

# The Divided Labor of Attack Advertising in Congressional Campaigns\*

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## Abstract

Outside groups have become a major force in U.S. campaigns, but it is not clear how these new players cooperate with candidates and what the effects are on campaign communications. This paper offers a theory of compensatory cooperation between campaign actors where candidates and outside groups divide the labor of attacking opponents. Using an extensive dataset of campaign advertising in the 2010 and 2012 congressional elections augmented with Nielsen television ratings data, it is shown that candidates attack opponents less as supporting outside group attacks increase. Consistent with statements from campaign professionals in interviews, these findings support the claim that candidates expect outside groups to attack on their behalf. The resulting cooperative system of attack and advocacy has significant effects on democratic discourse since outside groups produce attack advertising that is more likely to be policy-based and less likely to be based on personal attributes of candidates. When candidates partially outsource attack advertising to independent expenditure groups, attacks in that campaign become more issue and policy-based. Thus, in perhaps an unintended consequence of the divided labor of attack advertising, outside group involvement makes it more likely that an election campaign will foster citizen knowledge about issues and policy positions of the candidates.

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While independent expenditures have had a role in U.S. campaigns for many decades, the scale of independent activity has dramatically increased since the Supreme Court decision in *Citizens United v. FEC* and the federal court decision in *Speechnow.org v. FEC* in 2010. In the elections since these court decisions spending by outside groups has risen to the point that outsider advertising outpaces candidate spending in some of the closest races (Fowler and Ridout 2014). The larger set of actors directly communicating to voters presents both an opportunity and a challenge for candidates. How does this more crowded campaign environment affect the messages on the airwaves in campaigns?

The independent expenditure groups, mostly super PACs and so-called “dark money” groups (501(c)4s and other similar non-profits) that have taken on a larger role in recent elections are viewed by many scholars as integrated pieces of a broader party network (Herrnson 2009; Koger, Masket, and Noel 2009; Skinner, Masket, and Dulio 2012). Candidates, parties, and outside groups within these networks all share an interest in electoral success and should cooperate with one another to the degree that campaign law will allow (Dwyre and Kolodny 2014; Magleby, Monson, and Patterson 2007)<sup>1</sup>. Recent studies of independent group advertising have found that these actors tend to cooperate with candidates by emphasizing the same issues as the advertising of the candidates they support (Franz 2014; Franz, Fowler, and Ridout 2016).

This study posits that the various actors within these party networks are capable of even more sophisticated cooperation when it comes to the tone of advertising, that they engage in a compensatory style of cooperation by dividing of labor of attack. Using a dataset created by merging existing data of congressional advertising with television ratings data from Nielsen, this study shows that candidates will reduce the proportion of their own advertising devoted to attack when they benefit from outside group attacks on their opponent. This division of labor allows candidates to reduce attacks which carry the risk of public backlash and instead run more positive, self-promoting advertising.

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<sup>1</sup>Direct coordination between candidates, independent expenditure arms of party committees, and independent expenditure groups is prohibited by FEC rules: 11 C.F.R. §109.20(a) (2004)

The division of labor by candidates and outside groups would be an interesting but unimportant story if there were no consequences for democratic deliberations. But when a greater responsibility for attack advertising is shifted to super PACs and dark money groups, the types of attacks change. Outside groups often have secondary objectives and a less candidate-specific perspective than candidates. Because of these differences, outside groups compared to candidates are more likely to air policy-based instead of personal attacks. Contrary to concerns that outside groups who are unaccountable to voters will degrade the quality of campaign discourse, when outside groups participate in campaigns the attacks in the campaigns become more policy-based and less focused on attacks on candidates' personal characteristics.

## **The Risk and Reward of Attack Advertising**

In any campaign advertisement the sponsor chooses to air attack messaging about the opponent, advocacy messaging about the supported candidate, or often a combination of both. While candidates may profess to prefer mostly positive campaigns, campaign professionals are confident that attack advertising works (Abbe et al. 2001; Kern 1989; Theilmann and Wilhite 1998). Political science has offered some support for this view, finding that under certain conditions attack advertising can affect vote choice (Ansolabehere and Iyengar 1995; Fridkin and Kenney 2011; Mattes and Redlawsk 2014; but for a dissenting assessment see Lau, Sigelman, and Rovner 2007). Attack advertising may have greater persuasive power than advocacy because individuals tend to give greater attention to negative information (Baumeister et al. 2001), and individuals are more likely to recall and use negative information when evaluating candidates (Lau 1985). Given these features, attack advertising is a very appealing tool for campaigns.

Campaigns are most likely to attack opponents when electoral success is threatened. As a race gets more competitive, candidates are increasingly willing to attack their opponent,

and when candidates are lagging behind their opponent they are more likely to engage in attacks (Damore 2002; Kahn and Kenney 1999; Lau and Pomper 2004; Theilmann and Wilhite 1998). Challengers have an incentive to attack incumbents in order to redefine the officeholder and erode his/her support (Geer 2006; Lau, Sigelman, and Rovner 2007; Kahn and Kenney 1999; Tinkham and Weaver-Lariscy 1995), while incumbents are incentivized to rely on more advocacy messages to promote their accomplishments in office (Goldstein et al. 2001). Attack advertising can also be retaliatory, where candidates attack as a response to opponent attacks (Ansolabehere and Iyengar 1995; Damore 2002; Haynes and Rhine 1998; Lau and Pomper 2004). Finally, multi-candidate contests feature less attack advertising. In a multi-candidate race eroding support for one candidate may push those voters to another opponent, so the calculus for a candidate in deciding to attack is more complex and has a less certain payoff (Hansen and Pedersen 2008; Walter 2014).

Campaigns also have disincentives to attack opponents. First, attack advertising carries potential risk for the sponsor. Attacks might be considered out of bounds, unfair, or unacceptable by voters. Numerous studies have found a backlash effect from attack advertising, where viewers of attack ads lower their evaluations of the attacker instead of the target of the message (Allen and Burrell 2002; Brooks and Murov 2012; Dowling and Wichowsky 2015; Garramone 1985; Garramone and Smith 1984; Lau, Sigelman, and Rovner 2007). Second, campaigns must still balance multiple communications objectives in their advertising. Besides attacking opponents, campaigns seek to define their own candidates in favorable terms to voters. Advocacy messages frame the candidate in the preferred context and reduce voters' uncertainty about candidates (Alvarez 1997; Alvarez and Franklin 1994; Shea and Burton 2006). Advertising time spent attacking the opponent is time not spent making the case for the supported candidate, so campaigns should seek a balance of both attack and advocacy messages in the advertising mix.

## Campaign Actors and Cooperation

The advertising landscape is further complicated by the dramatically increased role of outside groups since 2010 (Fowler and Ridout 2012). The primary division of campaign actors is between *candidates* and *outside groups*. Candidates are defined as the campaign committees of the candidates for office and outside groups are defined as all other groups making independent expenditures in support of and in opposition to candidates in elections. An essential feature defining the difference between candidates and outside groups is that each are prohibited from communicating with the other once the candidate files with the FEC to officially enter the race. Outside groups are composed of *party groups* and three varieties of independent groups: *party-adjacent groups* that, like party groups pursue legislative majorities; *issue-based groups* that advance policy objectives through replacing opponents and defending allies; and *single candidate groups*, formed to support a single candidacy (Magleby 2014) (For the categorization of these groups, see Appendix A).

To develop a picture of how campaign actors cooperate with each other and provide advance signals of one another's activities, I draw on numerous accounts in press, scholarly studies and a set of eight one-on-one interviews conducted in June 2015 with individuals with direct experience in the current campaign landscape. The interview participants include campaign managers and campaign consultants for U.S. House and Senate races, senior leadership of expenditure-only groups, a pollster, and a television executive responsible for advertising sales to political clients in over a dozen major media markets. Respondents were recruited via email by referral from previous respondents. The semi-structured interviews were conducted "on background" since the interviews covered potentially sensitive topics of campaign strategy and techniques that push the limits of FEC regulations.

Campaign actors can cooperate without crossing the legal threshold of coordination by communicating with one another before the communications ban goes into effect (when the candidate files with the FEC to officially become a candidate), sending out cues to one another, through the use of public information, and because actors have formed reliable

expectations of how the other actors will behave. Some techniques of signaling and cooperation may appear to push or surpass the limits of FEC rules, but campaign actors have little reason to be timid. The FEC often fails to issue any guidance to campaign actors because of a frequent partisan deadlock of 3-3 among FEC commissioners when groups request advisory opinions (Corrado 2014), leading FEC chairwoman Ann M. Ravel to tell one reporter, “The likelihood of the laws being enforced is slim . . . People think the FEC is dysfunctional. Its worse than dysfunctional” (Lichtblau 2015).<sup>2</sup>

Parties and independent expenditure groups openly communicate their intentions and their spending through press releases that announce media buys and websites that feature lists of targeted contests (Dwyre and Kolodny 2014). In addition, other less formal methods are now used by campaign actors to share strategic information with outside groups: a stand-alone corporation was created on the Republican side to disseminate opposition research among both candidates and independent expenditure groups while remaining compliant with FEC rules (Confessore 2014); Twitter accounts were created on both sides to share polling information across party, candidate, and independent groups (Blumenthal 2014; Moody 2014); and Democratic candidates and the DSCC both posted “important messages” on their websites to highlight issues that were soon taken up by ads from Senate Majority PAC and Patriot Majority USA (Sullivan 2014). One political director for a super PAC interviewed for this project stated that his group rarely makes media buys, but instead shares information and coordinates efforts among independent allies during a campaign through research and regular conference calls with independent groups participating in the race. So, while the communications ban prevents coordination between candidates and outside groups, outside groups can and (at least occasionally) do coordinate with one another.

Even if these signaling methods fail, the various campaign actors can easily track one another’s media activity during the campaign. Candidates learn of the support from outside groups before the supporting ads air, receiving advance warning sometimes days in advance,

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<sup>2</sup>Ms. Ravel later resigned in frustration from the FEC in February 2017.

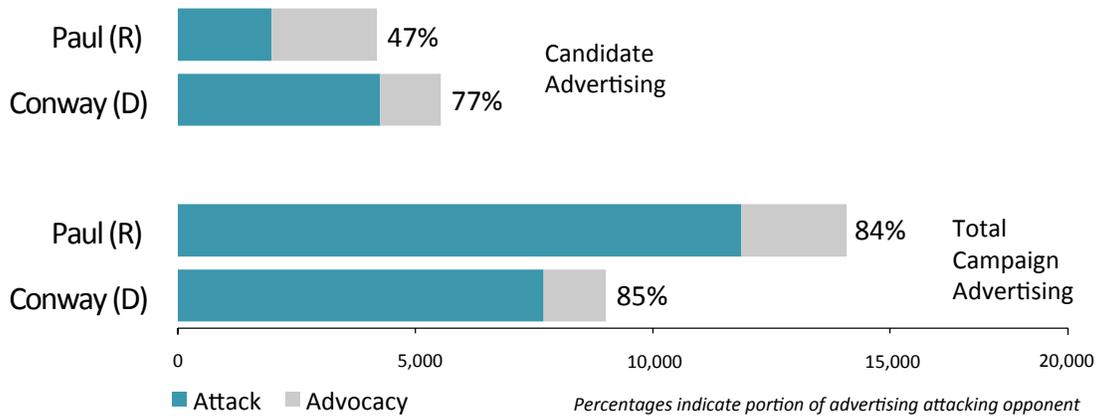
and many times weeks or even months in advance. According to interview respondents both in the television industry and in campaign management, media buying firms provide weekly and sometimes daily reports of other media buys in relevant markets. Thanks to these regular reports, campaign actors are aware of advertising by other actors in the race well in advance of the ads running on air.

Finally, campaign actors can synchronize their efforts because actors' behavior is predictable. Campaign staff, Hill Committee leadership, and independent group leaders frequently swap roles and have all learned their craft in the same arena. Interview respondents expressed confidence in other major actors in campaigns because they are "pros" or "veterans." Since they all know the same strategies, they can properly interpret the moves of other actors. One consultant described campaigning in the age of super PACs like playing the card game bridge: "My partner should be able to pick up on the signals about my cards based on my play." Some actors have reputations for particular tendencies. One respondent from a super PAC said that some candidates will be known for a reluctance to go negative in a campaign, so the outside groups will pick up that task right away.

## Theory and Hypotheses

### *Compensatory Attack*

Attack advertising can be a double-edged sword for candidates, but the expanded role of outside campaign actors offers candidates an opportunity to benefit from attacks on opponents without paying a price for them. Outside groups of all varieties usually prefer attacking opponents instead of defining the favored candidate (Fowler and Ridout 2012; Ridout and Franz 2011). Interview respondents from both the candidate side and independent expenditure group side remarked that supportive advertising can be harder for outside groups to create when coordination with the candidate is prohibited. A Democratic campaign consultant said that supportive advertising by outside groups is still rare further down the ballot from the



**Figure 1: Portion of Ad Volume Devoted to Attack, Kentucky Senate 2010**

presidential race because “even today b-roll is still hard to come by on most Senators and especially House members.” Respondents from both candidate campaigns and independent expenditure groups stated that outside groups are expected to “carry the negative,” that is, candidates assume that outside groups will run almost entirely attack advertising and take over some of the responsibility of attack on behalf of the candidate.

Advertising totals in the 2010 Kentucky Senate race, shown in Figure 1, illustrate how candidates can adjust their advertising when they anticipate that outsiders will carry the negative. The top half of the figure displays the volume of advertising and proportion of attack and advocacy by the candidates, while the bottom half of the figure displays the total advertising for each campaign, that is, the total of candidate advertising plus all advertising supporting that candidate by outside groups. First for the candidates, Rand Paul appeared to run a mostly positive campaign – he attacked Conway with 47% of his advertising while Conway attacked him with 77% of his ad volume. However, moving down to the bottom half of the figure we see that including the outside group support into the total advertising changes this picture. Both campaigns devoted nearly identical proportions of advertising to attacking the opponent (84% and 85%, respectively).

This should be a broad pattern across legislative campaigns, and campaign actors should capitalize on the broad network of participants to divide the labor of attacking opponents.

Recent studies of outside group advertising have shown that outsiders devote most of their messaging to attacking opponents (Fowler and Ridout 2012, 2014). Candidates should anticipate this from outside groups and devote a smaller proportion of their own advertising to attacking opponents when they know that outside groups will run more attack advertising on their behalf. In addition, many voters do not connect candidates to attack advertising by outside groups (Dowling and Wichowsky 2015). Because of this disconnect, candidates can escape backlash from attacks if the attack is made by outside groups on behalf of the candidate instead of by the candidate's own committee (Brooks and Murov 2012; Dowling and Wichowsky 2013; Weber, Dunaway, and Johnson 2012).

Recent scholarship has shown that on issue content outside groups tend to cooperate with candidates by mirroring their issue mentions (Franz, Fowler, and Ridout 2016). I expect that this arrangement is different, however, when it comes to the mix of attack and advocacy messages in a campaign. Because attack messages are easier than advocacy messages for outside groups to create, and because the main risk of attack, backlash against the candidate, is diminished when the attacks are carried by outside groups, campaign actors have an incentive to divide the labor on the tone of the advertising.

**Compensatory tone hypothesis:** As the volume of attack advertising by supporting outside groups in a campaign increases, the proportion of candidate attack advertising in that campaign decreases.

Furthermore, because of the high quality of signaling that occurs between campaign actors and the clear expectation of actors' roles, I expect that an inverse association should occur in the total campaign mix. That is, a candidate does not necessarily dial back on attacks because the party attacked her opponent for her in previous weeks. The candidate can also reduce attacks because of anticipated attacks by outside groups in coming weeks. Therefore, I expect that the inverse relationship should be present in the total of campaign advertising, even while it is not observable in a lagged analysis.

## ***Types of Attack***

All attack ads are not alike in the eyes of citizens. Attacks can be based on issues and policies or on personal aspects of the candidates. Voters often state that they are comfortable with policy-based attacks but they dislike attack ads that are not about topics germane to the election (Kahn and Kenney 1999). While personal attacks are often considered a distasteful tactic in campaign communications, policy-based attacks are usually acceptable to viewers (Mattes and Redlawsk 2014), and policy-based attacks typically carry more information about issues and candidate positions (Geer 2006).

When outside groups carry greater responsibility for attacking opponents in campaigns this can affect the substance of the attacks in the race. If outside groups insulate the candidate from backlash, outside groups may be more willing to run attacks on the personal characteristics of the opponent. As one super PAC employee put it, “We . . . can say things that the campaign can’t say” (Magleby and Goodliffe 2014). The degree of insulation a candidate enjoys from public backlash should vary by type of outside group supporting the candidate. Evidence of backlash was observed in Senate races in 1996 where attack messages from the party caused voter backlash against the supported candidates (Jasperson and Fan 2002). Some backlash against a candidate is reasonable to expect when the outside support is from the party – a campaign actor easily connected back to the candidate by most voters. Independent groups, however, do not have an immediately obvious connection to the supported candidate and many of these groups (501(c)s) are funded anonymously, so they should be less constrained by concerns about backlash. When campaign actors are less concerned about backlash they should be less reluctant to use personal attacks against opponents. Therefore, attack advertising by party-adjacent and issue-based independent groups should be more likely than advertising from parties or candidates to be personal

instead of policy-based attacks.

**Insulation hypothesis:** Party-adjacent and issue-based independent group attack advertising will be more likely than candidate or party advertising to be based on opponents' personal characteristics.

However, there are reasons to expect instead that outside groups are more policy-oriented in their attacks. A recent study of independent advertising in the 2012 presidential campaign concluded that voters did not consider ads by outside groups more negative or more misleading than ads from the candidates (Dowling and Miller 2014). Issue-based groups are formed around policy goals and will likely focus on their issues of interest in their advertising.<sup>3</sup> For example, the Sierra Club will be more likely to attack a candidate's environmental record than a candidate's honesty. Because of the groups' objectives, we might instead expect these groups to be the most likely to base their attacks on policy considerations. Parties and party-adjacent groups have broader agendas than issue-based groups, but they also divide their attention across numerous races. Outside groups with an interest in many races will sometimes use nearly identical advertising, "cookie-cutter ads", across numerous races (Memmott 2010). Cookie-cutter ads will more likely be broad-based attacks, e.g., "voted with Nancy Pelosi 95% of the time," and will not be customized to address specifics of the opponent's character. In essence, groups with broader perspectives than a single campaign (outside groups other than single candidate groups) will have different agendas and not concern themselves with the minutiae of each individual opponent. This suggests a rival hypothesis:

**National agendas hypothesis:** Outside groups will be more likely than candidates to engage in policy-based attacks.

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<sup>3</sup>Groups were coded in this study based on their stated objectives on their websites and in press releases, if available (see Appendix A for coding criteria).

## Data

The campaign advertising data used here come from the Wesleyan Media Project (WMP) for the 2010 and 2012 election cycles (Fowler, Franz, and Ridout 2014, 2015). The WMP captures and codes all airings of political advertisements on broadcast television in all 210 media markets in the United States. This study includes the broadcast campaign advertising by all campaign actors in federal legislative races, in the general election phase. In all, 2,382,138 airings of political advertisements by 751 House and Senate candidates and 232 outside groups are included.

The typical approach to measuring advertising volume is as a count of ad airings, but different airings often reach quite different audience sizes. This approach does not capture differences in both the cost and the reach of airings occurring in different markets, at different times, and during different programming. For example, an airing that occurs during the 6 o'clock news in a district's largest media market versus another airing that occurs during daytime programming in a secondary media market are quite different in terms of both cost and reach (for related discussions of advertising measurement, see Freedman and Goldstein 1999; Jamieson, Waldman, and Sherr 2000; and Shaw 1999).

Measuring campaign advertising using a count of airings does not pose a problem if the comparisons involve sets of airings that occurred in sufficiently similar times and markets or the differences are random noise that cancel out in large sample sizes. However, the essential relationship under study in the analyses that follow is between candidates and independent groups who purchase advertising at different rates and therefore might pursue different media buying strategies. If super PACs tend to purchase larger numbers of spots in cheaper time slots compared to candidates or vice versa, then the assessment of the impact of super PAC advertising using a count of airings would be biased.

To address these issues, this paper takes the additional step of creating a measure of campaign advertising that accounts for the differences in the audience size of advertising airings occurring in different markets and at different times of day. Using television audience data

**Table 1: Percentage of Advertising Attacking Opponents**

	Senate		House	
	2010	2012	2010	2012
Candidates	50%	40%	58%	44%
Parties	82%	84%	94%	89%
Party-Adjacent Groups	97%	92%	94%	93%
Issue-Based Groups	90%	87%	92%	77%
Single Candidate Groups	70%	99%	99%	98%
Total Campaign Advertising	63%	57%	71%	67%

obtained from Nielsen each airing is expressed as the size of the media market (in thousands of television households) times the average portion of television households viewing broadcast television in the daypart when the ad aired (see Appendix A for a detailed description of this process and Appendix B for an evaluation of the impact of using this measurement instead of a count of airings).

The WMP records if ads are contrast, promote, or attack spots. Using this information, the proportion of campaign actors' advertising volume dedicated to attack of opponents is calculated (see Appendix A for a full description of the process of calculating the attack percentage). Consistent with previous studies (Fowler and Ridout 2012, 2014), outside groups devote much more of their advertising volume to attacking opponents compared to candidates' advertising (see Table 1). There is some variation between groups and election years, but broadly speaking candidates average about 45% – 50% of advertising devoted to attack while outside groups average about 85% – 90% of advertising devoted to attack. Total campaigns, the sum of all advertising by candidates as well as supporting outside groups, dedicate about two-thirds of advertising to attacking opponents.

# Analyses

## *Cross-Sectional Models*

The compensatory attack hypothesis expects that the percentage of candidate advertising devoted to attack in a campaign will have a negative association with outside group supporting attacks. To observe the association between outside group attack advertising and candidates' total campaign advertising mix, cross-sectional models estimate the percentage of a candidate's advertising volume attacking opponents, separately for Senate and House campaigns. The unit of analysis in the models is the campaign, defined as the total advertising activity of the candidate and all outside allies in support of the candidate in the general election phase of the race. Campaigns are included if the candidate ran 50 or more television spots and if the candidate had an opponent (Senate N=119; House N=632).<sup>4</sup>

The dependent variable, the candidate attack percentage, is modeled as a function of several variables listed in Table 2. The independent variable of interest, *supporting attacks*, is measured as the total volume of attacks on behalf of the candidate divided by the candidate's total advertising volume. For example, Jack Conway the Democratic Senate candidate in Kentucky in 2010 had a total advertising volume value of 442,586 and outside groups supported his campaign with a volume of 274,855 attacks on his opponent. The resulting supporting attack ratio is 0.62 ( $\frac{274,855}{442,586} = 0.62$ ). Expressing supporting attacks as a ratio of the candidate's advertising volume accounts for varying sizes of campaigns, since candidates should only be interested in adjusting the advertising mix when the outside support is at a volume that is meaningful in their race.

To isolate the independent effect of supporting outside attacks on a candidate's attack

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<sup>4</sup>The sample is restricted to those campaigns where the candidate aired 50 or more spots because with so little of their own advertising, there would be insufficient "room" for these candidates to alter their mix of tone and inflated supporting attack values resulted from the candidates' own paltry advertising volumes. As a result, not included in the House sample are the 2010 Republican campaigns in IL-11 and MN-8 and the 2012 Republican campaign in NC-7. Not included in the Senate sample are the 2010 NY Senate races since it proved too difficult to reliably account for which candidate was supported by a given advertisement. To ensure that the results were unaffected by dropping these cases, the model was estimated with their inclusion and the results were almost entirely unaffected.

**Table 2: Summary Statistics for Models of Attack Percentage**

	Senate				House			
	Mean	Std. Dev.	Min.	Max.	Mean	Std. Dev.	Min.	Max.
<b>Dependent Var.</b>								
Candidate attack pct.	0.38	0.29	0	1	0.38	0.33	0	1
<b>Independent Vars.</b>								
Supporting attacks	0.54	0.92	0	4.58	0.69	1.53	0	11.53
Race rating	<i>(for the distribution see Table A.1, Appendix)</i>							
Opposing attacks	1.09	1.46	0	8.01	1.15	1.88	0	16.11
Republican	50%	—	0	1	51%	—	0	1
Incumbent candidate	30%	—	0	1	47%	—	0	1
Challenger candidate	27%	—	0	1	36%	—	0	1
Open seat candidate	43%	—	0	1	17%	—	0	1
Three-way race	9%	—	0	1	—	—	—	—
2012	53%	—	0	1	50%	—	0	1
	N=119				N=632			

percentage the model must also account for the other major determinants of a candidate’s choice to attack the opponent. The most important determinant is the state of the race, or the closeness of the campaign and the candidate’s prospects for winning, represented by nine-category race ratings from the Rothenberg & Gonzales Political Report from the first week of October in each election year (a complete description of this and other variables in this study is provided in the Appendix). The overall relationship between the strategic context of the race and a candidate’s percentage of attack should be curvilinear: candidates in closer races will be more likely to attack the opponent while safe and hopeless campaigns will attack less. Furthermore, candidates who are behind should be more likely to attack than candidates who are ahead. Folding the scale would fail to account for this second effect. Therefore, the Rothenberg ratings are included in the models as a set of eight dummy variables with the *safe seat* category omitted.

The *opposing attacks* directed against a candidate are measured as the total advertising volume attacking the candidate from all actors divided by the total volume of the candidate’s own advertising. The status of the candidates as *incumbents*, *challengers*, or in *open* contests is included in the model as two dummy variables (the omitted category is incumbent). In a handful of Senate contests a viable independent candidate (a candidate who eventually

received 15% or more of the total vote) was also in the race. Since attacking opponents is not as beneficial of a strategy in a multi-candidate contest than in a two-way contest, a dummy variable for candidates running in a *three-way race* is included in the Senate model. Finally, because this is a pooled sample of 2010 and 2012 races an indicator for the year of the election is included in the models as a dummy variable for *2012*<sup>5</sup>

A fractional logit model is used for the cross-sectional analysis because the dependent variable is a percentage. This is a generalized linear model with a binomial distribution and a logit link. This form is suited for a fractional response variable since it allows the dependent variable to take on any value between 0 and 1, including the boundary values, and can accommodate a large portion of zeros and ones in the dependent variable (Papke and Wooldridge 1996). Two models are estimated, separately for Senate and House campaigns. The basic model to measure the main effect of supporting outside attacks on candidates' attack percentage can be written as follows:

$$E(\text{candattack}_i) = \Lambda(\beta_0 + \beta_1 \text{supattack}_i + \sum_{j=2}^9 \beta_j \text{rating}_i + \beta_{10} \text{oppattack}_i + \beta_{11} \text{challenger}_i + \beta_{12} \text{open}_i + \beta_{13} \text{threeway}_i + \beta_{14} \text{2012}_i)$$

The estimates from this model for House and Senate races are shown in left two columns of Table 3. Variables for the state of the race have the anticipated effects on candidate attacks. To best illustrate this relationship, marginal effects on the predicted candidate attack percentage for each category of competitiveness are shown in Figure 2.<sup>6</sup> As expected, the highest predicted proportions of attack advertising are for candidates slightly behind in race, though the predicted percentages of attack are similar for all candidates within two categories of a toss up race. Safe candidates have the lowest predicted attack percentages, while their opponents (hopeless candidates) are predicted to run a moderate amount of attacks.

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<sup>5</sup>The validity of pooling 2010 and 2012 is tested using Wald tests on models fully interacted with year, provided in Appendix B. No independent variable had a significantly different slope between years.

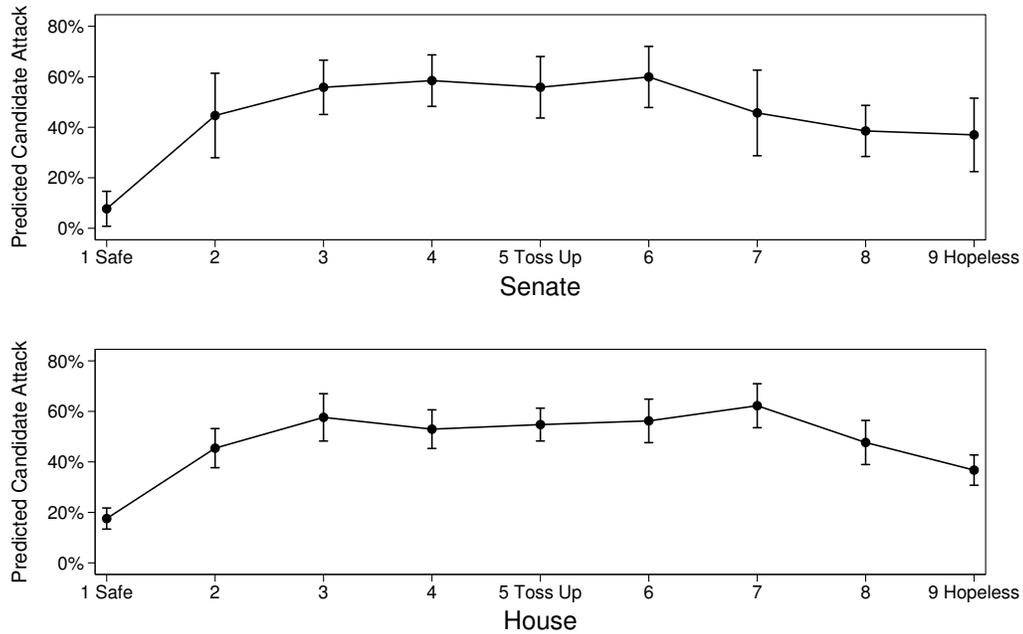
<sup>6</sup>All marginal effects in this study are calculated with the continuous variables held constant at their means and categorical variables at their mode.

**Table 3: Fractional Logit Models of Candidate Attack Percentage**

Independent Variables	Base Model		Partisan Model	
	Senate	House	Senate	House
Supporting attacks	-.422*	-.138**	-.751*	-.343***
	(.181)	(.056)	(.361)	(.080)
Republican	—	—	.340	-.065
			(.311)	(.132)
Republican × supporting attacks	—	—	.275	.246**
			(.291)	(.085)
Nearly safe seat (2)	2.337***	1.405***	2.448***	1.414***
	(.616)	(.215)	(.646)	(.214)
(3)	2.810***	1.912***	3.026***	1.982***
	(.538)	(.255)	(.539)	(.256)
(4)	2.926***	1.717***	2.866***	1.729***
	(.539)	(.219)	(.568)	(.224)
Toss Up (5)	2.811***	1.792***	2.949***	1.878***
	(.570)	(.211)	(.623)	(.216)
(6)	2.990***	1.854***	3.266***	2.004***
	(.580)	(.243)	(.625)	(.249)
(7)	2.380***	2.111***	2.095**	2.169***
	(.671)	(.254)	(.676)	(.263)
(8)	2.072***	1.499***	2.212***	1.472***
	(.543)	(.247)	(.567)	(.252)
Hopeless candidacy (9)	2.002*	1.032***	2.179**	1.009***
	(.616)	(.216)	(.638)	(.226)
Opposing attacks	.202 <sup>+</sup>	.123**	.290 <sup>+</sup>	.119**
	(.125)	(.043)	(.152)	(.043)
Challenging candidate	.055	.172	-.328	.183
	(.358)	(.143)	(.412)	(.153)
Open seat candidate	-.393	-.242	-.540	-.237
	(.279)	(.173)	(.330)	(.173)
Three-way race	-1.326***	—	—	—
	(.344)			
2012	.181	-.552***	.237	-.516***
	(.219)	(.109)	(.226)	(.109)
Intercept	-2.378***	-1.412	-2.585***	-1.386***
	(.219)	(.150)	(.489)	(.166)
N	119	632	115	632
BIC	-466.33	-3721.24	-438.06	-3711.26
Log Pseudo-Likelihood	-50.79	-290.24	-49.80	-288.79

*Standard errors in parentheses*

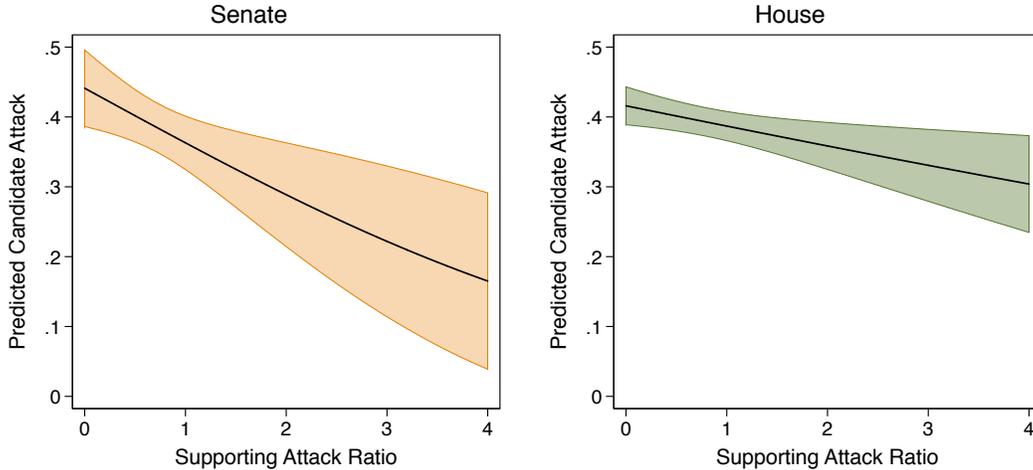
<sup>+</sup> $p < .10$ , \* $p < .05$ , \*\* $p < .01$ , \*\*\* $p < .001$ , two-tailed tests



**Figure 2: Marginal Effects of the State of the Race**

A greater volume of attack from the opponent is associated with a greater share of the candidate’s advertising going towards attack, though the effect is significant only in a one-tailed test in the Senate sample. No significant differences in the level of attack were observed between incumbents, challengers, and open seat candidates. The independent effect of running in a three-way race, however, is strongly negative in Senate contests. When there are three viable candidates, the candidates in those races run much less attack advertising. House candidates but not Senate candidates were much less likely to attack in 2012, perhaps because this was a redistricting year and even incumbents needed to introduce themselves to new electorates.

After controlling for these factors, the results of the models support the compensatory tone hypothesis. The main effects calculated in the base model show that a greater volume of supporting attacks from outside groups is negatively associated with the percentage of attack advertising from the candidate, in both Senate and House races. Holding other characteristics of the race constant, as outside groups attack more, candidates attack less.

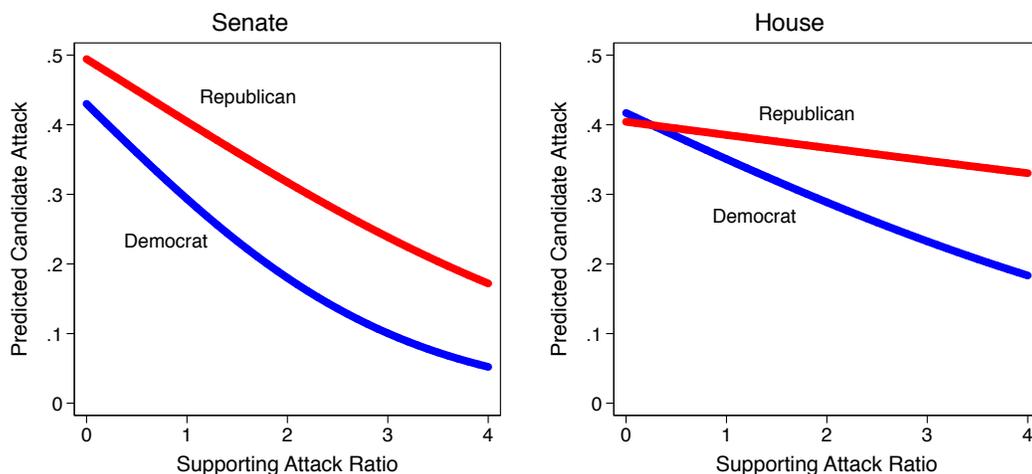


**Figure 3: Marginal Effects of Supporting Attacks from Outside Groups**

The marginal effects of outside group attacks on the candidate’s mix of attack and advocacy are shown in Figure 3. The base model predicts that in Senate contests an increase of one standard deviation in the supporting attack ratio results in a decrease of candidate attacks of 8.3 percentage points. In House races the effect is smaller. An increase of one standard deviation in the supporting attack ratio in House contests results in a decrease of candidate attacks of 4.0 percentage points.<sup>7</sup>

To move beyond these main effects a second set of models interact partisanship with supporting attacks, shown in the right two columns of Table 3. In these models the relationship between supporting attacks and candidate attacks is borderline significant in the Senate sample ( $F = 7.71, p = .052$ ) and more clearly significant in the House sample ( $F = 19.41, p < .001$ ). Margins calculated from the interactive models show that the compensatory relationship in attack advertising is stronger among Democratic campaigns than among Republican campaigns (see Fig. 4). In the Senate, Democratic candidates reduce their percentage of attacks by 11.7 points in response to one standard deviation increase in supporting attacks (moving from a supporting ratio of 0.54 to 1.46) while Republican candidates reduce their attack percentage by 8.2 points over the same range. In the House

<sup>7</sup>One standard deviation change of supporting attacks (Senate = 0.92; House = 1.53) starting from the variable’s mean (Senate = 0.54; House = 0.69).



**Figure 4: Marginal Effects of Supporting Attacks by Party**

the difference is more stark. One standard deviation increase from the mean of supporting attacks (from 0.69 to 2.22) is associated with 9.5 points less attacks by Democrats versus 2.8 points less attacks by Republican candidates.

### ***Lagged Variable Models***

Is the reciprocal relationship between attack advertising by outside groups and supported candidates a result of cues and expectations between actors, or is this a responsive and not explicitly cooperative relationship? Perhaps the associations are caused by a simpler process where candidates alter the mix of advertising tone in response to prior supporting attacks from outside groups. If campaign actors have solved their communication challenges and have accurate expectations of each others' advertising efforts in campaigns, timing should be irrelevant to a division of labor of attack. In other words, candidates should be able to adjust their percentage of attack based on both past and expected future advertising by supporting outside groups.

The previous pooled cross-sectional models allow us to observe the overall association between outside group attack advertising and candidates' total campaign advertising mix. But the WMP data records when each ad aired, so the advertising data can be structured

**Table 4: Fixed Effects Linear Models of Candidate Attack Percentage**

Independent Variables	DV: Candidate Attack		DV: Supporting Attack	
	Senate	House	Senate	House
Supporting attacks $t-1$	.003 (.003)	.003 (.004)	1.965*** (.042)	.519*** (.024)
Supporting attacks $t-2$	-.001 (.005)	.003 (.005)	-2.170*** (.077)	-.135*** (.028)
Opposing attacks $t-1$	-.003 (.002)	.003 (.004)	-.243*** (.032)	.607*** (.022)
Opposing attacks $t-2$	.007* (.003)	-.007+ (.003)	.354*** (.050)	-.358*** (.025)
Candidate attacks $t-1$	.614*** (.036)	.567*** (.020)	-.021 (.508)	-.141 (.125)
Candidate attacks $t-2$	-.157*** (.034)	-.181*** (.019)	.129 (.481)	-.284* (.119)
Intercept	.244*** (.017)	.289*** (.009)	.656** (.239)	.253*** (.056)
N	822	2,547	822	2,547
Overall R <sup>2</sup>	.55	.58	.88	.68

*Standard errors in parentheses*

<sup>+</sup> $p < .10$ , \* $p < .05$ , \*\* $p < .01$ , \*\*\* $p < .001$ , two-tailed tests

as a time-series panel to examine how outside group attacks one week are associated with a candidate’s attack percentage in following weeks and vice versa. To test for these potential relationships, the data is partitioned into weekly blocks and fixed effects time series models are estimated, shown in Table 4. The variables of *supporting attacks* and *opposing attacks* and *candidate attacks* are all included with both 1 and 2 week lags. Models are estimated both with candidate attacks as the dependent variable and with supporting attacks as the dependent variable in order to test if either outsiders or candidates respond in following weeks to supporting actors’ attack advertising. The dependent variables remain on the right-hand side of both models with 1 and 2 week lags to account for autocorrelation.<sup>8</sup>

The results of both models show that the dependent variables are temporally autocorrelated. That is, the candidate’s proportion of attacks in previous weeks has a significant association with the candidate’s attack percentage in the current week, and the volume of

<sup>8</sup>These models measure intra-campaign variation of candidate attack on opponents. Variables present in the other models, i.e., race competitiveness, challenger or incumbent, party, and election cycle are not included since they are constant within each panel group (campaign).

supporting attack advertising in a given week is strongly associated with the volume of supporting attacks in previous weeks.

If candidates react to supporting attacks in prior weeks, then the coefficients for *supporting attacks* $s_{t-1}$  and *supporting attacks* $s_{t-2}$  will have negative associations with the candidate attack percentage dependent variable (left two columns of Table 4). However, the results show no relationship between the percentage of candidate advertising devoted to attack in a given week and the volume of outside group supporting attacks in prior weeks. Going in the other direction, if outside groups reduce their volume of supporting attack in response to the supported candidates airing more attack, then coefficients for *candidate attacks* $s_{t-1}$  and *candidate attacks* $s_{t-2}$  will have negative associations with the supporting attack ratio (right two columns of Table 4). Evidence for such a relationship is weak. The two-week lag for candidate attacks has a negative relationship in House races, but the relationship is positive and insignificant in Senate races, and one-week lags for candidate attacks have no significant relationship with supporting attacks in either House or Senate contests.

As discussed in Chapter 2, candidates learn of the support from outside groups before the supporting ads air and with irregular advance warning – sometimes days in advance and many times weeks or even months in advance. Over the entire campaign candidates attack opponents less as outside groups attack more, but there is little evidence for a temporal explanation for this phenomenon. Candidates do not appear to manage this division of labor by reacting to outside group advertising after it airs, nor is there strong evidence that outside groups tailor the volume of their attacks in response to candidate advertising tone in prior weeks. Instead, candidates and outside groups can plan their mix based on both past and anticipated future support. The reciprocal association between candidate and outsider attacks appears to be driven by information and expectations, not as reactions to prior advertising.

## ***Type of Attack***

When outside groups take on a larger role of attack in a campaign, what impact does this have on the substance of the attacks in the race? The insulation hypothesis expects that party-adjacent and issue-based groups will be more likely to use personal attacks against opponents because as independent groups they are less concerned about public backlash. The issue agendas and national agendas hypotheses have opposite expectations: that issue-based groups, followed by parties and party-adjacent groups, will have the lowest levels of personal attacks in their campaign advertising. A straightforward evaluation of these hypotheses is to compare the proportions of attack advertising by each group devoted to personal attacks versus policy-based attacks.

For these comparisons it is necessary to differentiate both between the types of groups (candidates, parties, party-adjacent groups, and issue-based groups) and between the groups' organizational forms. The two dominant organizational forms are super PACs with transparent sources of funding and social welfare organizations (501(c)s) without disclosed donors – so-called “dark money” groups. Many 501(c) issue-based groups with undisclosed donors are authentic social welfare groups such as Sierra Club or the Humane Society, with members interested in advancing an issue more so than influencing elections. Party-adjacent dark money groups, however, generally organize as 501(c)s in order to offer their donors anonymity, e.g., Americans for Prosperity or Crossroads GPS. Among party-adjacent and issue-based independent groups the level of transparency may be associated both with their sensitivity to backlash and the authenticity of their commitment to a declared issue interest, and thus may be associated with the frequency of their use of personal attacks against candidates.

To create these subgroups donor transparency was classified as a dichotomous variable based on information from the Center for Responsive Politics ([opensecrets.org](http://opensecrets.org)) and the outside groups' own websites. Groups with fully disclosed donors were coded as *transparent* groups and groups with limited or completely undisclosed donors were coded as *dark* groups.

**Table 5: Percentage of Attacks on Personal Characteristics**

	<b>Senate</b>	<b>House</b>
Candidates	30% (431,848)	28% (435,004)
Parties	27% (190,285)	21% (293,861)
Transparent Party-Adjacent Groups	16% (67,511)	18% (42,627)
Dark Party-Adjacent Groups	14% (85,477)	7% (29,747)
Transparent Issue-Based Groups	9% (45,518)	19% (36,491)
Dark Issue-Based Groups	8% (38,875)	11% (63,219)

*Total airings of ads with attack content in parentheses*

*Single candidate groups are excluded because of their trivial advertising volume*

Single candidate groups were not included here since they represented only a trivial amount of advertising in the 2010 and 2012 congressional elections.

Table 5 shows the percentage of all attacks for each category of actors that were on personal characteristics versus policy matters. Because these percentages reflect the proportion of personal attacks in all attack ad airings by each actor (total attack ad airings are shown in parentheses), all differences are significant at  $p < .001$  in two-tailed proportions tests.

Candidates (30% Senate, 28% House) followed by parties (27% Senate, 21% House) were the most likely campaign actors to base their attacks on personal characteristics instead of policy considerations. Issue-based independent groups rarely made personal attacks (all issue-based groups combined 9% Senate, 14% House), but even party-adjacent groups both with disclosed and undisclosed donor support made mostly policy-based attacks against opponents when compared to candidates (all party-adjacent groups combined 15% Senate, 13% House). Furthermore, while the differences were modest, dark money groups were less likely than transparent groups to air personal attacks. These findings contradict the expectation of the insulation hypothesis: while outside groups might be “free” to engage in personal attacks, they choose to do so less frequently than candidates.

The competing hypothesis was better supported, as parties and party-adjacent independent groups (both dark money and transparent) were more likely than candidates to engage in policy-based attacks. In Senate contests but not in House races, anonymously funded party-adjacent groups were the least likely to use personal attacks (7%).

The difference in types of attacks by different groups suggests that campaigns with greater independent group activity are more policy focused, not less. However it is also possible that, just as with the mix of attack versus advocacy, an inverse association is at work in the type of attacks by campaign actors. To verify that this was not the case, a model was estimated with the percentage of a candidate's attacks based on personal characteristics as the outcome variable. No association was found between the proportion of personal attacks by candidates and outside supporting policy-based attacks (full model results provided in Appendix B). Therefore, advertising by outside groups and in particular by independent groups makes campaign agendas more policy-focused.

## Conclusion

This study has offered a theory of compensatory cooperation between campaign actors that explains how well-networked partisan sides conduct campaign communications in the post-*Citizens United* era by dividing the labor of attacking opponents. Holding other factors constant, the proportion of attack advertising by a candidate is inversely associated with the volume of attack advertising supporting that candidate. This observed relationship is consistent with statements from campaign professionals in interviews that candidates expect outside groups to attack on their behalf. In addition, time series models reveal that candidates are not simply responding to attacks on their behalf by allies in previous weeks. Cooperation between campaign actors appears to instead occur through other means such as early legal communication, the use of publicly available ad buy data, and due to reliable expectations of each other's strategies.

When candidates outsource some of the attacks on their opponents to outside groups, the policy content of advertising in campaigns increases. This could be because personal attacks are more customized attacks that require more localized knowledge. Another possibility is that even party-adjacent outside groups are motivated by policy interests, and they prefer to champion those policy perspectives in their advertising. Since candidates are the most likely campaign actor to engage in personal attacks, this also suggests that backlash is not a major consideration in the choice to attack opponents on personal versus policy grounds.

These findings inform some normative concerns about independent group advertising in congressional races. When outsiders are attacking candidates, the attacks are more likely to be of the type that citizens have judged to be fair game in campaigns. Outsiders are more attack-oriented than candidates, but the ratio of attack advertising for candidates is biased downward by safe and well-funded candidates running purely advocacy spots in their contests. Furthermore, because candidates pull back on their own attack advertising when outsiders come in to the race, the net effect of outside group attack advertising on the tone of the campaign is partially muted.<sup>9</sup> Concerns about the lack of accountability of independent group advertising and of the distortive effect of unlimited independent expenditures remain, but at least in terms of advertising tone and the substance of attacks, the increased role of independent groups in campaigns has not had a corrosive effect on campaign discourse.

Finally, The compensatory cooperation shown here suggests an especially close and trust-relationship between campaign actors. When a candidate divides the labor of attack with a theoretically independent group, the candidate is partially abandoning a critical weapon for the campaign based on trust that the outside advertiser will pick up the attacks. Such a high degree of trust across actors suggests that independent groups are viewed by candidate campaigns as full and trusted members of the party network, not as a shadow party that is a rival for control of the campaign. Candidates today have incentives to cooperate with a wider network of actors to win elections in an environment that places greater emphasis on

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<sup>9</sup>In an average Senate campaign a candidate's shift towards advocacy in response to outside attacks reduces the total percentage of attack advertising in a campaign from 63% to 57%.

actors beyond the candidates and parties.

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## Appendix A: Measurement of Variables

### Advertisement Audience

Each airing of an advertisement was assigned a value to account for the size of the media market where the ad aired and the share of the market typically viewing during the daypart when the ad ran, where  $audience = market \times daypart$ . The resulting *audience* value can be thought of as the maximum potential audience for the airing. *Market* size is the total number of television households in the market in thousands, obtained from Nielson for the year of the election, 2010 and 2012. *Daypart* viewership represents the average portion of television homes watching broadcast television during that time period, provided by Nielson. These values are national averages calculated separately by month for each election cycle. For a lengthier discussion of this measure, and robustness checks of models using this measure, see Appendix C. For example, an ad in 2012 airing in the Miami market (1,621,130 television households) during early news (estimated 23.4% of homes watching local television during this daypart) has a value of 379.34 ( $1621.13 \times .234 = 379.34$ ) while another ad airing in the Jacksonville market (659,170 television households) during late news (estimated 18.4% of homes viewing local television during this daypart) has a value of 121.29 ( $659.17 \times .184 = 121.29$ ).

### Attack Percentage

The attack percentage was measured for each airing using two variables provided in the WMP data. The WMP codes ads into three categories: *attack*, *contrast*, and *promote*, and further codes contrast ads for the mix of attacking and advocacy within each ad. A *negativity* score to measure the proportion of attack in each spot was created where attack ads were coded as 1, promote ads as 0, and contrast ads were coded as follows: “more promote than attack” = .25, “about equal attack and promote” = .50, “more attack than promote” = .75, “only contrasting element is brief statement in oral authorization” = 1. The resulting scale assigned one of five values to each airing: 0, .25, .50, .75, or 1. Multiplying the audience for each airing by its *negativity* score yields the total volume of attack advertising, where  $attackvol = negativity \times audience$ . The sum of a candidate’s attack volume divided by the the sum of the candidate’s total audience yields that candidate’s attack percentage.

### Supporting Attack Ratio

Supporting attack is the total volume of attack by outside groups in support of a candidate divided by that candidate’s own total advertising volume.

### Opposing Attack Ratio

Opposing attack is the volume of advertising attacking against a candidate by all campaign actors (the opposing candidate’s advertising plus opposing outside group advertising) divided by that candidate’s own total advertising volume.

## Personal Attack Percentage

Each attack ad airing was coded for *personal* attack according to the following: *personal only* = 1, *both personal and policy* = .5, and *policy only* = 0. The volume of personal attack for each actor is the sum for all airings of  $personalvol = personal \times attackvol$ . The volume of personal attack divided by the volume of all attack by each actor yields the personal attack percentage.

## Race Ratings

The Rothenberg & Gonzales Political Report rates the likelihood of each party winning the presidency, House, Senate, and gubernatorial contests using a nine-point scale, from safe Republican to safe Democrat. The ratings are created by interviewing “more than 150 congressional candidates every cycle and talk with key partisan decision-makers in Washington and astute political observers in the states. We also rely heavily on data, including past electoral history and trends, current polling (public and private, partisan and nonpartisan), as well as national surveys” (Gonzales 2015). Rothenberg’s nine category scale reflects the probability that one party or the other will win the seat, not the expected vote share. The nine point scale of the state of the race for each candidate was created by flipping the scale for Republicans (the original scale is 1= safe Democrat) to create a nine-category rating of a candidate’s chances: 1 = safe, 2 = favored, 3 = lean toward, 4 = tilt toward, 5 = toss-up, 6= tilt away, 7= lean away, 8 = unlikely, 9 = hopeless. Three way races in the Senate were manually coded to reflect Rothenberg’s expectation for each candidate.

**Table A1: Competitiveness of Races, 2010 & 2012**

	Senate	House
Safe	21%	33%
Favored	7%	7%
Leaning towards	5%	6%
Tilting towards	9%	6%
Toss Up	15%	9%
Tilting away	9%	5%
Leaning away	7%	6%
Unlikely	9%	6%
Hopeless	18%	23%
N=	119	632

*Represents only campaigns included in analyses*

## Outside Groups

Outside groups were coded based on the stated objectives of the group on its own website, profile information from [opensecrets.org](http://opensecrets.org), and press accounts if available.

**Party Committees:** Groups explicitly connected with one of the two major parties.

**Party-Adjacent Groups:** Groups that refer to multiple issues all consistent with one party’s platform, or refer to electing Republicans / conservatives or Democrats / progressives. Allocate resources across multiple races all on one partisan side and do not back challengers in partisan primaries.

**Issue-Based Groups:** Groups that are affiliated with an interest group or industry, offer memberships, or advocate for narrow policy goals. Note that Tea Party groups are included in this category despite seemingly broad issue interests due to their tendency to oppose Republican incumbents in primaries and references to “true conservatives”. Tea Party groups mostly engaged in direct contact of voters via mail and post for fundraising and advocacy, and only rarely aired television advertisements.

**Single Candidate Groups:** Groups created to support a single candidate in a single election.

**Table A2: Top Independent Groups**

<b>Party-Adjacent, 2010</b>		<b>Issue-Based, 2010</b>	
Crossroads GPS	35.48%	U.S. Chamber of Commerce	31.23%
American Crossroads	23.08%	Club for Growth	5.92%
American Action Network	19.66%	60 Plus	5.36%
Patriot Majority PAC	7.39%	AFSCME	4.82%
American Future Fund	5.79%	Americans for Tax Reform	4.65%
Americans for Prosperity	5.10%	Ntl. Fed. of Ind. Business	3.34%
Comm. Hope Growth & Opportunity	4.64%	Americans for Job Security	3.03%
America’s Family First Action Fund	3.54%	Women Vote	2.89%
Commonsense Ten	2.29%	Citizens for Strength and Security	2.57%
Republican Jewish Coalition	2.10%	National Education Association	2.49%
<b>Party-Adjacent, 2012</b>		<b>Issue-Based, 2012</b>	
Crossroads GPS	33.32%	U.S. Chamber of Commerce	18.81%
House Majority PAC	18.51%	AFSCME	9.11%
Majority PAC	17.51%	Independence USA	8.04%
Congressional Leadership Fund	8.06%	Now or Never PAC	6.69%
American Crossroads	6.50%	Americans for Tax Reform	6.45%
American Action Network	6.08%	Club for Growth	5.05%
YG Action Fund	3.51%	SEIU	3.70%
Patriot Majority PAC	2.90%	Center Forward	3.53%
Freedom PAC	2.65%	American Future	2.85%
Americans for Prosperity	1.67%	Freedomworks	2.55%

*Percentages indicate proportion of category’s advertising volume by each group in that year*

## Appendix B: Additional Models and Robustness Checks

### 1. Assessing the Audience Measure

Obtaining ratings estimates for each of the 2,382,138 airings included in this study is neither practical nor financially possible (precision ratings data, even several years old, are proprietary and are available only at significant cost). So a compromise must be struck between increased precision on one hand and feasibility and cost on the other. The information we would need to have the most precise estimate of the total impressions of an advertisement, in order of increasing precision, are: first, the television market in which the ad aired; second, the part of the day when the ad aired; third, the station on which the ad aired; fourth and at the greatest level of precision, the program during which the ad aired. The approach taken in this study includes the first two in arriving at an audience estimate: the size of the market and the average broadcast television viewership during the daypart.

It is important to also note that the advertising under study here is limited to broadcast television. This reduces the variance in audience sizes within dayparts across stations within the dataset. For example, it would be inappropriate to treat a spot airing during the early news daypart on the Hallmark Channel the same as a spot airing at the same time on an ABC affiliate local news broadcast. This study only compares airings from broadcast stations that have a smaller variation in audience sizes at a given time compared to the wide range of audience sizes across cable networks.

While this measure improves the quality of comparisons of advertising strength, it should be noted what is still left out. This weighting scheme does not differentiate between broadcast television stations within a market, does not differentiate between programs within a daypart, and does not account for demographic differences in viewership of different television programs - all considerations of great importance to media buyers for campaign actors. Still, weighting airings by market and daypart is a significant improvement on the measurement of advertising volume in terms of reach compared to a count of ad airings, and there is no reason to expect that this weighting introduces more error than it eliminates.

#### Where Groups Place Their Ads

If candidates and outside groups have differences in the distribution of their airings across dayparts, this would be an immediate indication that their individual airings are reaching audiences of different sizes. A broad picture of the advertising placement patterns of outside groups compared to candidates is provided in Table B1. In the aggregate, outside groups and candidates have very similar ad placement patterns in terms of dayparts.

**Table B1: Portion of Airings by Daypart**

	2010		2012	
	Candidates	Outsiders	Candidates	Outsiders
Early Morning	26.5%	28.2%	28.3%	24.9%
Daytime	19.9%	19.0%	16.9%	17.9%
Early Fringe	14.5%	13.8%	13.5%	13.4%
Early News	7.4%	7.5%	8.3%	8.7%
Prime Access	9.2%	9.3%	10.5%	11.5%
Prime Time	6.3%	5.8%	5.6%	6.4%
Late News	7.6%	7.4%	8.6%	8.5%
Late Fringe	8.6%	8.9%	8.3%	8.8%
N=	758,542	414,314	1,642,628	1,028,814

*General election advertising only, combines Senate and House campaigns*

The more important bias could occur in the values for supporting attacks since this variable is a quotient of supporting outside group advertising volume divided by candidate advertising volume. The differences between the supporting attacks calculated from audience-weighted airings minus the supporting attacks calculated from unweighted airings is quite small: the average difference in the values is just 0.03 (SD = 0.36).

In short, for analyses that include a large number of campaigns, these differences are smoothed out enough that we can be comfortable with airings as a unit of analysis. In analyses of a single campaign we should be wary of ad counts, but in studies of a larger scope, these minor errors should largely disappear as a concern. Despite the small differences, the weighted values are used in the analyses in this paper since the values better represent the total impressions of the advertising under study.

### **Attack Percentage Model Using Unweighted Airings**

To ensure that the results reported in the study are robust to alternative measures of advertising strength, the models are re-estimated using unweighted ad airings, and the results are given in Table B2. In these models the candidate attack percentage, the supporting attack ratio, and opposing attacks are all calculated without the inclusion of a weight for the estimated audience, but the models are otherwise the same. The associations between outside group attacks and candidate attacks in these models are all still in the expected negative direction, the magnitude of the effects are very close to those in the models in the body of the paper, and the coefficients are statistically significant. The coefficient for House races in the base model is slightly smaller, -.115 versus -.138, and is significant only in a one-tailed test, though the p-value in the two-tailed test ( $p = .056$ ) is very close to standard thresholds of statistical significance. The results from these additional models provide confidence that the results reported in the body of the paper are robust.

**Table B2: Candidate Attack Models with Unweighted Airings**

Independent Variables	Base Model		Partisan Model	
	Senate	House	Senate	House
Supporting attacks	-.492* (.197)	-.115+ (.060)	-.819* (.306)	-.293*** (.081)
Republican	—	—	.374 (.307)	-.078 (.134)
Republican × supporting attacks	—	—	.278 (.280)	.252** (.091)
Nearly safe seat (2)	2.377*** (.615)	1.392*** (.216)	2.485*** (.645)	1.394*** (.216)
(3)	2.737*** (.538)	1.844*** (.255)	2.953*** (.535)	1.900*** (.255)
(4)	3.017*** (.533)	1.678*** (.222)	2.965*** (.555)	1.684*** (.227)
Toss Up (5)	2.837*** (.579)	1.783*** (.215)	2.970*** (.628)	1.844*** (.219)
(6)	2.951*** (.585)	1.845*** (.249)	3.217*** (.617)	1.953*** (.256)
(7)	2.396*** (.664)	2.103*** (.252)	2.130** (.655)	2.133*** (.262)
(8)	2.092*** (.534)	1.508*** (.252)	2.244*** (.556)	1.475*** (.254)
Hopeless candidacy (9)	1.985** (.613)	1.039*** (.217)	2.169** (.629)	1.017*** (.227)
Opposing attacks	.218* (.125)	.125** (.047)	.312** (.117)	.125** (.047)
Challenging candidate	.045 (.361)	.140 (.144)	-.359 (.405)	.152 (.154)
Open seat candidate	-.405 (.277)	-.254 (.175)	-.556 (.323)	-.244 (.176)
Three-way race	-1.298*** (.356)	—	—	—
2012	.225 (.220)	-.549*** (.110)	.281 (.227)	-.517*** (.110)
Intercept	-2.396*** (.470)	-1.417*** (.150)	-2.616*** (.482)	-1.383*** (.166)
N	119	632	115	632
BIC	-466.79	-3725.95	-438.93	-3714.93
Log Pseudo-Likelihood	-50.65	-291.22	-49.46	-290.28

*Standard errors in parentheses*

<sup>+</sup> $p < .10$ , \*  $p < .05$ , \*\*  $p < .01$ , \*\*\*  $p < .001$ , two-tailed tests

## 2. Model of Personal Attack

If candidates increase their personal attacks on the opponent as policy-based attacks on their behalf from outside groups increase, then we should see a positive association between the dependent variable and *supporting policy attacks* – the volume of policy-based attacks by supporting outside groups over the the total volume of the candidate’s advertising volume. The other independent variables in the model are identical to the ones in the main model in this study except for *opposing personal attacks*, which is the total volume of personal attacks made by the opposing side on the candidate, divided by the candidate’s total advertising volume, and a more compact and simplified treatment of the state of the race using two variables: *race competitiveness*, which is a folded scale of the race ratings and *likelihood of loss* which measures the positive or negative difference from the opponent’s race rating.

The estimates from the models provided in Table B3 show no association between policy-based attacks by outside groups and candidates’ proportion of personal attacks. Neither in Senate or House campaigns does the volume of policy based attacks made by supporting outside groups have any influence on the personal/policy mix of attacks made by candidates. None of the independent variables in the Senate model had effects that were statistically significant, and just two variables in the House model had statistically significant effects on candidate’s proportion of personal versus policy-based attacks: candidates further behind are more likely to attack on personal grounds, while challenging candidates are less likely to make personal attacks on incumbent opponents.

## 3. Testing the Validity of Pooled Samples

To increase the statistical power the data were pooled across years. However, this pooling may merge data with very different relationships at work. In particular, the 2010 election came up shortly after clarification from the FEC on independent expenditures, so a learning curve could be expected and coefficients estimated for 2010 might be significantly different than the coefficients estimated for 2012. To examine differences by year, the model of compensatory attack is fully interacted with the year variable. The table below provides the results from Wald tests to determine whether the coefficients are the same between election years (this is equivalent to a Chow test). In these tests, a chi-square is performed to determine the probability that the coefficients are significantly different between election years in the fractional logit model. In the pooled sample of attack advertising no significant differences are observed between any of the variables between 2010 and 2012 (Table B4). The single difference is the main effect term for year in the House model, reflecting that there was a difference in the intercept for candidate attack percentage from 2010 to 2012, but the slopes for other variables were identical.

**Table B3: Fractional Logit Models of Candidate Personal Attack**

Independent Variables	Senate	House
Supporting policy attacks	-.062 (.211)	-.073 (.073)
Race competitiveness	.133 (.107)	-.032 (.054)
Likelihood of loss	.083 (.070)	.089** (.033)
Opposing personal attacks	.112 (.286)	.014 (.029)
Challenging candidate	-.177 (.427)	-.559** (.206)
Open seat candidate	.069 (.346)	-.166 (.209)
2012	.443 (.300)	-.080 (.147)
Intercept	-2.113*** (.474)	-1.064*** (.208)
N	87	440
BIC	-319.94	-2422.38
Log Pseudo-Likelihood	-38.42	-203.49

Standard errors in parentheses

+  $p < .10$ , \*  $p < .05$ , \*\*  $p < .01$ , \*\*\*  $p < .001$ , two-tailed tests

Note: Only candidates with any volume of attack advertising are included in the models, and three-way race was dropped due to insufficient variation in this model

**Table B4: Test of Interactions: Models of Attack Advertising**

	Senate		House	
	$\chi^2$	p-value	$\chi^2$	p-value
Year	1.23	.26	5.35	.02
Supporting attacks $\times$ year	1.35	.24	0.35	.55
Race rating $\times$ year	7.23	.51	7.72	.46
Opposing attacks $\times$ year	2.12	.15	0.65	.42
Inc., cha., open $\times$ year	0.79	.67	1.13	.57