions. Second, we ran a large scale field experiment during the 2015 electoral race for mayor in Cava de' Tirreni (a midsize town in the south of Italy), which featured a male incumbent facing male opponents. In this experiment—one of the very few instances of randomized partisan messages by a political candidate in a real-world campaign—our treatments consisted of positive vs negative canvassing, that is, door-to-door campaigning by volunteers.

The empirical results from our survey experiment in Milan show no average effect of our treatment, but unveil large differences in the gender response to political persuasion strategies. Male and female voters tend to respond in opposite ways to the degree of aggressiveness of the opponent's campaign, which stands against the actual—somewhat negative, according to the opinion of the voters in our control group—campaign by the incumbent. Negative advertising increases male turnout by about 5 percentage points, but has no effect on fe-

uncivil) negative campaigns. Preece and Stoddard (2015) run a field experiment to show that priming about the competitive nature of politics has a negative effect on the interest in political office for females, but not for males. Brooks (2010) runs a lab experiment to show that negativity reduces females' intention to vote.

males. Gender differences are even stronger for electoral choices. Females vote more for the opponent (by 9 percentage points) and less for the incumbent (by 8 points), if exposed to the opponent's positive campaign. Exactly the opposite happens for males. This creates a large gender difference in the response to the positive (vs negative) campaign both for the incumbent vote share (10.6 points) and for the opponent vote share (12.5 points).

Our first experimental evidence thus suggests that gender matters in the response to political persuasion. This effect may however be driven by gender identity (Akerlof and Kranton, 2000). Since the 2011 election in Milan featured a mixed gender race with a male opponent attacking a female incumbent, female voters may identify themselves with the incumbent and thereby dislike the attacks by the opponent and his negative campaign. To test the relevance of this gender identity motive, we exploit a natural experiment that took place during one of our surveys. During a campaign debate on Sky TV, the female incumbent violently attacked the male opponent by accusing him of strong ties with communist terrorists in his youth. By comparing the responses of individuals who happened to answer the survey just before or just after the show was aired, we find that again males and females have opposite reactions. Males lean more toward the (female) sender of the negative attack, and females align with the (male) candidate targeted by the attack. We also collected Twitter data related to the electoral race between the two candidates, and performed a sentiment analysis on the tweets sent by male and female users 24 hours before and 24 hours after the Sky TV debate. Our sentiment analysis confirms the findings from the survey data. After the Sky TV debate, more tweets with negative messages were sent by males on the (male) opponent and by females on the (female) incumbent.

To corroborate and generalize the validity of our findings in a large scale field setting, we implemented a randomized controlled trial during the 2015 electoral race for mayor in Cava de' Tirreni, which featured a same-gender (all males) electoral race. The experiment was designed to examine the differential gender effects of negative (and positive) electoral campaigning by a (male) opponent against the (male) incumbent. This field experiment

featured randomization at the electoral precinct level. The treatments consisted of positive vs negative canvassing. The empirical results confirm our previous findings. Among male voters, negative campaigning by the (male) opponent against the (male) incumbent increases the opponent's vote share by 18.5 percentage points, while reducing the votes for the incumbent. Exactly the opposite happens for females.

Overall, we thus use different methodologies—survey, natural, and field experiment—in different geographic environments (Milan, the largest city in the North of Italy, and Cava de' Tirreni, a midsize city in the South), with different gender races—mixed in Milan and "all males" in Cava de' Tirreni—and exploit several electoral campaign instruments (video ad, slogan, flyer, and canvassing). All this experimental evidence points in the same direction. The gender of the electoral campaign receiver matters: among female voters, positive (vs negative) campaigning by the opponent increases his vote share and reduces the incumbent's votes, while the opposite occurs among male voters.

1. Survey Experiment in Milan

We examine the effects of positive vs negative campaigning on a sample of (male and female) eligible voters, who accepted to participate in a series of online surveys prior to the election for mayor of Milan in May 2011. A Milan-based commercial survey company ("CE&Co") was contacted to run the online surveys. They used different techniques (such as exploiting their existing online panel, or producing new contacts using phone books, etc.) to construct an initial sample of about 1,536 eligible voters, aged between 18 and 65, in the 2011 election. The company stratified the sample along three dimensions: i) neighborhood, ii) age group, and iii) gender.

The 2011 municipal election in Milan featured two main candidates: Letizia Moratti, the incumbent mayor supported by a center-right coalition, and Giuliano Pisapia, her main opponent supported by a center-left coalition. At the beginning of the electoral campaign,

Ms. Moratti was considered to have a large electoral advantage, as Milan had been run by a center-right mayor for eighteen consecutive years. Ms. Moratti's electoral campaign was largely perceived as negative, with frequent attacks against her main political opponent, whereas the style of Mr. Pisapia's electoral campaign was more accommodating. At the first round of the 2011 election, which took place on May 15-16, Mr. Pisapia obtained 48% of the votes, against 41.6% for Ms. Moratti. Mr. Pisapia then went on to win the runoff ballot on May 29-30, receiving 55.1% of the votes, and became mayor of Milan. The turnout rate was 67.6% in the first round and 67.2% in the runoff.

Our survey experiment was implemented between March and May 2011 with the provision of four surveys to the eligible voters in the online sample (see Figure 1 for the timing of the experimental surveys). The first survey was conducted between March 28 and April 4 for all individuals in our sample with the goal of obtaining personal information (gender, age, marital status, education) and the individuals' political and social attitudes. Respondents to the initial survey were then randomly assigned to three groups. Individuals in group A were exposed to the positive treatment, consisting of an electoral campaign with a positive tone by the opponent; individuals in group B to the negative treatment, consisting of an electoral campaign with a negative tone by the opponent; while individuals in groups C received no electoral information. All individuals in groups A and B were exposed also to a (non-randomized) electoral campaign by the incumbent, composed of items extracted from the incumbent's actual campaign, publicly available online.

[Insert Figure 1]

Between April 26 and May 2, the second survey was conducted, but only for individuals in the treatment groups (A and B). This survey contained the first wave of the electoral campaign. The two (randomized) electoral tools by the opponent consisted of a 100-second video interview with the candidate sitting at his office desk and of a campaign slogan (see Appendix Figures A.1 and A.2). During this second survey, we collected the individuals' impressions on the video and the slogan.

The third survey was released—again to groups A and B only—between May 6 and 14, and contained the second wave of the electoral campaign. In this case, the two (randomized) electoral tools by the opponent were respectively an open letter from the candidate to the voters and a 60-second video ad endorsed by the candidate. We then collected the individuals' impressions on the letter and the video. The full set of instruments used for the opponent's electoral campaign is described in the Online Appendix, where the links to the videos are also made available.

The mayoral election took place on May 15 and 16. The (fourth and last) post-electoral survey was conducted for all three groups immediately after the election, starting on May 17, and lasted for a week. This survey collected information on self-reported electoral outcomes (such as turnout and actual vote for the candidates) and personal perceptions about the electoral campaign. Since the result of the first electoral round led to a runoff, individuals were also asked whether they expected to vote at the runoff and, if so, for which of the two candidates. These answers provided the "in the field" component of our survey experiment, and represent our main outcomes of interest in the empirical analysis. Since not all individuals profiled in the first survey responded also to the subsequent surveys, we include in the final (estimation) survey only the 1,140 voters who declared whether they voted or not in the fourth survey.[7]

Our treatment thus consisted of positive versus negative messages conveyed by the opponent using four instruments of electoral campaign: 1) a video interview with the candidate; 2) a campaign slogan; 3) a letter to the voters signed by the candidate; and 4) a video ad endorsed by the candidate. All of these tools were designed by professionals under our direction and in collaboration with the opponent's campaign. Each of these items was proposed

[7]The main characteristics of the estimation sample are summarized in the Appendix Table B.1, which provides descriptive statistics by treatment group. Table B.2 shows that the observable characteristics are balanced across treatment groups, with the only exception of the information measure at the 10% significance level. The attrition rate caused by nonresponses to the fourth survey (something that we could not check ex ante) is also balanced across groups, and this confirms the (ex post) validity of the experimental design.

to the two treatment groups in a positive or in a negative tone. However, both positive and negative ads addressed the same issue, with the same format, and in the same setting (e.g., background images, length of the text). Clearly, the informational treatments coexisted with the real campaign, going on independently of our surveys, and therefore their effects (if any) operated at the margin. However, we designed the experiment so that the intensity of the overall treatment could be strong, as different campaign items with the same tone might reinforce each other (see Green and Gerber, 2004), especially on individuals who did not want or did not have time to follow the real campaign closely. In line with the existing literature (Lau et al., 2007), our average treatment effect was not statistically different from zero: neither positive nor negative campaigning influenced voting behaviors when compared between each other or with respect to the control group (see Appendix Tables B.3 and B.4).

Our survey experiment provides an ideal environment to investigate how females and males react to electoral campaign's positive vs negative communication, because the share of female and male voters is almost equal and observable characteristics are orthogonal to the informational treatments within gender strata.[8] Moreover, the nonresponse rate, which is determined after our treatments took place, is also balanced across groups by gender.

We thus estimate the following linear probability model by OLS:

$$\begin{aligned} Y_i = \alpha_1 POS_i + \alpha_2 NEG_i + \beta_1 POS_i \times FEMALE_i + \beta_2 NEG_i \times FEMALE_i \\ + \delta FEMALE_i + \epsilon_i \end{aligned} \tag{1}$$

where POS and NEG are dummies that identify the exposure to positive or negative campaign, respectively, $FEMALE$ is a dummy identifying female voters, and standard errors are clustered by ZIP code to account for spatial correlation.[9] This specification allows us to

[8] Appendix Tables B.5 and B.6 show that observable covariates are balanced across treatment groups for both females and males, respectively. We also replicated standard randomization checks within gender strata (see Appendix Table B.7). These checks confirm the validity of the randomization procedure within gender.

[9] Results are quantitatively equivalent with Probit and Logit models, even slightly more robust in terms

estimate the treatment effect of positive and negative campaigns for males and females both with respect to the control group and between each other.[10]

Figure 2 shows the effects of positive vs negative campaigning on first-round voting choices (complete results are in Table 1). Negative campaigning increases male turnout with respect to positive campaigning (10% significance), and has instead no effect on female turnout. Gender differences are more pronounced if we look at the candidates' vote shares. Females vote more for the opponent (by 9 percentage points) and less for the incumbent (by 8 points) when they are exposed to the opponent's positive campaign. Instead, positive and negative treatments have little differential impact on males.[11] Importantly, the gender difference in the response to positive vs negative campaigning is statistically different from zero both for the incumbent's vote share (10% significance) and for the opponent's (5% significance). No significant effects emerge on the cumulative vote shares of the other (minor) candidates. Figure 3 displays the same gender differences in the results on (expected) turnout and voting behavior in the runoff (complete results are in Table 2). Although the gender difference is statistically different from zero only for the incumbent's vote share, strikingly enough, point

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of statistical significance (available upon request). We prefer to report results from the linear probability model to make the interpretation of the interaction coefficients more intuitive.

[10]Specifically, α_1 (α_2) captures the treatment effect of positive (negative) campaign for males, and β_1 (β_2) the differential treatment effect of positive (negative) campaign between males and females. When we estimate our baseline equation (1), we also implement the following Wald tests: (H1) treatment effect of positive campaign for females: $\alpha_1 + \beta_1 = 0$; (H2) treatment effect of negative campaign for females: $\alpha_2 + \beta_2 = 0$; (H3) treatment effect of positive vs. negative campaign for males: $\alpha_1 - \alpha_2 = 0$; (H4) treatment effect of positive vs. negative campaign for females: $(\alpha_1 + \beta_1) - (\alpha_2 + \beta_2) = 0$; (H5) differential treatment effect of positive vs. negative campaign between males and females: $\beta_1 - \beta_2 = 0$; (H6) treatment effect of any campaign vs. no campaign for males: $\alpha_1 + \alpha_2 = 0$; (H7) treatment effect of any campaign vs. no campaign for females: $(\alpha_1 + \beta_1) + (\alpha_2 + \beta_2) = 0$; (H8) differential treatment effect of any campaign vs. no campaign between males and females: $\beta_1 + \beta_2 = 0$.

[11]However, Table 1 shows that, when compared to the control group, among males the positive campaign reduces the opponent's vote share and increases the incumbent's.

estimates always have opposite signs for male and female voters.

[Insert Figures 2 and 3]

[Insert Tables 1 and 2]

Both in the first round and in the runoff, when men and women vote for a candidate, they tend to react in opposite ways to our treatments (see test H5 in Tables 1 and 2). From the opponent's viewpoint, positive campaign is extremely fruitful in attracting female voters, but backfires with male voters. This finding could also be related to the tone of the incumbent's campaign, which, as inferred from our control group, was generally perceived to be negative. Hence, male voters seem to be attracted by negative campaigns.

Figures 4 and 5 examine the instantaneous effect of each campaign tool, as measured by the replies to questions on the approval rate of the two candidates, asked after each tool was administered (complete results are in Table 3). Specifically, Figure 4 uses the questions asked after the video interview ("Do you agree with what the candidate says in the video?") and after the campaign slogan ("How much do you feel you can trust the candidate?"). Figure 5 uses the questions asked after the open letter ("Do you agree with the general sense of this letter?") and after the video ad ("How truthful does this electoral message seem to you?"). By measuring the instantaneous reaction of respondents to the electoral messages, the above variables resemble standard outcomes in existing lab or survey experiments. Results on gender differences are again striking: responses go systematically in opposite directions, and most of the time the difference is statistically significant at standard levels. In both the second and third survey, males are less in favor of the incumbent if they are exposed to the opponent's negative campaign, but this is never true for females, who actually tend to trust more the incumbent if they are exposed to the opponent's negative video interview and campaign slogan.

[Insert Figures 4 and 5]

[Insert Table 3]

Although the behavioral response to campaign communication is different between males and females, their perceptions about the tone of the campaign is similar. Appendix Table B.9 shows that both males and females perceive the overall campaign (first column) and the opponent's campaign (second column) as more negative, if they are exposed to the (opponent's) negative treatment. Direct questions on perceptions may fail to capture the true impact of our treatments on voters' beliefs. Nevertheless, it is reassuring that these effects have the expected sign, and do not differ between males and females. Gender differences emerge again on the incumbent's campaign, however: those females who observed the opponent's positive campaign tend to perceive the incumbent as more negative, and the opposite occurs for males, although these effects are not statistically significant. Table B.9 also shows that our treatments have no effect on how confident voters are about their choice (fourth column) or on the motivation of their vote (fifth column).

What drives this gender difference in the behavioral response to political campaigning? Males and females are recognized to differ along many dimensions, such as educational attainments, political ideology (Edlund and Pande, 2002), preferences toward competition (Bertrand, 2010) or cooperation (Niederle, 2016), and preferences for public policy (Cavalcanti and Tavares, 2011; Funk and Gathmann, 2013). Some of these aspects can be addressed by using the information obtained in our first survey. Appendix Table B.8 shows in fact that, in our sample, female respondents differ along several observable characteristics, such as age, marital status, left-wing orientation, and interest in politics.[12] To analyze whether these factors drive gender differences in the response to our informational treatments, we add to our baseline specification, one at a time, each of the following variables and their interaction with the treatment indicator: young, college, left, and low interest in politics. The Appendix Table A.1 reports the effect of our informational treatments, while accounting for

[12]These gender differences in observables, of course, do not represent a threat to the validity of our estimates, as they are not systematically different across treatment groups (see Appendix Table B.7). Moreover, we have shown that covariates are balanced across treatment groups within gender strata.

these additional variables, on the opponent's (panel A) and on the incumbent's (panel B) vote share. The introduction of these additional explanatory variables (and of the respective interaction terms) does not eliminate (or even reduce) our gender effect. Hence, our gender differences in political persuasion cannot be accounted for by these observable differences in age, education, and political ideology between male and female voters. Similar conclusions can be drawn from the results in the Appendix Table A.2, which provides the same analysis for the runoff election.

As a final robustness check, we include in our baseline specification all observable characteristics and their full set of interactions with the treatment indicators in order to capture the net effect of gender, after controlling for everything else at the same time. This specification is quite demanding from a statistical viewpoint, because it increases the number of cells where we are trying to estimate the treatment effects, and the statistical significance is considerably reduced. Actually, also from a substantive viewpoint, some regressors such as marital status might be an example of over-controlling, because gender might be intrinsically associated with different preferences in this respect. Nevertheless, we report these specifications (Appendix Table B.11 for the first round and Appendix Table B.12 for the runoff) as the most conservative test on pure gender differences. Notably, the direction of the results discussed above is unchanged even when we control for a full set of interactions, although some of the effects lose statistical significance. The bottom line is that a residual underlying gender difference still lies behind our findings.

2. Natural Experiment in Milan

Since the 2011 Milan election featured a mixed-gender race, between a female incumbent and a male opponent, gender identification may still drive our results (see Akerlof and Kranton, 2000). Females may dislike negative advertising against a female candidate, whereas males may accept (or even like) the male opponent attacking the female incumbent. Would the

results be different if a female politician attacked a male politician?

An episode occurred during the 2011 Milan election allows us to test this alternative hypothesis. On May 11, during a political debate broadcast on Sky TV, Ms. Moratti accused Mr. Pisapia of taking part in a car robbery with other communist terrorists in his youth. Exploiting the rules of the debate, Ms. Moratti used her closing statement for her attack, so that Mr. Pisapia was unable to reply and defend himself. Only after the debate, Mr. Pisapia was able to explain to the press that he had been fully and immediately acquitted from the charge. The negative attack had a huge echo in local and national news media, and marked a turning point in the campaign. We exploit this episode as a natural experiment to study the effect of negative campaign by a female politician (the incumbent) against a male politician (the opponent). We exploit two different approaches with survey and Twitter data.

Since our third survey was still under way when the Sky TV show was aired (see Figure 1), some individuals had already participated in this survey, while others (14% of the sample) had not. We therefore exploit the timing of the survey response in order to evaluate the impact of the negative attack. To implement this evaluation, we must restrict the attention to the outcomes measured in the third survey, because at the time of the fourth survey all voters had already come to know about the Sky TV episode. To further examine this event, we also acquired from a London-based social media monitoring platform company ("FACE") around 87,000 tweets regarding the 2011 Milan electoral race for mayor, covering the period from April 1 to May 31. We considered tweets for which we could obtain information about the gender of the user, and that contained the word "Moratti" or "Pisapia," but excluded those containing both names. In the end, we were left with almost 45,000 tweets, on which we performed a sentiment analysis to study the effect of the negative campaign episode. We initially identified a list of stems (root of a word or of many words), which are relevant to infer the sentiment toward a candidate. A positive stem is related to an emotion, such as joy or love, or to an expression of political support, such as "vote for." Conversely, a negative

stem is related to a pessimistic emotion, or to an expression of political dislike.[13] For each tweet, we thus counted the number of negative and positive words, and we constructed four indicators. The Moratti (Pisapia) Negative Index measures the difference between negative and positive words in a tweet that refers only to Moratti (Pisapia). The Moratti (Pisapia) Negative Dummy indicates whether there are more negative than positive words in a tweet referring only to Moratti (Pisapia).

To test the differential gender effect of Ms. Moratti attack during the Sky TV show, we use two specifications for both data sources. First, we estimate the following OLS model:

$$Y_i = \alpha_1 AFTER_i + \beta_1 AFTER_i \times FEMALE_i + \delta FEMALE_i + \epsilon_i \quad (2)$$

where Y_i is either the survey response or the tone of the tweets, as captured by the indicators described above, and the dummy $AFTER_i$ captures respectively whether the individual responded to the third survey or sent the tweet after the Sky TV show (vs before).

We are aware that individuals responding earlier or later to the survey, and sending tweets before or after the TV show, may be different along some unobservable dimensions. To control for this, in our second specification, we augment equation (2) with a spline third-order polynomial in the distance from the time of the event:

$$Y_i = \alpha_1 AFTER_i + \beta_1 AFTER_i \times FEMALE_i + \delta FEMALE_i + f(DISTANCE_i) + \epsilon_i \quad (3)$$

where $DISTANCE_i$ is measured in minutes. This amounts to a regression discontinuity (RD) design in the distance from the Sky TV show. For the Twitter data, we restrict the analysis to tweets sent 24 hours before and 24 hours after the broadcast of the show.

When using data from our third survey, we consider the same outcomes analyzed in Figure 5 (and in Table 3, Panel B) and estimate whether female and male voters who replied

[13] We also included some emoticons as they are widely used on Twitter to express feelings. The complete list contains 108 stems, of which 54 are coded as positive and 54 as negative (see the Online Appendix).

to the survey after the Sky TV show have different evaluations on the quality of both the incumbent's and the opponent's campaign. Clearly, these are intention-to-treat effects, because we are unable to know whether those individuals who replied after the show actually heard about the episode. Results are displayed in Figure 6 (and in Table 4, Panel A for the OLS and Panel B for the RD specification).

[Insert Figure 6]

[Insert Table 4]

The dependent variables are the answers to the questions on whether respondents agree with the candidates' open letter and video ad. Female voters, again, tend to punish the candidate who went negative (even though this time it is a woman): they agree less with the letter and trust less the video by the incumbent after the negative attack. On the contrary, male voters do not punish the female incumbent. If anything, they tend to rally in her favor even if she went negative against a male candidate. Also for the RD specification in Table 4, Panel B, all outcomes convey the same conclusion as the OLS estimations. Even in a small neighborhood of the event (that is, comparing individuals who answered the survey just before or just after the show), females and males respond differently to the negative attack carried out by the incumbent, thereby suggesting that no gender identification is at work in our sample.

When analyzing the Twitter data, we use the four indicators described above to estimate whether female and male voters tweeting after the Sky TV show modified the tone of the tweets toward the two candidates. As in the previous case, these represent intention-to-treat effects, as we are unable to assess whether those who sent tweets after the show actually knew about the episode. Results from Twitter data are reported in Figure 7 (and in Table 5, Panel A for the OLS and Panel B for the RD specification).

[Insert Figure 7]

[Insert Table 5]

Results from the OLS specification displayed in the top quadrants of Figure 7 (and in Table 5, Panel A) show that the number of negative tweets against Ms. Moratti increased after the Sky debate among females, while the number of negative tweets against Mr. Pisapia—and their intensity, as measured by the net number of negative words—increased among males. The RD specification displayed in the bottom quadrants of Figure 7 (and in Table 5, Panel B) conveys the same conclusion as the OLS estimation. In this case, there is evidence of more negative tweets against Ms. Moratti after the Sky show even among males, but the effect is stronger for females.

In the end, the same empirical findings emerge from two different data sources that exploit this natural experiment. The attack by the female incumbent against the male opponent reduces the appeal of the incumbent among female voters, who agree less with the incumbent in our survey data and resort to more negative tweets against the incumbent herself. On the opposite, males increase the number of negative tweets against the opponent. Hence, females seem to dislike negative campaigning even when staged by a female candidate against a male candidate.

3. Field Experiment in Cava de' Tirreni

This field experiment is designed to examine the effect of positive vs negative electoral campaigning in an election in which the incumbent and the two main opponents are males. This allows us to test the effect on male and female voters of a negative (vs positive) electoral campaign in which a male candidate attacks another male candidate. Moreover, while running a field—as opposed to a survey—experiment can improve the internal validity of our results, running it in a different political context, with respect to Milan, can also improve their external validity.

Municipal elections were held in Cava de' Tirreni, a town with around 46 thousand eligible voters located in the South of Italy, on May 31, 2015. The incumbent mayor, Marco

Galdi, from the center-right coalition ran for re-election against two main opponents: Vincenzo Servalli, supported by the center-left coalition, and Armando Lamberti, supported by three civic lists. The overall tone of the electoral campaign was neutral. Typical electoral campaign tools were press releases, candidates' interviews with local media (newspapers and TV channels), candidates' speeches at local events, street posters, and flyers. TV ads played no role. At the May 2015 election, the incumbent Marco Galdi, with 25.3% of the votes, and his opponent from the center-left party Vincenzo Servalli, with 28.7%, advanced to the second round. Armando Lamberti received 14.7% of the votes. At the runoff ballot on June 14, 2015, Vincenzo Servalli was elected mayor with 60.6% of the votes. The turnout was 69.7% in the first round and 50.17% in the runoff.

Our treatments consisted of canvassing with positive and negative messages by Mr. Lamberti volunteers between May 10 and May 30, 2015, that is, during the three weeks prior to the election.[14] The young volunteers knocked on doors of private residences, and buzzed private residences' intercoms, to engage in personal interaction with eligible voters. The campaign volunteers solicited the voters to communicate their ideas about Cava de' Tirreni, presented Mr. Lamberti's campaign, and handed them electoral materials. For the eligible voters not engaged in personal interactions, electoral materials were left in their mailboxes. We randomized a positive treatment, which emphasized Mr. Lamberti's own ideas, and a negative treatment, which concentrated on the incumbent's (Mr. Galdi) wrong-doing while in office. The electoral materials consisted of a flyer and a hanger, designed by professionals under our direction and in collaboration with the Lamberti's campaign. The full set of instruments used in Mr. Lamberti's campaign electoral campaign is described in the Online Appendix. The volunteers were provided by the candidate. They underwent a one-day training stage

[14]While being largely exploited in the US, as part of "get out the vote" strategies, canvassing represented a novelty for Italian politics. To our knowledge, Cantoni and Pons (2016) are 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 mid-sized town in Northern Italy (38 precincts).

with one of the authors and the campaign manager. 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 either by Mr. Lamberti or by the other candidates, and our flyers/hangers were the only printed materials used by Mr. Lamberti's campaign. As a result, our field experiment is one of the rare cases where a political candidate accepted to administer different partisan messages to different parts of his constituency at random (see Kendall, Nannicini, and Trebbi, 2015 for another field experiment of this kind).

We randomized the treatments at the electoral precinct level. Of the 55 electoral precincts in town, 18 (with 15,925 eligible voters) received the positive treatment, 18 (with 15,424 eligible voters) received the negative treatment, while the remaining 19 precincts (with 15,174 eligible voters) were not treated. Appendix Table D.1 reports the ex ante balance tests of predetermined variables at the precinct level. The available variables refer to the previous elections for mayor in Cava de' Tirreni in 2006 and 2010. For both elections, they include the number of eligible voters (absolute and by gender), the voter share of the center-right, center-left and other candidates, as well as the voter share of the different party lists.[15] For all these predetermined variables, our precinct-level randomization is perfectly balanced.

To measure the effect of our treatments on the male and female voters' electoral behavior, we implemented two surveys. A first phone survey was conducted by "IPR Feedback," a commercial survey company, between April 16 and April 30, 2015. IPR used the Cava de' Tirreni public phone database to obtain an initial random sample of about 1,400 eligible voters in the 2015 municipal election. The first survey was administrated with the goal of obtaining relevant personal information (gender, age, marital status, education, number of children), as well as more specific information on economic characteristics (profession, house-

[15]The distinction between the vote share of the candidate and of the party list is of interest. In fact, according to the electoral rule, mayoral candidates can be supported by one or more party lists, and voters are allowed to cast separate votes for a candidate and for a party list supporting another candidate.

ownership), and on political and social attitudes (political orientation, voting behavior in the previous local election, individual perceptions about the political positioning of the mayoral candidates, individual opinion regarding the more pressing problem that the mayor should address). Additionally, the respondents were asked some questions to elicit their degree of competitiveness (self-reported and stemming from actual participation to professional sport competitions or to other contests) and their view on the importance of cooperative behavior in life. The respondents to the initial survey fall into a treatment or control group, depending on the precinct they lived in. A follow-up post-electoral survey was conducted after the election from June 1 to June 12, 2015. This survey collected information on self-reported outcomes (turnout and actual vote), voters' perceptions about the candidates' ideology, and about the tone of the electoral campaign. However, not all the individuals, who participated in the first survey, responded to the second (post-electoral) survey that we implemented to measure voting choices. Therefore, our final (estimation) sample consists of 857 voters, who answered to the second survey. The main characteristics of this sample are summarized in Appendix Table D.2, which provides descriptive statistics by treatment group. Besides standard demographic characteristics and education, we measure the ideological position of each voter, and the preferences for competition and cooperation. All variables come from the post-electoral survey that reports the voters' electoral outcomes. Respectively 55% and 51% of the surveyed eligible voters, who belong to the positive and negative treatment, were not personally reached by the volunteers and received only the electoral material.

Using answers to questions from our post-electoral survey, we can test whether the tone of the campaign was correctly perceived. Individuals exposed to the set of flyers and hangers with the negative message do identify the opponent's campaign as negative, that is, "aimed at criticizing his main opponents" (see Appendix Table D.3). Moreover, in line with our intended design, the tone of the opponent's campaign does not modify the individuals' perceptions on candidates' ideology. Unlike in the 2011 Milan election in Section 2, this post-electoral survey shows also that our treatments did have some statistically significant average effect.

As shown in Appendix Tables D.4 and D.5, respectively for the full sample of eligible voters and for the sample of canvassed voters, the negative campaign increased the vote share of the opponent and of other candidates (in the canvassed sample in Appendix Table D.5), while reducing the vote share of the incumbent. The incumbent's vote share was also decreased by the positive treatment.

Our field experiment provides an ideal environment to investigate how females and males react to political communication, in an electoral race featuring a male incumbent and male (main) opponents. Appendix Tables D.6 and D.7 show that observable covariates are (ex post) balanced across treatment groups for both females and males, respectively. As in the survey experiment in Milan, described in Section 2, we also replicated standard randomization checks within gender strata (see Appendix Table D.8). These checks confirm the validity of the randomization procedure within gender. We then proceed to estimate equation (1) by OLS. This specification allows us to estimate the treatment effect of positive and negative campaign for males and females, both with respect to the control group and between each other. Exactly as in Milan, we also run the Wald tests described in footnote 10.

Figure 8 shows the results on voting choices for the full sample of voters in Cava de' Tirreni, who answered the second (post electoral) survey, regardless of whether the individuals in the treatment groups were personally reached by the canvassing (see Table 6 for the full results). A gender difference (statistically significant at 10% level) emerges in the opponent's vote share: females vote more for the opponent when exposed to his positive campaign, whereas males vote more for him if exposed to his negative campaign.

[Insert Figure 8]

[Insert Table 6]

In Figure 9 (and in Table 7 for the full results), we show the results for our sample of canvassed voters, namely for those individuals who were personally reached by the volunteers, either by intercom or at their apartments. Electoral campaigning has no impact on turnout rates, but stronger gender differences emerge in this sample for the effect on the opponent's

vote share. Positive campaigning (by the opponent) reduces male votes and increases female votes for the opponent. The gender gap is large and statistically significant. Moreover, positive campaigning (by the opponent) increases male votes and reduces female votes for the incumbent. These results are also statistically different from zero with respect to the control group, as shown in Table 7.

[Insert Figure 9]

[Insert Table 7]

Gender differences thus emerge also in this electoral race where a male opponent attacks a male incumbent. But what drives them? Exploiting questions in our post-electoral survey, in which voters were asked whether different candidates ran positive or negative campaigns, we can rule out the fact that male and female voters had different perceptions about the tone of the electoral campaign (see again Appendix Table D.3). Gender differences in the behavioral response to political campaigning may be due to observable differences between males and females along other dimensions. Besides the differences in political ideology or education, our initial survey provides information also on individual preferences toward competition and cooperation.[16] Appendix Table D.9 shows in fact that, in our sample, respondents indeed differ by gender along several observable characteristics, including their preferences for competition and cooperation.[17]

We test for these possible channels in Appendix Table A.3, which shows results for the effects of our informational treatment on voting outcomes, namely, the opponent's vote share

[16]In particular, to exert their degree of competitiveness, voters were asked whether during their life they participated to a sport competition or to any other kind of competition, such as a musical or artistic contest. To learn about their preferences for cooperation, voters were asked whether they believed that to succeed in life is more important to cooperate with the others or to be better than the others.

[17]These gender differences in observables, again, do not represent a threat to the validity of our estimates, as they are not systematically different across treatment groups (see Appendix Table C.8). Moreover, we have already shown that covariates are balanced across treatment groups within gender strata (see Appendix Tables C.6 and C.7).

in panel A and the incumbent's vote share in panel B.[18] We report our baseline specification (at column 1), as well as the specification in which, one at a time, each of the following variables and its interaction with the treatment indicator are included: young (column 2), college (column 3), left (column 4), and preferences for competition (column 5) and cooperation (column 6). Table A.3 shows that controlling for education, political ideology, and competition (and their interaction with our treatments) does not eliminate (or even reduce) our gender effect. A different picture emerges instead when we control for cooperation (column 6): gender differences completely disappear for the incumbent's vote share (panel B), but they remain for the opponent's vote share (panel A). Nevertheless, the positive campaign is still found to be particularly effective in increasing the opponent vote share among cooperative individuals. This result may suggest that our gender effect is at least partially related to gender differences in cooperative behavior (see Niederle, 2016 for a review). Although the results on a possible gender difference in altruism and social preferences are mixed, women have been found more reciprocal than men in experimental (trust) games (Croson and Gneezy, 2009). Positive campaigning, which mostly amounts to present future projects for the city, may thus be more in line with this cooperative approach than negative ads.

Our final robustness check is to include in our baseline specification all observable characteristics and their full set of interactions with the treatment indicators. This specification identifies the net effect of gender, after controlling for all of these channels. As discussed in Section 2, this specification is very demanding. The results in Appendix Table D.11 suggest that indeed no gender effect survives after controlling for all these channels. This is hardly surprising, however, as these variables include cooperation, which we have already shown to explain the lion's share of the observed gender differences.

[18]The effect on voters' turnout is reported in Appendix Table D.10.

4. Concluding Remarks

Political persuasion has become increasingly more important, and thereby more sophisticated. Multiple senders of political messages compete for the attention of a large mass of receivers—the voters—and try to influence their decisions. The diffusion of social networks and the ability of processing the huge amount of information collected in large datasets have allowed politicians to identify with high precision their favorite targets: undecided or core voters. Since the ads can now be placed in front of the right receivers, shouldn't also the message be tailored to persuade them?

Our experimental evidence from electoral campaigns in Milan (2011) and Cava de' Tirreni (2015) strongly suggests that the gender of the receivers does indeed matter. In our randomized campaigns, a positive electoral campaign by the opponent increased his vote share, and reduced the incumbent's votes, among female voters. The opposite occurred instead among male voters. Our results are robust to different environment (size and location of the city), gender composition of the electoral race (mixed and all male), experimental methodology (survey, natural, field), and electoral campaign instruments (videos, slogans, flyers, canvassing).

Our findings contribute to bridge a gap between political practice and academic evidence on negative advertisement in electoral campaigns. While its average persuasive effect on voters may be close to zero, large differences emerge according to the gender of the voter. Hence, targeted positive or negative advertisement tools may play an important role in electoral campaigns. Our findings contribute also to the literature on gender differences. Besides other well recognized differences in political ideology, risk aversion, preferences for competition or public policy, we find that gender differences exist also in the behavioral response to aggressive political persuasion. Our empirical tests suggest that this gender difference is neither driven by gender identification, nor by other channels such as females being more left leaning. We are also able to discard that this deep difference in voting behavior is attributed to different tastes for competition, in this case for different forms of electoral

competition. We instead find suggestive evidence compatible with the existing findings that females have more cooperative behavior. When we can control for preferences for cooperation (in the Cava de' Tirreni election), in fact, most of our gender results disappear.

Additional explanations may however be at work, which we cannot test. For instance, gender differences have been found in attitudes toward violence, even when the phenomenon does not directly affect the respondents (Smith, 1984; Sapiro and Conover, 1993).[19] Although we always used a civil tone in our negative campaigns, females might have perceived the attacks toward the other candidates as violent behavior. Finally, the existence of several gender differences has largely been recognized also by a neuropsychological literature (Baron-Cohen, Knickmeyer, and Belmonte, 2005). Males have been shown to have greater reactivity than females to stressful situations, such as watching a scary or violent movie. Hence, to the extent that a persuasion strategy based on negative advertising is perceived as a more arousing event, it may stimulate more actions among males than among females, who may find more appealing an inclusive persuasion strategy.

[19]In a controlled experiment using war scenarios, Brooks and Valentino (2011) show that women are less likely to support war than men, and that female support for war increases when missions have humanitarian objectives and are approved by the United Nations.

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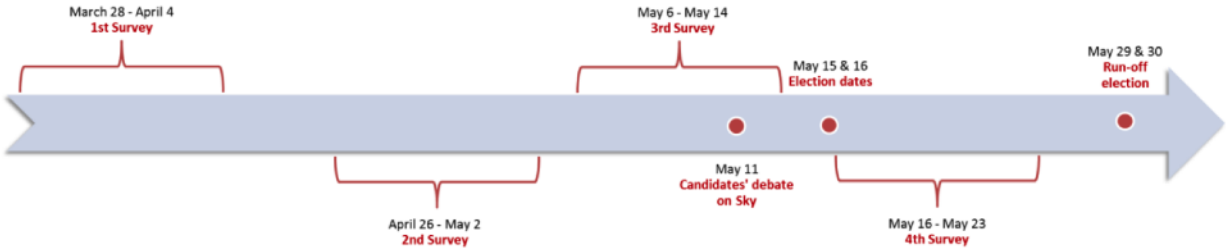
Figure 1: Timing of the Experimental Design in Milan



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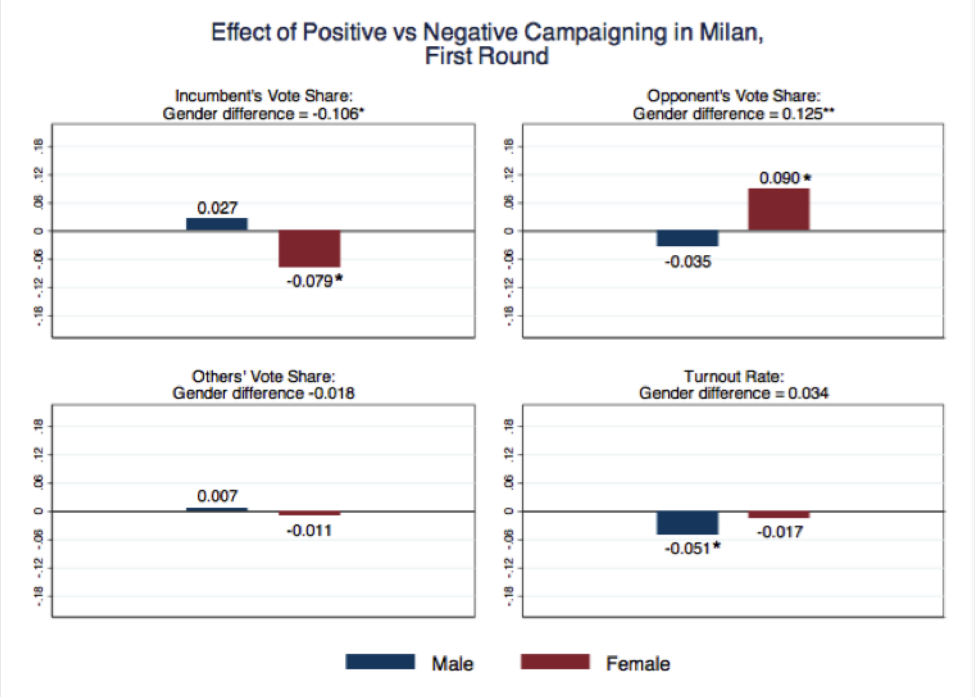

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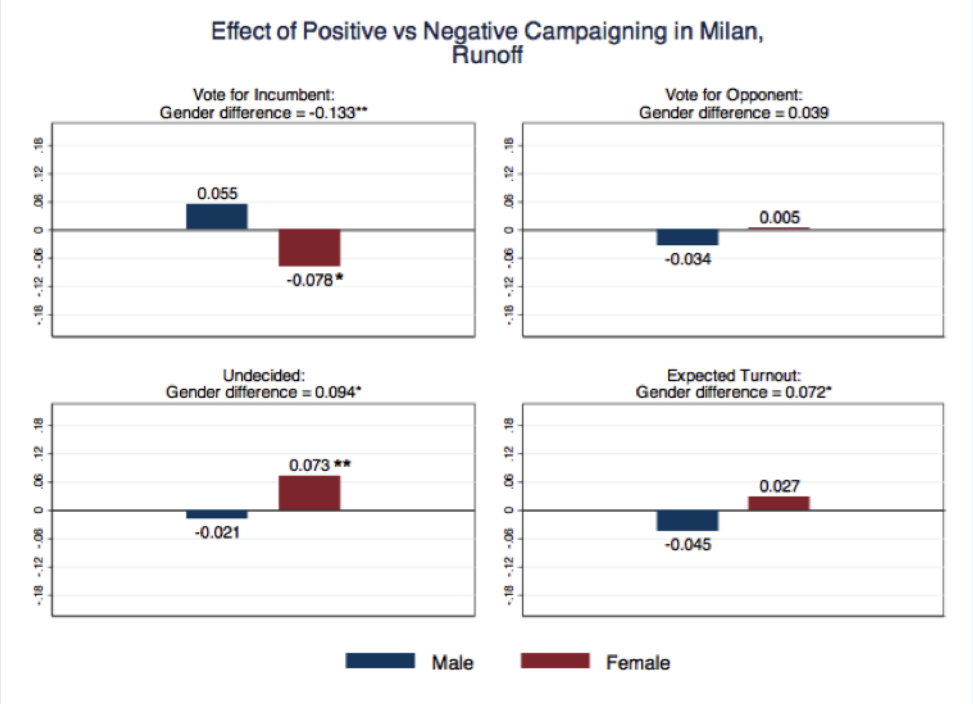

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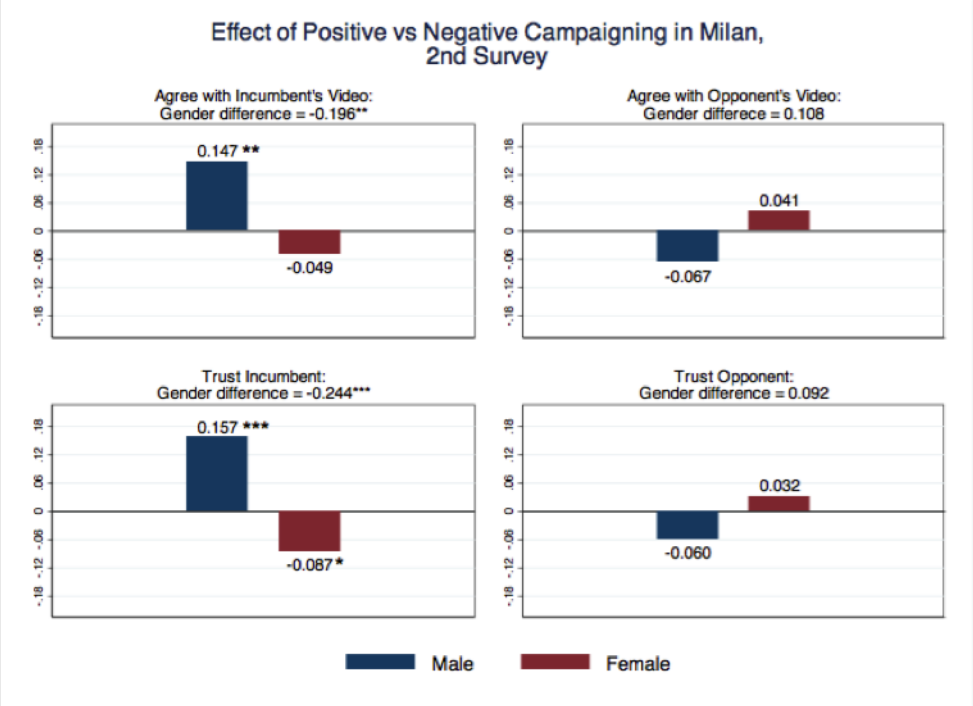

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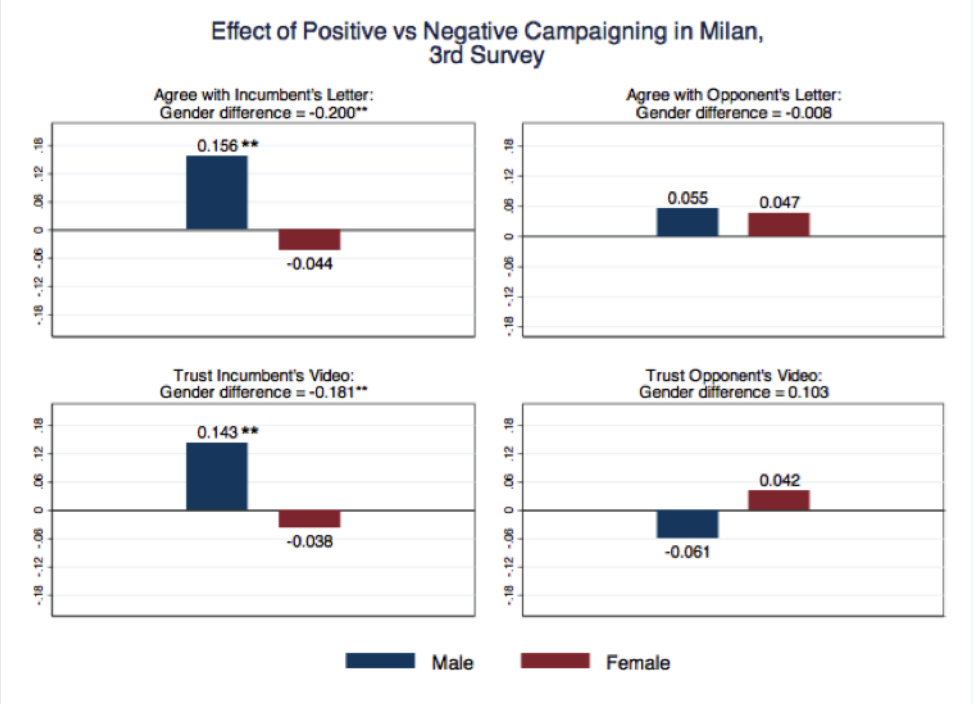

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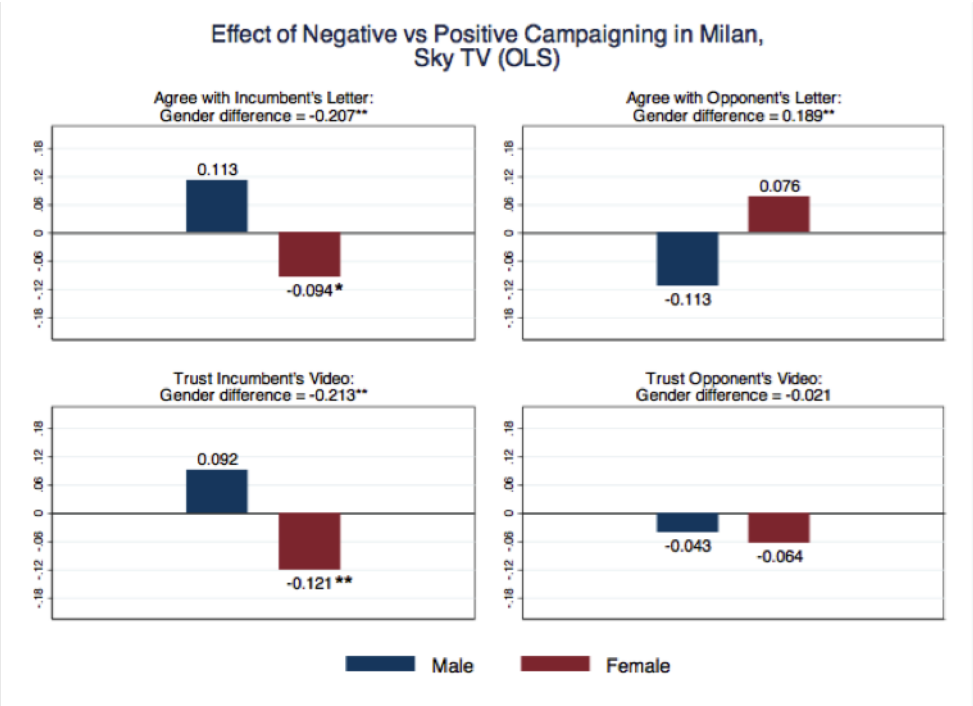

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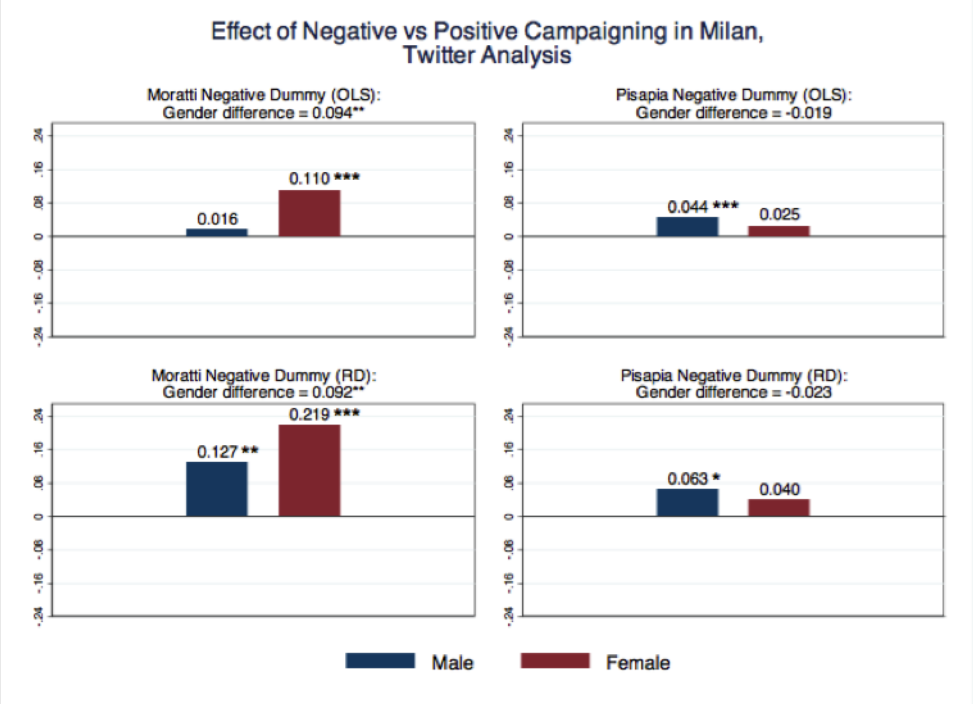

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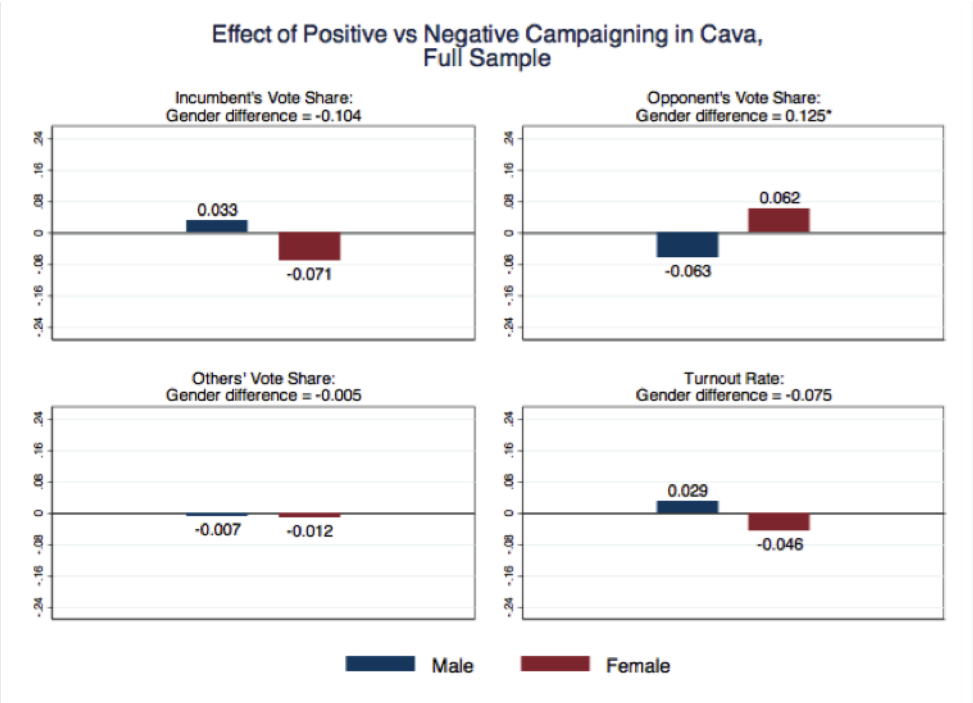

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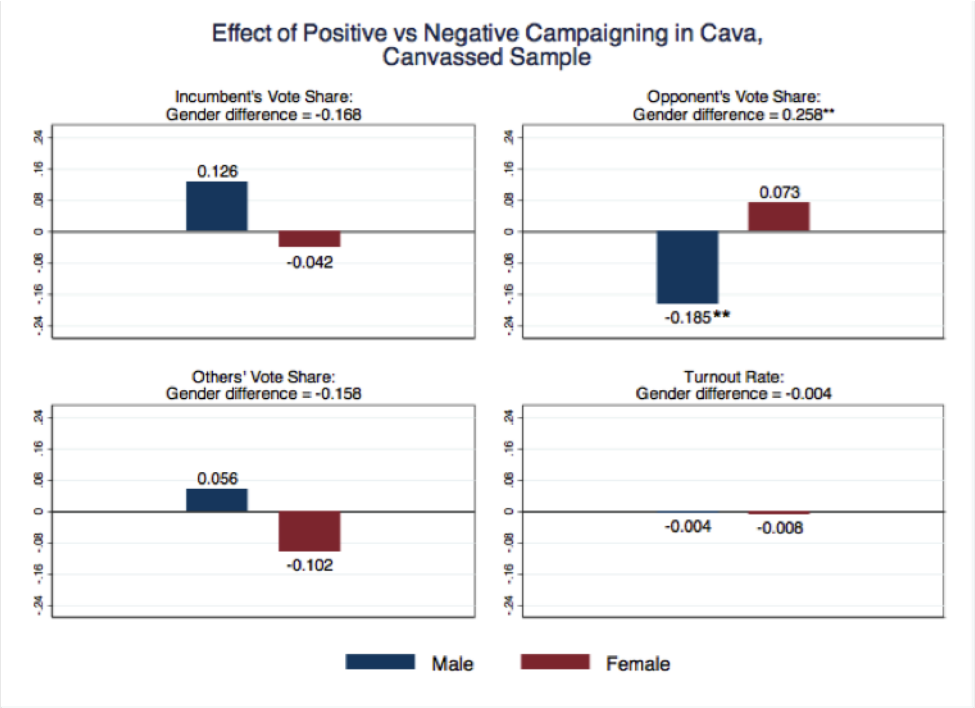
Effect of Positive vs Negative Campaigning in Cava, Canvassed Sample
Incumbent's Vote Share:
Gender difference = -0.168
0.126
-0.042
Opponent's Vote Share:
Gender difference = 0.258**
0.073
-0.185**
Others' Vote Share:
Gender difference = -0.158
0.056
-0.102
Turnout Rate:
Gender difference = -0.004
-0.004
-0.008
Male
Female

Table 1: Effects of Campaign Information by Gender in Milan, First Round

	Turnout rate	Opponent's vote share	Incumbent's vote share	Others' vote share
Positive campaign (α_1)	0.031	-0.110*	0.127**	-0.018
	[0.043]	[0.059]	[0.054]	[0.063]
Negative campaign (α_2)	0.082**	-0.075	0.100	-0.025
	[0.037]	[0.069]	[0.061]	[0.054]
Positive campaign × Female (β_1)	-0.080	0.190**	-0.207***	0.018
	[0.051]	[0.080]	[0.075]	[0.070]
Negative campaign × Female (β_2)	-0.114**	0.065	-0.101	0.036
	[0.049]	[0.083]	[0.077]	[0.065]
Female	0.061	0.004	0.067	-0.071
	[0.040]	[0.071]	[0.057]	[0.052]
P-value H1: $\alpha_1 + \beta_1 = 0$	0.068*	0.154	0.119	0.994
P-value H2: $\alpha_2 + \beta_2 = 0$	0.289	0.851	0.982	0.770
P-value H3: $\alpha_1 - \alpha_2 = 0$	0.092*	0.435	0.619	0.876
P-value H4: $\alpha_1 + \beta_1 - (\alpha_2 + \beta_2) = 0$	0.556	0.062*	0.074*	0.776
P-value H5: $\beta_1 - \beta_2 = 0$	0.365	0.035**	0.076*	0.785
P-value H6: $\alpha_1 + \alpha_2 = 0$	0.137	0.132	0.033**	0.694
P-value H7: $\alpha_1 + \beta_1 + \alpha_2 + \beta_2 = 0$	0.102	0.460	0.342	0.870
P-value H8: $\beta_1 + \beta_2 = 0$	0.043**	0.104	0.034**	0.656
Obs.	1,140	912	912	912

Estimated OLS regression: $Y_i = \alpha_1 POS_i + \alpha_2 NEG_i + \beta_1 POS_i \times FEMALE_i + \beta_2 NEG_i \times FEMALE_i + \delta FEMALE_i + \varepsilon_i$. (H1) Treatment effect of positive vs. no campaign for females: $\alpha_1 + \beta_1 = 0$. (H2) Treatment effect of negative vs. no campaign for females: $\alpha_2 + \beta_2 = 0$. (H3) Treatment effect of positive vs. negative campaign for males: $\alpha_1 - \alpha_2 = 0$. (H4) Treatment effect of positive vs. negative campaign for females: $(\alpha_1 + \beta_1) - (\alpha_2 + \beta_2) = 0$. (H5) Differential treatment effect of positive vs. negative campaign between males and females: $\beta_1 - \beta_2 = 0$. (H6) Treatment effect of any campaign vs. no campaign for males: $\alpha_1 + \alpha_2 = 0$. (H7) Treatment effect of any campaign vs. no campaign for females: $(\alpha_1 + \beta_1) + (\alpha_2 + \beta_2) = 0$. (H8) Differential treatment effect of any campaign vs. no campaign between males and females: $\beta_1 + \beta_2 = 0$. Significance at the 10% level is represented by *, at the 5% level by **, and at the 1% level by ***.

Table 2: Effects of Campaign Information by Gender in Milan, Runoff

	Expected turnout	Vote for opponent	Vote for incumbent	Undecided
Positive campaign (α_1)	0.022	-0.085	0.184***	-0.099**
	[0.046]	[0.058]	[0.057]	[0.043]
Negative campaign (α_2)	0.067*	-0.051	0.129**	-0.078*
	[0.035]	[0.063]	[0.062]	[0.043]
Positive campaign × Female (β_1)	-0.017	0.163*	-0.272***	0.109*
	[0.046]	[0.081]	[0.082]	[0.060]
Negative campaign × Female (β_2)	-0.089**	0.124	-0.139*	0.015
	[0.042]	[0.086]	[0.080]	[0.053]
Female	0.051	-0.042	0.096	-0.054
	[0.035]	[0.070]	[0.068]	[0.051]
P-value H1: $\alpha_1 + \beta_1 = 0$	0.835	0.135	0.085*	0.816
P-value H2: $\alpha_2 + \beta_2 = 0$	0.459	0.111	0.816	0.054*
P-value H3: $\alpha_1 - \alpha_2 = 0$	0.141	0.467	0.300	0.569
P-value H4: $\alpha_1 + \beta_1 - (\alpha_2 + \beta_2) = 0$	0.256	0.921	0.061*	0.032**
P-value H5: $\beta_1 - \beta_2 = 0$	0.059*	0.473	0.028**	0.087*
P-value H6: $\alpha_1 + \alpha_2 = 0$	0.251	0.228	0.006***	0.028**
P-value H7: $\alpha_1 + \beta_1 + \alpha_2 + \beta_2 = 0$	0.716	0.081*	0.247	0.450
P-value H8: $\beta_1 + \beta_2 = 0$	0.190	0.078*	0.010***	0.225
Obs.	1,119	1,034	1,034	1,034

Estimated OLS regression: $Y_i = \alpha_1 POS_i + \alpha_2 NEG_i + \beta_1 POS_i \times FEMALE_i + \beta_2 NEG_i \times FEMALE_i + \delta FEMALE_i + \varepsilon_i$. (H1) Treatment effect of positive vs. no campaign for females: $\alpha_1 + \beta_1 = 0$. (H2) Treatment effect of negative vs. no campaign for females: $\alpha_2 + \beta_2 = 0$. (H3) Treatment effect of positive vs. negative campaign for males: $\alpha_1 - \alpha_2 = 0$. (H4) Treatment effect of positive vs. negative campaign for females: $(\alpha_1 + \beta_1) - (\alpha_2 + \beta_2) = 0$. (H5) Differential treatment effect of positive vs. negative campaign between males and females: $\beta_1 - \beta_2 = 0$. (H6) Treatment effect of any campaign vs. no campaign for males: $\alpha_1 + \alpha_2 = 0$. (H7) Treatment effect of any campaign vs. no campaign for females: $(\alpha_1 + \beta_1) + (\alpha_2 + \beta_2) = 0$. (H8) Differential treatment effect of any campaign vs. no campaign between males and females: $\beta_1 + \beta_2 = 0$. Significance at the 10% level is represented by *, at the 5% level by **, and at the 1% level by ***.

Table 3: Instantaneous Effects of Campaign Tools in Milan

	Panel A. 2^{nd} Survey			
	Agree with opponent's video	Agree with incumbent's video	Trust opponent	Trust incumbent
Positive campaign (α_1)	-0.067	0.147**	-0.060	0.157***
	[0.051]	[0.060]	[0.049]	[0.056]
Positive campaign × Female (β_1)	0.108	-0.196**	0.092	-0.244***
	[0.070]	[0.078]	[0.072]	[0.065]
Female	-0.013	0.076	-0.024	0.088*
	[0.060]	[0.051]	[0.055]	[0.045]
P-value H1: $\alpha_1 + \beta_1 = 0$	0.374	0.384	0.481	0.088*
Obs.	793	793	793	793
	Panel B. 3^{rd} Survey			
	Agree with opponent's letter	Agree with incumbent's letter	Trust opponent's video	Trust incumbent's video
Positive campaign (α_1)	0.055	0.156**	-0.061	0.143**
	[0.060]	[0.059]	[0.058]	[0.057]
Positive campaign × Female (β_1)	-0.008	-0.200**	0.103	-0.181**
	[0.068]	[0.078]	[0.076]	[0.078]
Female	0.005	0.020	0.016	0.023
	[0.049]	[0.049]	[0.058]	[0.053]
P-value H1: $\alpha_1 + \beta_1 = 0$	0.269	0.380	0.359	0.424
Obs.	762	762	762	762

Estimated OLS regression in the subsample exposed to any campaign (non-missing values only): $Y_i = \alpha_1 POS_i + \beta_1 POS_i \times FEMALE_i + \delta FEMALE_i + \varepsilon_i$. (H1) Treatment effect of positive vs. negative campaign for females: $\alpha_1 + \beta_1 = 0$. In Panel A, the first two columns refer to questions asked after the video interview with each candidate ("do you agree with what the candidate says in the video?"); last two columns refer to questions asked after the campaign slogan of each candidate ("how much do you feel you can trust the candidate?"). In Panel B, the first two columns refer to questions asked after each candidate's open letter to voters ("do you agree with the general sense of this letter?"); last two columns refer to questions asked after the video ad endorsed by each candidate ("how truthful does this electoral message seem to you?"). Significance at the 10% level is represented by *, at the 5% level by **, and at the 1% level by ***.

Table 4: Effects of Sky TV Show on 3^{rd} Survey Outcomes

	Agree with opponent's letter	Agree with incumbent's letter	Trust opponent's video	Trust incumbent's video
		Panel A. OLS specifications		
After Sky (α_1)	-0.113	0.113	-0.043	0.092
	[0.069]	[0.078]	[0.086]	[0.079]
After Sky × Female (β_1)	0.189**	-0.207**	-0.021	-0.213**
	[0.087]	[0.079]	[0.109]	[0.083]
Female	-0.024	-0.045	0.067	-0.033
	[0.042]	[0.038]	[0.040]	[0.034]
P-value H1: $\alpha_1 + \beta_1 = 0$	0.166	0.091*	0.273	0.041**
		Panel B. RD specifications		
After Sky (α_1)	-0.142	0.139	-0.121	0.071
	[0.089]	[0.088]	[0.117]	[0.093]
After Sky × Female (β_1)	0.182**	-0.201**	-0.040	-0.219**
	[0.086]	[0.077]	[0.109]	[0.083]
Female	-0.021	-0.050	0.069*	-0.041
	[0.043]	[0.039]	[0.041]	[0.035]
P-value H1: $\alpha_1 + \beta_1 = 0$	0.631	0.409	0.113	0.116
Obs.	762	762	762	762

Panel A reports the OLS specifications: $Y_i = \alpha_1 AFTER_i + \beta_1 AFTER_i \times FEMALE_i + \delta FEMALE_i + \varepsilon_i$; where $AFTER_i$ is a dummy equal to one if the voter responded before the Sky TV show was aired, and equal to zero otherwise. Panel B reports the RD specifications: $Y_i = \alpha_1 AFTER_i + \beta_1 AFTER_i \times FEMALE_i + \delta FEMALE_i + f(DISTANCE_i) + \varepsilon_i$; where $f(.)$ is a spline third-order polynomial control function, and $DISTANCE_i$ is the distance from the time of the show measured in minutes. (H1) Treatment effect of positive vs. negative campaign for females: $\alpha_1 + \beta_1 = 0$. Significance at the 10% level is represented by *, at the 5% level by **, and at the 1% level by ***.

Table 5: Effects of Sky TV Show on the Tweets' Tone

	Moratti Negative Dummy	Moratti Negative Index	Pisapia Negative Dummy	Pisapia Negative Index
		Panel A. OLS specifications		
After Sky (α_1)	0.016	-0.023	0.044***	0.134***
	[0.020]	[0.037]	[0.014]	[0.033]
After Sky × Female (β_1)	0.094**	0.045	-0.019	0.085
	[0.039]	[0.075]	[0.026]	[0.068]
Female	-0.035	-0.004	-0.003	-0.111*
	[0.029]	[0.058]	[0.020]	[0.059]
P-value H1: $\alpha_1 + \beta_1 = 0$	0.001***	0.727	0.259	0.000***
		Panel B. RD specifications		
After Sky (α_1)	0.127**	0.168*	0.063*	-0.095
	[0.052]	[0.091]	[0.037]	[0.080]
After Sky × Female (β_1)	0.092**	0.049	-0.023	0.061
	[0.039]	[0.075]	[0.026]	[0.066]
Female	-0.036	-0.005	-0.002	-0.093*
	[0.029]	[0.059]	[0.020]	[0.056]
P-value H1: $\alpha_1 + \beta_1 = 0$	0.000***	0.050**	0.353	0.704
Observations	1,811	1,811	1,811	1,811

Panel A reports the OLS specifications: $Y_i = \alpha_1 AFTER_i + \beta_1 AFTER_i \times FEMALE_i + \delta FEMALE_i + \varepsilon_i$; where $AFTER_i$ is a dummy equal to one if the voter responded before the Sky TV show was aired, and equal to zero otherwise. Panel B reports the RD specifications: $Y_i = \alpha_1 AFTER_i + \beta_1 AFTER_i \times FEMALE_i + \delta FEMALE_i + f(DISTANCE_i) + \varepsilon_i$; where $f(.)$ is a spline third-order polynomial control function, and $DISTANCE_i$ is the distance from the time of the show measured in minutes. (H1) Treatment effect of positive vs. negative campaign for females: $\alpha_1 + \beta_1 = 0$. Significance at the 10% level is represented by *, at the 5% level by **, and at the 1% level by ***.

Table 6: Effects of Campaign Information by Gender in Cava, Full Sample

	Turnout rate	Opponent's vote share	Incumbent's vote share	Others' vote share
Positive campaign (α_1)	0.098*	0.026	-0.151	0.099
	[0.059]	[0.045]	[0.101]	[0.109]
Negative campaign (α_2)	0.069	0.089	-0.184*	0.106
	[0.060]	[0.056]	[0.099]	[0.109]
Positive campaign × Female (β_1)	-0.134**	0.052	0.009	-0.062
	[0.068]	[0.064]	[0.118]	[0.129]
Negative campaign × Female (β_2)	-0.059	-0.073	0.113	-0.057
	[0.068]	[0.068]	[0.118]	[0.129]
Female	0.060	0.050	-0.001	-0.080
	[0.053]	[0.040]	[0.096]	[0.100]
P-value H1: $\alpha_1 + \beta_1 = 0$	0.300	0.082*	0.019*	0.598
P-value H2: $\alpha_2 + \beta_2 = 0$	0.747	0.683	0.266	0.469
P-value H3: $\alpha_1 - \alpha_2 = 0$	0.563	0.271	0.670	0.933
P-value H4: $\alpha_1 + \beta_1 - (\alpha_2 + \beta_2) = 0$	0.188	0.183	0.230	0.852
P-value H5: $\beta_1 - \beta_2 = 0$	0.218	0.089*	0.281	0.963
P-value H6: $\alpha_1 + \alpha_2 = 0$	0.121	0.170	0.071*	0.300
P-value H7: $\alpha_1 + \beta_1 + \alpha_2 + \beta_2 = 0$	0.657	0.178	0.051*	0.468
P-value H8: $\beta_1 + \beta_2 = 0$	0.115	0.853	0.569	0.606
Obs.	857	448	448	448

Estimated OLS regression: $Y_i = \alpha_1 POS_i + \alpha_2 NEG_i + \beta_1 POS_i \times FEMALE_i + \beta_2 NEG_i \times FEMALE_i + \delta FEMALE_i + \varepsilon_i$. (H1) Treatment effect of positive vs. no campaign for females: $\alpha_1 + \beta_1 = 0$. (H2) Treatment effect of negative vs. no campaign for females: $\alpha_2 + \beta_2 = 0$. (H3) Treatment effect of positive vs. negative campaign for males: $\alpha_1 - \alpha_2 = 0$. (H4) Treatment effect of positive vs. negative campaign for females: $(\alpha_1 + \beta_1) - (\alpha_2 + \beta_2) = 0$. (H5) Differential treatment effect of positive vs. negative campaign between males and females: $\beta_1 - \beta_2 = 0$. (H6) Treatment effect of any campaign vs. no campaign for males: $\alpha_1 + \alpha_2 = 0$. (H7) Treatment effect of any campaign vs. no campaign for females: $(\alpha_1 + \beta_1) + (\alpha_2 + \beta_2) = 0$. (H8) Differential treatment effect of any campaign vs. no campaign between males and females: $\beta_1 + \beta_2 = 0$. Significance at the 10% level is represented by *, at the 5% level by **, and at the 1% level by ***.

Table 7: Effects of Campaign Information by Gender in Cava, Canvassed Sample

	Turnout rate	Opponent's vote share	Incumbent's vote share	Others' vote share
Positive campaign (α_1)	0.041	-0.031	-0.144	0.166
	[0.074]	[0.031]	[0.117]	[0.123]
Negative campaign (α_2)	0.045	0.154*	-0.270***	0.110
	[0.070]	[0.082]	[0.099]	[0.125]
Positive campaign × Female (β_1)	-0.063	0.159**	-0.036	-0.122
	[0.087]	[0.075]	[0.138]	[0.153]
Negative campaign × Female (β_2)	-0.059	-0.099	0.132	0.036
	[0.083]	[0.100]	[0.125]	[0.152]
Female	0.060	0.050	-0.001	-0.080
	[0.053]	[0.041]	[0.096]	[0.100]
P-value H1: $\alpha_1 + \beta_1 = 0$	0.628	0.060*	0.014**	0.622
P-value H2: $\alpha_2 + \beta_2 = 0$	0.757	0.345	0.073*	0.094*
P-value H3: $\alpha_1 - \alpha_2 = 0$	0.956	0.015**	0.189	0.649
P-value H4: $\alpha_1 + \beta_1 - (\alpha_2 + \beta_2) = 0$	0.875	0.372	0.618	0.338
P-value H5: $\beta_1 - \beta_2 = 0$	0.963	0.021**	0.188	0.334
P-value H6: $\alpha_1 + \alpha_2 = 0$	0.480	0.211	0.035**	0.199
P-value H7: $\alpha_1 + \beta_1 + \alpha_2 + \beta_2 = 0$	0.615	0.059*	0.011**	1.183
P-value H8: $\beta_1 + \beta_2 = 0$	0.389	0.659	0.677	0.739
Obs.	560	282	282	282

Estimated OLS regression: $Y_i = \alpha_1 POS_i + \alpha_2 NEG_i + \beta_1 POS_i \times FEMALE_i + \beta_2 NEG_i \times FEMALE_i + \delta FEMALE_i + \varepsilon_i$. (H1) Treatment effect of positive vs. no campaign for females: $\alpha_1 + \beta_1 = 0$. (H2) Treatment effect of negative vs. no campaign for females: $\alpha_2 + \beta_2 = 0$. (H3) Treatment effect of positive vs. negative campaign for males: $\alpha_1 - \alpha_2 = 0$. (H4) Treatment effect of positive vs. negative campaign for females: $(\alpha_1 + \beta_1) - (\alpha_2 + \beta_2) = 0$. (H5) Differential treatment effect of positive vs. negative campaign between males and females: $\beta_1 - \beta_2 = 0$. (H6) Treatment effect of any campaign vs. no campaign for males: $\alpha_1 + \alpha_2 = 0$. (H7) Treatment effect of any campaign vs. no campaign for females: $(\alpha_1 + \beta_1) + (\alpha_2 + \beta_2) = 0$. (H8) Differential treatment effect of any campaign vs. no campaign between males and females: $\beta_1 + \beta_2 = 0$. Significance at the 10% level is represented by *, at the 5% level by **, and at the 1% level by ***.