Do parties respond to electoral prospects?

An Analysis of the Amount and Substance of Press Releases Issued by Dutch Political Parties

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Abstract

When do parties change *the intensity with which* they communicate their platform in-between elections and when do they change *what* they communicate? We hypothesize that the prospect of losing the next election triggers parties to take the risk involved in changing their platform. Specifically, we hypothesize that a party (1) increases the number of party press releases it sends and (2) changes its issue agenda if it faces poor electoral prospects. We also expect that this effect will differ across opposition parties and governing ones. We test these propositions empirically using a novel dataset with over 35,000 press releases issued by 16 Dutch political parties between 1997 and 2014, these parties' former election results, their opposition/government status and their expected performance based on opinion polls. To determine the topic of each press release, we used *topic modeling*. Our analyses largely support our expectations and have important implications for models of democratic representation.

Key words
Political parties' strategies; prospect theory; reference point; opposition-incumbency dynamics; political decision-making; topic modeling

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Do political parties respond to their electoral prospects? Several studies argue that parties change their election platform because of poor performance in the last national elections (Budge, Ezrow, and McDonald 2010; Budge 1994; Harmel and Janda 1994; Harmel et al. 1995; Somer-Topcu 2009). Analogous to prospect theory (Kahneman and Tversky 1979; Tversky and Kahneman 1992), we expect that the prospect of losing seats in parliament motivates parties to take risks and therefore – among other things – they will change the communication of their platform to the voter. Specifically, we hypothesize that expected electoral losses motivate parties to highlight different issues and to change the intensity with which they communicate these issues. Emphasizing different issues is risky,[3] because the consequences of parties' new strategy are uncertain. The new strategy could, for instance, attract more voters but could also drive them away.

The most commonly analyzed documents to investigate party responsiveness to environmental stimuli are policy statements in parties' election manifestos (for overviews of studies using these data, see Adams 2012; Fagerholm 2015). In this paper, conversely, we use press releases issued by parties to study how parties' respond to expected electoral losses (or gains). We focus on press releases for three reasons. First, a major drawback of studying election manifestos is that they are produced at the time of an election only, thereby failing to capture parties' reactions to environmental stimuli *in-between* elections. Second, press releases are more independent from the legislative agenda and the media agenda compared to other sources that can be used to evaluate party responsiveness, such as legislative speeches, legislative voting behavior or media reports (Helbling and Tresch 2011; Kriesi et al. 2006, 2008; De Nooy and Kleinnijenhuis 2013). Thus, press releases are driven less by the strategic behavior of other actors, and therefore reflect the party's own agenda. Third, parties' press releases influence the media agenda (Asp 1983; Brandenburg 2002; Walgrave and Van Aelst 2006) and thereby the salience of particular issues in the perception of voters (McCombs and Shaw 1972; Weaver, McCombs, and Shaw

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[3] Whereby risk-taking behavior means choosing outcomes that are probabilistic over outcomes that are certain.

2004). Because issue salience is an important predictor of vote choice (Brandenburg 2002; Green and Hobolt 2008; Kleinnijenhuis and Ridder 1998), parties use press releases to manipulate voters' perception of what parties stand for. Therefore, press releases are a good source to analyze how parties respond to environmental stimuli.

We consider a change in the issues parties highlight, that is in their issue agenda, and the intensity with which they communicate these issues as risky, precisely because issue salience predicts vote choice and parties can manipulate it. If a party is winning in the opinion polls, it probably means that the issues this party is strong on are also the issues that voters deem important. Thus, by highlighting different issues, a party risks changing voters' perception of salient issues and thereby their votes. Therefore, we expect parties only to do this if the current issues fail to work for them (Carmines and Stimson 1989; Hobolt and De Vries 2011; Riker 1982).

How did we analyze this hypothesis? First, we collected 36,768 press releases from 16 Dutch political parties that entered parliament in the period 1997-2014. Using this dataset, we constructed two dependent variables. The first one, labelled *change in a party's intensity of communication* is measured by the number of press releases sent by a party in a month. The second dependent variable, labelled *change in a party's issue agenda*, analyzes change in a party's issue agenda in a month. For the second dependent variable, we used an automated text analysis tool – the expressive agenda model (Grimmer and Stewart 2013; Grimmer 2010) – to determine the topic of each press release. We subsequently analyzed the extent of change in month i in relative attention to 40 topics compared to the party's average relative attention to these topics. To measure a party's electoral prospects, we used opinion polls that indicate a party's present electoral standing. Even though many polls are not based on representative samples, and differences in seats are sometimes interpreted when they are not significant, parties, pundits and the media use these polls as-if they contain real information on public opinion shifts (Geer 1996).

Our analyses demonstrate, in line with our hypotheses, that parties that are losing in the polls change their issue agenda more than parties that are winning in the polls. This effect is significant for opposition parties, but not for governing parties. Different from our initial theoretical expectations, which were less strong for change in the intensity of a party's communication, parties that are expecting to gain seats in the next election sent more press releases than parties that are expecting to lose seats. In the discussion, we demonstrate that this finding is plausible and that it highlights the importance of (also) examining the behavior of parties in-between elections.

Prospective electoral performance and parties' responsiveness

Performance – or the lack thereof – is an important explanation of why parties change their election platform. Existing studies theorize and in some cases also demonstrate empirically that parties with poor recent electoral performance (Budge, Ezrow, and McDonald 2010; Budge 1994; Harmel and Janda 1994; Harmel et al. 1995; Somer-Topcu 2009) or parties that have lost office status (Carmines and Stimson 1989; Riker 1982) are more likely to change their platform.[4] The common denominator in these studies is that parties are hypothesized to respond to their current endowment in seats (or votes) and government portfolios. At least one study draws on prospect theory to underpin this prediction (Somer-Topcu 2009). This psychological theory of choice under risk predicts, based on the finding that losses hurt more than equal gains please, that people take risks to avoid losses but play safe to safeguard gains (Kahneman and Tversky 1979; Mercer 2005; Vis 2010, 2011). Thus, parties that have lost an election are expected to take more risks than parties that have won an election. As indicated, changing an election platform equates risk-taking behavior, because it is unsure what a new platform (or strategy) will bring

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[4] Another set of studies finds that parties are responsive to the public or to different sub constituencies: changes in public opinion (Adams, Haupt, and Stoll 2008; Adams et al. 2004), changes in party voter position (Ezrow et al. 2010; Schumacher, de Vries, and Vis 2013), opinion leader shifts (Adams and Ezrow 2009).

the party, whereas the party knowns what pay-offs the current platform produces. The so-called reference point is important here, since this point separates satisfactory outcomes (winning elections) from unsatisfactory ones (losing elections). However, following Schumacher et al. (2015), we derive a different implication from prospect theory than Somer-Topcu (2009) did. Prospect theory is about behavioral differences that can be observed between people facing different *prospects*, not about behavior after you lost or gained something. Hence, it is a party's current position (e.g., lost/gained seats compared to previous election) that determines how it interprets its expected performance at the *next* election that subsequently drives its behavior.

Opinion polls are an important source of information to parties. Polls provide information on (1) voter preferences, (2) a party's expected electoral performance and (3) the expected electoral performance of rival parties. By providing information on electoral prospects, we expect polls to influence party responsiveness. But how? In the introduction we mentioned that by emphasizing certain topics in their communication vis-à-vis voters, parties try to manipulate which issues (topics in our analyses) voters find important. If a party is already favored by the electorate, it is likely that its issues are also important for voters. By changing its emphasis to other topics, parties take a risk. It might be that on these new topics other parties have better reputations (Budge and Farlie 1983). Even though empirical research demonstrates that voters often do not notice it when parties stray from their average position on issues (Adams, Ezrow, and Somer-Topcu 2011; Adams 2012), or that if they do notice, the effect is small (Fernandez-Vazquez 2014), changing strategy might make parties a less (or more) attractive coalition partner. In sum, a party that changes its attention to new topics, that is, changes its issue agenda, engages in risk-taking behavior. Then, following prospect theory, we hypothesize:

H1A: *The higher the probability that a party will lose seats in the next election, the more likely the party is to change its issue agenda.*

Whether changing the intensity of communication – that is, the amount of press releases issued – can be considered risky or not, is more difficult to establish. One could say that any deviation from the party's mean intensity is risky, because the outcome of this deviation is more uncertain than maintaining at the status quo. One could expect that parties that are expected to lose, because of their decreased support in the polls, will try out a set of new issues and angles on issues, and thereby *in toto* send more press releases. Moreover, in parties facing poor electoral prospects individual members of parliament (MPs) will be motivated to send press releases to increase their visibility and improve their potential for re-election. These considerations lead to H1B:

H1B: *The higher the probability that a party will lose seats in the next election, the more press releases it will send.*

Do opposition parties and government parties respond similarly?

Do opposition parties and government ones respond differently to opinion polls? Several studies argue that opposition parties are more likely to change their platform than government parties because opposition parties surely are on the wrong side of public opinion (Bendor et al. 2011; Carmines and Stimson 1989, 2011; Riker 1982, 1986). As the losers of political competition, one might expect that poor electoral prospects will hurt opposition parties more profoundly than they do parties in government. Government parties face the cost of governing, the empirical observation that, on average, government parties lose votes (Nannestad and Paldam 2002). This is partly even mechanistic, because parties often come into government because they performed better than average in the election. In the next election, the party is likely to return to its average vote share, thus losing votes. Consequently, poor electoral prospects may affect governing parties less than they do opposition parties because the former

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may have been expecting at least some losses. Following this reasoning, falling support in opinion polls hurt opposition parties (much) more than they hurt government parties. Thus:

H2: *Opposition parties are more likely to change their issue agenda and to send more press releases if they are losing in the polls than government parties.*

However, Schumacher et al. (2015) demonstrate that in fact, on average, government parties change their election platform more than opposition parties do. They suggest that government parties do this, because they fear losing their endowment of government portfolios. This fear is fueled by the aforementioned cost of governing. This result suggests that government parties do care about poor opinion polls. Because government parties have more to lose – office! – than opposition parties do, we may also expect that given similar levels of losses it are government parties that respond more strongly, take more risk and thus are more likely to change their issue agenda and to send more press releases.

H3: *Government parties are more likely to change their issue agenda and to send more press releases if they are losing in the polls than opposition parties are.*

Table 1 summarizes the theory section, outlines the dependent variables, independent variables (change in seats; expected performance; and in government), hypotheses, and the coefficients' predicted signs.

Table 1. Definitions and hypotheses

Definitions
Pr(P1) = probability of change in party's number of press releases
Pr(P2) = probability of change in party's issue agenda
X1 (electoral prospects): % seats in polls in month i - % seats in last election
X2 (in government): In government (1) or in opposition (0)

Hypotheses		Predictions
H1A	$\Pr(P2) = \beta_1 X_1 + \text{controls}$	$\beta_1 < 0$
H1B	$\Pr(P1) = \beta_1 X_1 + \text{controls}$	$\beta_1 < 0$
H2	$\Pr(P1 \text{ and } P2) = \beta_1 X_1 + \beta_2 X_2 + \beta_3 (X_1 {*} X_2) + \text{controls}$	$\beta_3 < 0$
H3	$\Pr(P1 \text{ and } P2) = \beta_1 X_1 + \beta_2 X_2 + \beta_3 (X_1 {*} X_2) + \text{controls}$	$\beta_3 > 0$

Data and operationalization

To investigate when parties change the intensity of communication and the topics they communicate about, we built a new dataset of press releases issued by 16 Dutch national political parties that were elected in parliament between January 1997 and February 2014. The press releases were collected by "*Nieuwsbank*" (www.nieuwsbank.nl). This Dutch press agency collects all press releases of organizations, companies and governments published on the Internet since 1997 as long as the websites are accessible for their software. Their collection resulted in 36,768 press releases send by the national political parties in parliament. Table 2 gives an overview of the Dutch parties in our dataset and their period in parliament and in office.
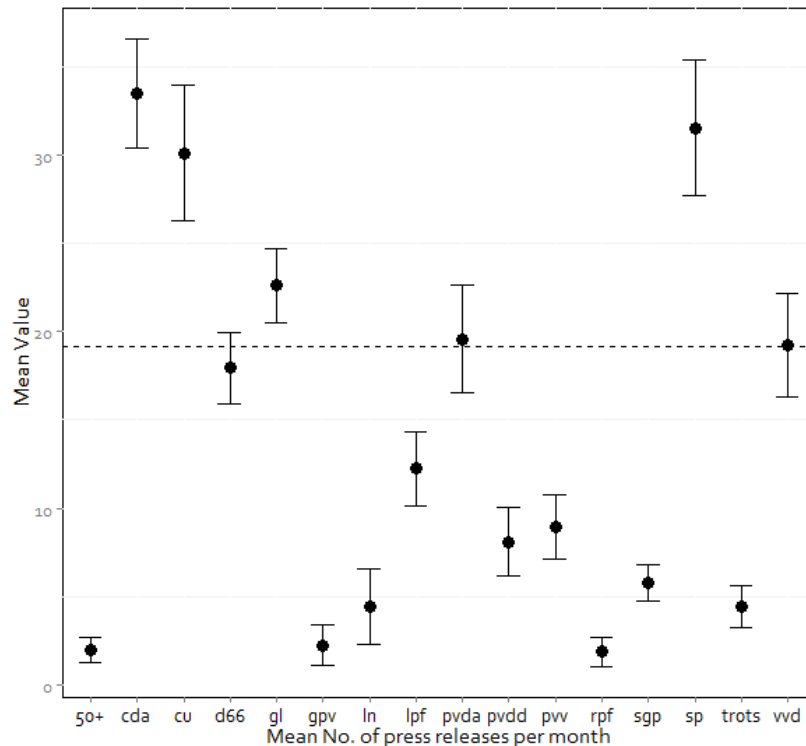
Table 2. Overview of parties in our dataset, their period in parliament and in office

Party	In parliament	In office
50 Plus	2012-2014	
Christian Democrats (CDA)	1997-2014	02-12
Christian Union (CU)	2003-2014	06-10
Reformed Political League (GPV) (as of 2003: CU)	1997-2003	
Reformatory Political Federation (RPF) (as of 2003: CU)	1997-2003	
Progressive Liberals (D66)	1997-2014	97-02;03-06
Green Left (GL)	1997-2014	
Livable Netherlands (LN)	2002-2003	
List Pim Fortuyn (LPF)	2002-2006	02-03
Labor Party (PvdA)	1997-2014	97-02; 06-10; 12-14
Animal Rights Party (PvdD)	2006-2014	
Freedom Party (PVV)	2006-2014	
Reformed Political Party (SGP)	1997-2014	
Socialist Party (SP)	1994-2014	
Proud of the Netherlands (TON)	2008-2010	
Conservative Liberals (VVD)	1997-2014	97-06; 10-14

Note: All parties that were not in office in 1997-2014 have never been in office.

On average, parties sent almost twenty press releases per month. However, there is a lot of variation

both between parties and within parties over time, as figure 1 demonstrates (see Appendix 1 for a more

detailed discussion). The Christian Democrats and the Socialist Party sent on average the most press

releases per month (respectively 32.9 and 30.7); 50Plus (50+) sent on average the fewest press releases

per month (1.1).

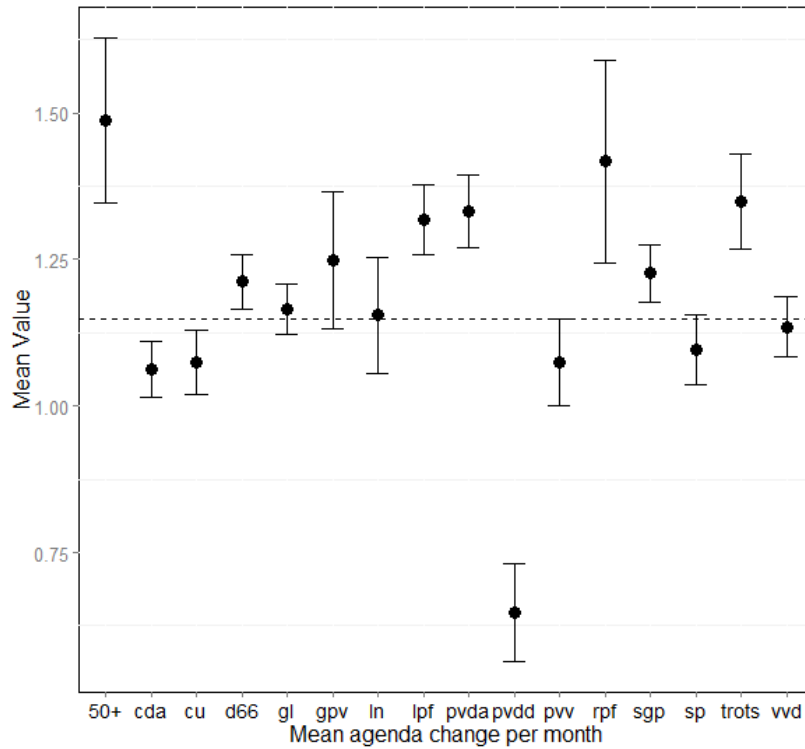**Figure 1. Descriptive information of press releases issues by parties per month**

Source: Authors' dataset, based on press releases collected by Nieuwsbank (see main text).

As discussed, we evaluate party platform change in two ways. Our first dependent variable, *change in*

intensity of a party's communication, is measured by the amount of press releases a party sent in a

month. Our second dependent variable, *change in a party's issue agenda*, is measured by the change in

the attention for topics of the press releases sent by a party in a month. For measuring change in a

party's issue agenda, we identified the topic of each press release issued by that party. For this purpose,

we used topic modeling, an unsupervised, automated method to identify clusters of topics in texts

(Grimmer and Stewart 2013; Grimmer 2010). Topics models discover topics in a text and associate the documents with a topic. The specific topic model we used – expressive agenda modelling – used information about which party sent the press release to assist in identifying the topics (for a technical exposition see Grimmer, 2010). The researcher determines the number of topics to be identified. We ran several models setting the number of topics in the range from 25 to 50. On the basis of a reading approximately 40 of the documents and 20 best-word matches of the topic, we selected the model that identified 40 topics. It turned out that the exact number of topics did not make a huge difference in the analysis, since the dependent variables of change in a party's issue agenda we constructed from the models with different numbers of topic were very highly correlated (between .90 and .97). Appendix 1 discusses in detail our approach and the topics we identified.

Once we established the topics of the press releases, we created two measures: (1) a party's relative attention for each topic by month, measured by the number of a party's press releases on that topic divided by the total amount of that party's press releases that month; (2) a party's mean relative attention for a topic in the months prior to the month analyzed in measure 1. Our dependent variable, change in a party's issue change, is the sum of the absolute differences between a party's attention for topics in month *i* and the attention for topics in all months prior to *i*. If this dependent variable is 0 it means that there is no difference between the relative attention for topics in month *i* compared to all months prior to i. If this dependent variable is 2, it means that the party pays attention to topics it has never paid attention to in the past, that is to say, that the party changed it issue agenda substantially. Figure 2 displays the means and confidence intervals of issue agenda change by party. Like with the amount of press releases each party sent (see figure 1), also the mean change in issue agenda varies substantially both across parties and within parties over time. Figure 2 shows that on average the Animal Party (pvdd) changed its issue agenda the least, and the 50Plus (50+) party varied its issue agenda the most.

Figure 2. Mean values dependent variable change in issue agenda per party

Source: Authors' dataset, based on press releases collected by Nieuwsbank (see main text).

Our core independent variables are expected performance (H1–3) and a party's government/opposition status (H2 and H3). We measure *expected performance* as the difference between the percentage of seats in the polling results and the percentage of seats at the previous election. A positive number means that a party is projected to win seats because they have more seats in the polls than at the last election; a negative number entails that a party is projected to lose seats compared to last election. We used the polling results from all the main Dutch polling agencies (van der Velden 2015). When we had multiple observations in one month, we used the mean of the polled seats. We measured a *party's government/opposition status* by coding the 16 parties as (1) parties in office, (0) parties in opposition. We control for previous electoral losses (or gains) by the variable *change in seat share*, which we measure by differencing the percentage of seats in the previous election (*t*) and the percentage of seats in the penultimate election (*t*-1). We also controlled for campaigning periods, which usually start three

months before the election, because of potential differences in the level and topicality of press releases.

For a similar reason, we controlled for months during which parliament was in recess.

Table 3. Operationalization and descriptive statistics of dependent and independent variables

DV Platform change	Operationalization	Mean (SD)	Min. – Max.
Change in intensity of a party's communication	1. Sum of changes in number of press releases	19.1 (20.7)	0-123
Change in a party's issue agenda	2. Sum of changes on each issue	1.1 (0.4)	0-2
Dichotomous IVs		**0**	**1**
In government	0 opposition, 1 government	1379	544
Recess	0 parliament is not in recess, 1 recess	1265	658
Campaign period	0 no elections, 1 three months before national elections	1754	169
2nd order campaign	0 no elections, 1 three months before local elections	1632	291
Continuous IVs		**Mean (SD)**	**Min. – Max.**
Change in seats	Seat share t – seat share $t-1$	0.18 (5.18)	-14.7 – 17.3
Polls relative to seat share	Polled seat share – seat share	0.33 (4.28)	-16.6 – 16.1

Estimation technique

Our observations are nested in months (206 in total, between 1997-2014) and parties (16 in total) and

therefore our data should be regarded as panel data. Estimating a simple regression on the pooled data

could lead to erroneous conclusions (Beck and Katz 1995). Because parties differ substantially in the

extent to which they use press releases as a means of communication (see figure 1), we ran times-series

cross-sectional (tscs) fixed effects regressions. This way we compared the number of press releases and

the change in topic attention to a party's mean level.

Dependent variable 1, change in a party's intensity of communication, measured by the change

in the number of press releases sent by the party, is count data and thus follows a Poisson distribution.

A concern with Poisson distributed data is that Poisson regression models underestimate the occurrence

of zero press releases sent, because the variance is greater than the mean (so-called overdispersion).

Since we have a lot of zero's in our data, we have to use a model that correctly predicts the occurrence

of a zero. A negative binomial regression model assumes that the observed count for every observation is drawn from a Poisson distribution with a mean estimated from observed and unobserved characteristics (incorporating observed and unobserved heterogeneity) and thereby accounts for the overdispersion (Long and Freese, 2006).[5] To account for our negative binomial distributed panel-data, we ran a times-series count model to test our hypotheses.[6] In this analysis, we included all the independent variables listed in table 3 and an interaction effect between the variables in government and polls relative to seat share. This way we could separate the effect of expected performance for opposition and government parties, as hypothesized by H2 and H3.

Our second dependent variable, change in issue agenda, follows a normal distribution and could be analyze with an ordinary tscs fixed effects regression. In this analysis, we used the independent variables listed in table 3 and added the number of press releases as a control variable. We did so, because in some months parties sent few press releases and this automatically increases the change in the issue agenda; with – for example – 5 press releases a party cannot cover all the topics it normally covers.

Do parties change the intensity of communication when they are losing?
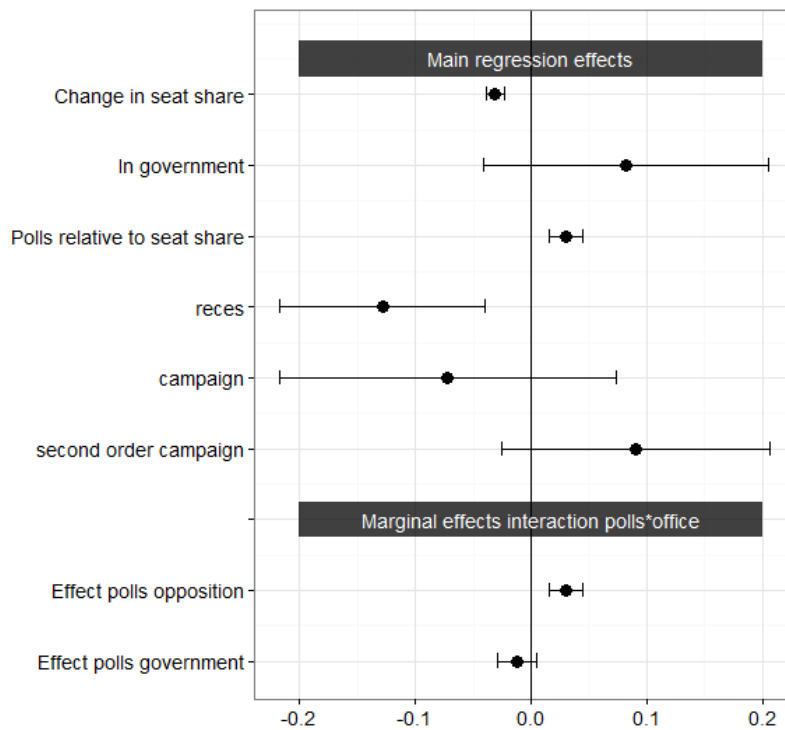
Our first analysis tests whether a party sends more press releases when it is losing in the polls (H1b) and whether opposition parties (H2) or governing parties (H3) are more likely to communicate more intensely when they are losing in the polls. Figure 3 graphically displays the regression coefficients (dots) and 95% confidence intervals (bars) of our negative binomial regression fixed effects regression of the number of press releases send by parties by month (that is, change in a party's intensity of

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[5] The formula for a negative binomial regression is: $\mu_i = E(Y_i|X_i) = e^{xi*B} = Exp(x * B + \varepsilon)$.

[6] The formula for count times-series with a negative binomial distribution is: $Y_t|$ $FY, \lambda\ t{-}1 \sim NegBin(r, \theta t)$, $\lambda t \equiv \theta t$

$1 - \theta t = d + a1\lambda t{-}1 + b1Y t{-}1$, $t \geq 1$ (Zhu, 2011).

communication, dependent variable 1). We find a positive and significant effect for the polls relative to seat share variable. This means that when polls indicate that a party will win seats in the next election, the party will send more press releases. This is the opposite of the expectation expressed in H1. The two last variables in figure 3 are the marginal effects that stem from the interaction between the variables in government and polls relative to seat share. We find that opposition parties increase the intensity of their communication when they are winning, but that government parties decrease the intensity of their communication when they are winning. As for the control variables, we find that change in seat share has a significant, negative effect. This result indicates that parties increase the amount of press releases they send if they lost seats in the last national election. Moreover, as expected, parties sent fewer press releases during recess and, perhaps surprisingly, there is no difference between campaign and non-campaign periods in parties' intensity of communication.

Figure 3. Negative binomial regression coefficients predicting change in intensity
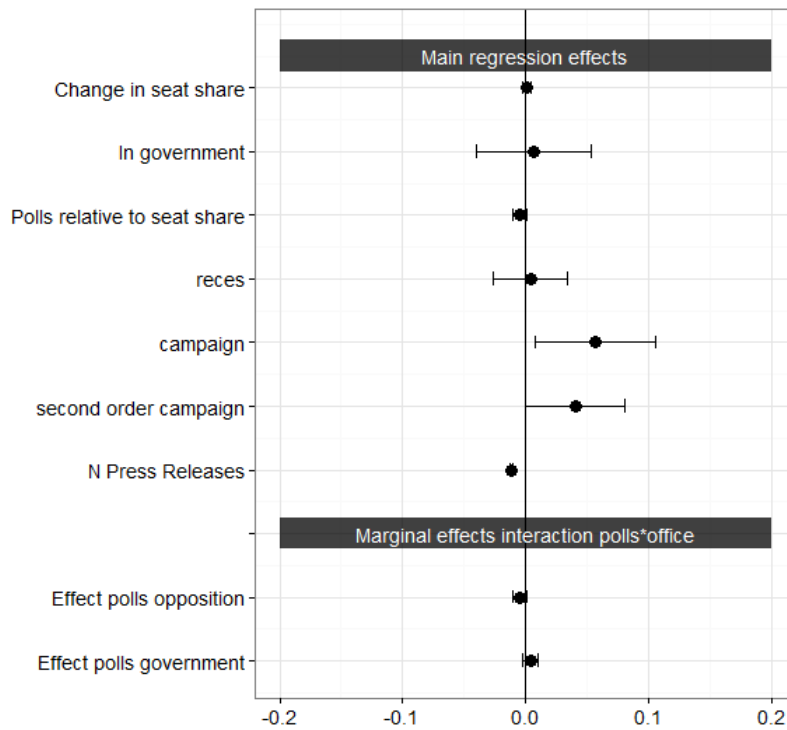
Do parties change their issue agenda when they are losing?

Our second analysis tests whether a party changes its issue agenda more when it is losing in the polls (H1a) and whether opposition parties (H2) or governing parties (H3) change their issue agenda more when they are losing in the polls.

Figure 4 graphically displays the regression coefficients (dots) and 95% confidence intervals (bars) of our time-series cross-sectional fixed effects regression of the change in party's issue agenda by month (dependent variable 2). The variable in government is insignificant. The main effect of the variable polls relative to seat share is significant and negative.[7] This means that parties that are losing in the polls change their agenda more than parties that are gaining in the polls. This is in line with H1a. Figure 4 also displays the interaction between in government and polls relative to seat share under marginal effects. We report a negative, significant effect of polls for opposition parties and a non-significant effect for government parties. As for the control variables, we find no significant effect for change in seat share. During campaign periods, parties change their issue agenda more than in non-campaign periods. Furthermore, there is no significant effect of recess and the number of press releases has a negative effect.

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[7] One should not interpret the main effects of variables included in an interaction effect in the same regression. When running the model without the interaction polls*office, we also find a negative effect of the variable polls relative to seat share.

Figure 4. Time-series cross-sectional fixed effect regression predicting change in a party's issue age

Discussion

This paper contributes to the continuously expanding literature on how political parties respond to environmental stimuli by focusing on parties' behavior in-between elections. We examined whether, in line with prospect theory, expected electoral losses as indicated by losses in the polls motivate parties to take the risk to change their platform. Specifically, we used a novel dataset including over 35,000 press releases issued by 16 Dutch political parties between 1997 and 2014 and constructed two dependent variables to assess parties' behavior in-between elections: (1) change in the intensity of a party's communication, measured by the change in the amount of press releases the party issued; (2) change in a party's issue agenda, measured by the change in the topics a party pays attention to in its press releases. For the latter dependent variable, we used topic modelling.

Our analyses demonstrated that, different from our expectation that prospective losses motivate change, a party that is expected to win seats in the next election sends more press releases.

This finding could mean that in-between elections, parties may be trying out a variety of new strategies to appeal to voters. Once they have found a strategy that works, evidenced by the party rising in the polls, the party increases the intensity of its communication by issuing more press releases. Our finding for the differences between opposition parties and governing ones suggest that this may indeed by the mechanism at work, but only for opposition parties. Governing parties decrease the intensity of their communication when they are winning, whereas opposition parties increase this intensity. This makes sense, since opposition parties have only limited access to actions that influence voters' perception of a party, such as implemented policies or entering a coalition (Fernandez-Vazquez 2014; Fortunato and Stevenson 2013), and thus need to revoke to different means to communicate their policy platform and possible changes therein to voters.

Regarding parties changing their issue agenda, our second dependent variable for a party's platform change, our main finding was that – in line with our hypothesis – parties that are losing in the polls change their issue agenda more than parties that are winning in the polls. This effect is significant for opposition parties, but not for governing parties; a finding that – again – seems plausible given the different ways in which opposition parties and governing parties need to communicate to voters.

Our findings also indicate that, even if changes in the left-right positions of parties' platforms between elections are limited (Dalton and McAllister 2015), the period in-between elections is not to be ignored. While we found that during campaign periods, parties change their issue agenda more than in non-campaign periods – meaning that most change materializes during election periods – parties' intensity of communication in terms of sending press releases does not differ across campaign and non-campaign periods.

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Appendix 1. Automated analysis to identify topics

How did we examine whether parties change the attention to topics in their press releases when they expect to lose? We first identified the topics of the 30,000+ press releases. For this purpose, we used topic modeling, an unsupervised, automated method to identify clusters of topics in texts (Grimmer and Stewart 2013; Grimmer 2010). The topic model we applied, discovers topics in a text, associates the document with a topic, and evaluates how much attention an author pays to a topic (for a technical exposition see Grimmer, 2010). Using topic modelling allows us to identify a party's so-called expressed agenda. The change in this agenda is our dependent variable 2. Before doing this, we needed to determine the number of topics the models identified by validating the match between topics and documents the model provided. Similar to exploratory factor analysis, the topics identified by the topic model have no meaning and should be given by the researcher on the basis of a reading of texts and words that have a high probability of belonging to that topic. What is different from factor analysis is that there are no hard criteria for defining a factor, or in this case a topic. If the researcher concludes based on a reading of the material that several topics cluster in one topic, then the topic model should be re-run allowing more topics to be identified. Let us first summarize our initial validation efforts.

The first step in our text analysis was cleaning the documents, that is removing all punctuation, white space, numbers, stop words, sparse terms (occur less than 0.05% of the time). We subsequently lemmatized each document using the software Frog (Van Den Bosch, Busser, Canisius 2007) in the Amsterdam Content Analysis Toolkit (AmCAT) (van Atteveldt 2008),[8] in which the algorithm recognized for instance the Dutch words "are" (*zijn*) and "were" (*waren*) as similar words. Subsequently, we created a matrix with the frequency of each lemmatized word in each document. The next step was to run the

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[8] AmCAT is an open source infrastructure equipped to do large-scale automatic and manual content analysis (text analysis) for the social sciences and humanities (van Atteveldt 2008).

topic model following the specifications of Grimmer (2010), which meant setting the number of topics the model needs to identify.

We have evaluated several models in which we set different numbers of topics to be identified, ranging from 25 to 50. To interpret the substantive meaning of the lemmatized words clustered into a topic, we conducted multiple steps. First, we tried to make sense out of the 20 most used words in the topics. Most of the times, this gave us already a fairly good idea about the topic. For example, in table A1, topic 15 Animal Welfare, the lemmatized words showed the lemmas animal welfare (*dierenwelzijn* in Dutch), animal (*dier* in Dutch), meat (*vlees* in Dutch) and prohibition (*verbod* in Dutch). As the Netherlands has a Party for the Animals and the 2010 government (Rutte I) proposed animal cops, this knowledge combined with the lemmas was enough to interpret the substantive meaning of the topic. As a second step, we drew a random sample of 40 press releases per topic of which we read the title of the press release. As a third and last step, we again drew a random sample of 40 press releases that we read in entirety. Based on these three steps and our context knowledge of Dutch politics, we were able to identify all topics of all models.

Table A1. Topics and top word (lemmatized) matches

	Subject	Lemmatized Topic Word Matches
1	*Parliamentary Debates*	amendement, heer, omroep, wet, indienen, wetsvoorstel, voorstellen, graag, publiek, regelen, wijziging, stuk, bestaan, aannemen, betreffen, raad, termijn, mogelijkheid, regeling, huidig
2	*Economy*	beleid, financieel, overheid, belang, graag, hoog, brief, algemeen, bestaan, af, laat, mogelijkheid, project, waarom, overleg, lang, leiden, economisch, geld, zeer
3	*Israel - Palestine Conflict*	land, internationaal, nederlands, europees, recht, mensenrecht, israel, wereld, irak, beleid, militair, ontwikkeling, economisch, eu, iran, belang, ontwikkelingssamenwerking, situatie, rol, europa
4	*EU Constitution*	europees, unie, land, europa, grondwet, lidstaat, eu, nederlands, verdrag, parlement, raad, nationaal, commissie, referendum, burger, recht, beleid, belang, sociaal, economisch

5	*Local Politics*	provincie, provinciaal, staat, gedeputeerde, overheid, natuur, plan, betalen, geld, groningen, weg, gebied, werken, burger, samen, miljoen, beleid, bedrijf, regionaal, jeugdzorg
6	*Public Transport*	vervoer, ns, openbaar, reiziger, trein, station, rijden, betalen, stad, ov, plan, bus, weg, overheid, veiligheid, lang, lijn, geld, vervoerder, gebruik
7	*Education*	school, onderwijs, leerling, ouder, kind, leraar, vmbo, vrijheid, overheid, kwaliteit, wetsvoorstel, werken, wet, geld, mogelijkheid, docent, voortzetten, basisschool, mee, jong
8	*Parliamentary Debates*	heer, graag, amendement, brief, moment, af, gewoon, mee, even, geld, natuurlijk, werken, helemaal, manier, termijn, betreffen, misschien, waarom, wet, zorg
9	*Employment Policy*	werknemer, werk, werkgever, werken, sociaal, arbeidsmarkt, baan, arbeid, uitkering, betalen, wet, recht, hoog, lang, wao, kans, regeling, bedrijf, inkomen, zorg
10	*Pension Policy*	oud, pension, lang, werknemer, zorg, aow, betalen, werken, sociaal, groep, jong, pensioenfonds, geld, werk, leven, hoog, arbeid, zorgen, vaak, plan
11	*Education*	student, onderwijs, hoog, opleiding, instelling, studiefinanciering, universiteit, studie, kwaliteit, betalen, studeren, hbo, recht, hogeschool, wet, jong, graag, docent, mogelijkheid, af
12	*Economy*	bedrijf, ondernemer, overheid, economisch, nederlands, betalen, klein, regel, bedrijfsleven, mkb, europees, werken, werknemer, last, hoog, ondernemen, wet, belang, consument, land
13	*Elections*	verkiezing, stem, zetel, campagne, lijsttrekker, kiezer, uitslag, kiezen, land, aflopen, provinciaal, betalen, laat, mee, lokaal, voeren, samen, europees, procent, gemeenteraadsverkiezingen
14	*Political Meeting*	europees, deel, bezoeken, bezoek, parlement, renderen, eindhoven, oud, algemeen, vanavond, bekend, ledenvergadering, brussel, congres, wmo, pas, ontvangen, thema, gegeven, overleg
15	*Animal Welfare*	dier, dierenwelzijn, europees, nederlands, natuur, verbod, vlees, leven, wild, betalen, landbouw, lang, wet, verbieden, belang, miljoen, zonder, zeer, welzijn, eind
16	*Political Meeting*	congres, trots, arbeid, verkiezing, kiezen, europees, discussie, betalen, lijsttrekker, vaststellen, toekomst, resolutie, aanmelden, deel, algemeen, beginnen, commissie, aflopen, hans, presenteren
17	*Political Meeting*	commissie, rapport, europees, aanbeveling, conclusie, nederlands, waarom, overhied reactie, bestaan, rol, verantwoordelijkheid, betalen, belang, parlementair, advies, feit, betrekken, leiden, parlement
18	*Political Meeting*	deel, wit, café, thema, avond, bezoeken, forum, europees, onderwijs, discussie, piet, zaal, deelnemer, provinciaal, algemeen, bezoek, nederlands, veiligheid, ger, middag
19	*EU*	europees, parlement, commissie, lidstaat, europa, eu, nederlands, land, europarlementarier, raad, unie, betalen, brussel, nationaal, regel, richtlijn, stemmen, rapport, ep, straatsburg
20	*EU*	dalen, europees, europarlementarier, parlement, europa, commissie, eu, land, christen, rapport, dal, geld, nederlands, unie, lidstaat, betalen, binnenvaat, eurofractie, steun, hoog

21	*Parliamentary Debates*	wet, wetsvoorstel, wijziging, mogelijkheid, waarom, regeling, voorstellen, behandeling, belang, bestaan, graag, af, recht, toelichting, algemeen, huidig, leiden, gelden, aangeven, hoog
22	*Youth Policy*	jong, arbeid, school, aanpak, groep, werken, betalen, werk, kind, alcohol, lang, ouder, vaak, bieden, onderwijs, overheid, nederlands, kans, samen, aandacht
23	*Child Care*	kind, ouder, gezin, kinderopvang, zorg, jong, jeugdzorg, wet, recht, werken, betalen, belang, school, vaak, jeugd, overheid, wetsvoorstel, lang, bestaan, voorkomen
24	*Housing Policy*	betalen, woning, plan, hoog, bewoner, huis, kost, inkomen, huurder, laag, belasting, geld, euro, overheid, af, lang, rekening, procent, leiden, woningmarkt
25	*Public Broadcast*	publiek, omroep, overheid, sector, belang, raad, commercieel, media, geld, betalen, programmas, regionaal, nederlands, lokaal, bestel, taak, markt, privatisering, toezicht, wet
26	*Law & Order*	politie, Justitie, waarom, bericht, vrijheid, ministerie, bekend, slachtoffer, rechter, nee, delen, openbaar, mening, feit, betalen, straf, geweld, agent, aanpak
27	*EU Constitution*	europa, europees, land, eu, parlement, nederlands, unie, raad, nationaal, lidstaat, sociaal, economisch, toekomst, burger, grondwet, verdrag, brussel, vrijheid, betalen, commissie
28	*Education Retrenchment*	onderwijs, school, leraar, leerling, hoog, kind, kwaliteit, geld, docent, voortzetten, ouder, klas, overheid, student, zorg, bezuinigingen, betalen, jong, opleiding, passen
29	*Budget Deficit*	euro, miljoen, geld, miljard, bezuiniging, betalen, hoog, land, economie, kost, economisch, nederlands, bezuinigen, overheid, bank, financiel, minder, bedrag, laag, plan
30	*Health Care*	zorg, patient, ziekenhuis, betalen, zorgen, geld, kwaliteit, gezondheidszorg, instelling, werken, awbz, oud, recht, lang, medisch, huisarts, thuiszorg, zorgverzekeraar, arts, hoog
31	*Protests*	actie, voeren, betalen, land, steunen, handtekening, nederlands, mee, irak, samen, steun, plan, internationaal, stoppen, ondernemen, militair, roepen, af, zetten, laat
32	*Economy*	samenleving, overheid, land, burger, verantwoordelijkheid, sociaal, leven, werken, vrijheid, nederlands, zorg, onderwijs, maatschappelijk, beleid, toekomst, kind, werk, waarin, elkaar, vooal
33	*Accession of Turkey to EU*	turkije, eu, europees, turks, land, parlement, onderhandeling, unie, europa, vrijheid, commissie, mensenrecht, lidstaat, nederlands, kosoco, internationaal, hervorming, rapport, betalen
34	*Immigration*	asielzoeker, land, vreemdelig, opvang, verblijfsvergunning, illegal, ind, pardon, wit, uitzetting, vluchteling, asielbeleid, terugkeer, groep, terug, uitprocederen, beleid, lang, uitzetten, procedure
35	*Women's Position in Society*	vrouw, land, kind, geweld, betalen, emancipatie, werken, nederlands, abortus, aandacht, werk, allochtoon, positie, arbeid, europees, recht, zorg, slachtoffer, vaak, jong
36	*Social Policy*	sociaal, werk, zekerheid, beleid, werken, uitkering, arbeid, inkomen, betalen, werkgelegenheid, economisch, lang, zorg, plan, europees, overheid, bijstand, verantwoordelijkheid, partner, akkoord

37	*Environment*	duurzaam, groen, ruimte, gebied, stad, natuur, nota, ruimtelijk, energie, ontwikkeling, economisch, overheid, beleid, land, landbouw, milieu, belang, landschap, bestaan, economie
38	*Military*	nederlands, militair, missie, defensie, land, irak, afghanistan, internationaal, waarom, betalen, europees, uruzgan, krijgsmacht, amerikaanse, overheid, antillen, bericht, steun, inzet, belang
39	*Elected Mayor*	burgemeester, raad, kiezen, gemeenteraad, wethouder, and, lokaal, to, college, raadslid, state, burger, positie, democratie, wetsvoorstel, vernieuwing, grondwet, bevoegdheid, bestuurlijk, referendum
40	*Political Meeting*	deelname, ocw, vw, thema, nederlands, lnv, ploeg, vrom, stichting, activiteit, ad, groningen, financien, ministerie, conferentie, toekomst, hoek, berg, hotel, forum

Even though we could identify all topics in all the different models, table A2 in this Appendix shows that if you set the model to a lower number of topics, the identified topics yielded more noise. For example, the model with 50 topics had a topic with press releases on the accession of Turkey to the EU, which was not in the model with 30 topics. These press releases on the accession to Turkey were not clustered in the model with 30 topics, but spread out over all the topics. So, although the model with 50 topics identified multiple topics on the same issue, for instance on education, there were topics on education in general, retrenchment on education, and on financing university and vocational studies. The model with 40 topics balances specificity and unique topics. We, therefore, decided to do our analyses with the 40 topics model.

Table A2. Unique topics per topic model

Topics	25 Topics	30 Topics	35 Topics	40 Topics	45 Topics	50 Topics
Accession of Turkey to EU	0	0	1	1	1	1
Animal Welfare	1	1	1	1	1	1
Agriculture	0	0	0	0	0	1
Budget Deficit	1	1	1	1	1	1
Child Care	1	0	1	1	1	1
Development Aid	0	0	1	0	1	1
Economic Crisis	0	0	0	0	1	1
Economy	1	1	1	1	1	1
Education	1	1	1	1	1	1
Elected Mayor	0	0	1	1	1	0

Elections	1	1	1	1	1	1
Employment Policy	1	1	1	1	0	1
Environment	1	1	0	1	1	1
EU	1	1	1	1	1	1
EU Constitution	0	1	0	1	1	1
Euthanasia	0	0	0	0	0	1
Financing Higher Education	0	1	0	0	1	1
Freedom of Speech	0	0	1	0	0	1
Health Care	1	1	1	1	1	1
Housing Policy	0	0	1	1	1	1
International Cooperation	0	0	0	0	1	0
Iraq Invasion	0	0	0	0	1	0
Immigration	0	1	1	1	1	1
Integration	1	1	1	0	0	0
Israel - Palestine Conflict	0	1	1	1	1	1
Justice	1	0	0	0	1	0
Law & Order	0	1	1	1	1	1
Local Politics	1	1	1	1	1	1
Military	1	1	1	1	1	1
Nuclear Energy	0	0	0	0	1	1
Parliamentary Debates	1	1	1	1	1	1
Pension Policy	0	0	0	1	0	1
Political Meetings	1	1	1	1	1	1
Protests	1	1	0	1	0	0
Public Broadcast	0	1	1	1	1	1
Public Transport	1	1	1	1	1	1
Retrenchment Education	0	0	1	0	1	1
Security	0	0	0	0	0	1
Social Policy	0	1	0	1	1	0
Spatial Planning	0	1	1	0	1	1
Sustainability	0	0	1	0	0	1
Transport	0	0	1	0	0	1
Women's Position in Society	0	0	0	1	0	1
Youth Policy	1	1	1	1	1	1

Figure A1 shows a heat-map of parties' attention to each of the 40 topics relative to the total number of press releases each sent. We can see that for all mainstream parties – CDA, ChristenUnie, D66, GroenLinks, PvdA, SP and VVD –, the economy and welfare issues are important issues. For the Green Party (GroenLinks) and the Progressive Liberals (D66) Figure A1 also shows that the EU is an important

issue. Newer parties, such as the PVV or PvdD (Animal party), conversely, concentrate the majority of their press releases on respectively 'tan' (traditional, authoritarian and nationalist) and 'gal' (green, alternative, libertarian) issues.

Figure A1. Heat-map of parties' relative attention to topics