Issue Ownership and Agenda Setting in the 2019 Swiss National Elections

Fabrizio Gilardi* Theresa Gessler† Maël Kubli‡ Stefan Müller§

July 21, 2021

Abstract

The 2019 Swiss national elections were characterized by the unusual prominence of two issues, environment and gender, whereas two staples of Swiss politics, immigration and Europe, were less dominant compared to previous elections. We study how, in this context, the media and party agenda were linked to issue ownership. Specifically, we consider whether political parties that own an issue could lead the media agenda and the agenda of other parties. Our analysis relies on all tweets and press releases of major Swiss political parties from January to October 2019 and 37,225 newspaper articles published during the same period. Results show, first, that the agenda-setting capacity of parties was restricted to the issue that received the least attention during the campaign (gender), and second, that the link between issue ownership and agenda setting is ambiguous. These findings suggest that during election campaigns, agenda setting may be largely exogenous to both parties and media.

*Department of Political Science, University of Zurich (https://fabriziogilardi.org).
†Department of Political Science, University of Zurich (https://theresagessler.eu).
‡Department of Political Science, University of Zurich(https://maelkubli.ch).
§School of Politics and International Relations, University College Dublin (https://muellerstefan.net).

1 Introduction

"2019 will not only be remembered as a climate election, but also as a women's election."[1] This statement, expressed on the Swiss public German-speaking broadcaster the day after the 2019 Swiss national elections, sums up the consensus view among Swiss political commentators that the elections were shaped by two issues that usually are not at the forefront of Swiss politics: environment and gender. By contrast, two issues that dominated the Swiss political landscape during the past three decades (immigration and the relationship between Switzerland and the European Union), played a less prominent role compared to previous elections. In this context, this paper studies study how agenda setting during the election campaign was linked to issue ownership.

A key feature of elections is that political parties that are perceived as "owning" an issue benefit when that issue is salient (Petrocik, 1996; Belluci, 2006; Bélanger and Meguid, 2008; Green and Hobolt, 2008). To some, maybe even large extent, issue salience is determined by events that political actors cannot directly control. However, during election campaigns parties try to steer the political agenda and public attention to issues they "own" (Dolezal et al., 2014). If citizens base their vote choice on a issue for which they believe a party to be competent, a party may benefit electorally (Walgrave et al., 2015). Evidence from the Swiss context suggests that parties are perceived as "issue owners" if media coverage of the issue is linked with the party (Tresch and Feddersen, 2019). In addition, more extensive media coverage on issues a party owns seems to correlate with higher support for this party (Thesen et al., 2017). Thus, parties face electoral incentives to emphasize their issues during election campaigns, lead the public discussion on these issues, and dominate news coverage on issues they own.

However, whether and under what conditions parties can in fact set the agenda, and specifically how this capacity is linked to issue ownership, is a question that has not been settled conclusively. One important aspect is that the agenda-setting capacity of parties

[1] "2019 wird aber nicht nur als Klimawahl in Erinnerung bleiben, sondern auch als Frauenwahl" (https://www.srf.ch/news/schweiz/wahlen-2019/srg-nachwahlbefragung-deshalb-hat-die-svp-massiv-stimmen-verloren).

depends on the response of their competitors. Previous findings emphasize strategic considerations that go into other parties' decision to ignore or engage with an issue that is owned by their competitors (Abou-Chadi, 2016), and show that when external events or campaigns change the salience of an issue, competitors may change their strategic calculus (Green-Pedersen, 2019).

We contribute to these debates by studying such an example of external changes to issue salience in the context of the 2019 Swiss national elections. The election campaign was marked by the unusual attention given to the environment and gender issues, which were brought forward by prominent social movements and advocacy groups before and during the election year (Gilardi et al., 2020). Both issues were widely perceived to prompt some parties to redefine their positions facing the national elections in 2019. We first analyze whether this context, largely exogenous to party campaigns, affected the agenda-setting capacity of parties depending on whether they "own" these issues. Specifically, we study whether parties that own an issue lead the media agenda as well as the agenda of other parties. First, we hypothesize that parties are more successful at shaping the media agenda on a given issue if they own it. This argument implies, for example, that the Green party has more influence than other parties over the media agenda on the environment issue, whereas for the immigration issue we would expect the media to react more strongly to the right-wing populist SVP. Second, shifting the focus to the relationship among parties, we hypothesize that parties react to other parties on issues that they do not own only if they are salient during the election campaign. In other words, we expect the SVP to react to the Greens on the environment issue, which was highly salient, while we would expect the Greens *not* to react to the SVP on the immigration issue, which was not salient.

Our empirical analysis relies on all tweets and press releases of major Swiss political parties from January until election day in October 2019, as well as 37,225 newspaper articles published during the same period. First, we employ a machine-learning classifier to categorize the documents into the four issues (environment, gender, immigration, Eu-

rope). Second, we use vector autoregression (VAR) models to determine parties which parties lead the media as well as other parties' agendas, and on which issues. Our approach and analysis builds on Gilardi et al. (2021b), from which it differs in two crucial ways. First, this paper is focused explicitly on the election campaign, and therefore analyzes a shorter time period. Second, it is focused squarely on party agendas, which it measures more comprehensively and precisely.

Results show that the agenda-setting capacity of parties was restricted to the issue that received the least attention during the campaign, namely gender. The media wrote more articles on this issue after parties emphasized it in their tweets and press releases. However, the link between issue ownership and agenda setting is ambiguous. On the one hand, the relationship is stronger for the SP and the Greens, which tend to care more about the issue. On the other hand, it is not limited to these parties: a somewhat weaker, positive association can be found also for the SVP and the FDP. A similar picture characterizes the relationship between parties. Overall, the attention that a party gives to a given issue is unrelated to the attention that other parties give to it, regardless of whether they own it or not. This does not mean that parties do not talk about the same issues to a considerable extent. However, if they show similar shifts in emphasis, they do so motivated by external dynamics as we find little to no evidence for endogenous influence within the party system. Therefore, our findings suggest that during election campaigns, which issues dominate the agenda may be largely exogenous to both parties and media.

2 The 2019 Swiss National Elections: Issue Attention and Ownership

The 2019 Swiss national elections were characterized by two outcomes: the historical number of seats won by the Green parties as well as by female candidates. These outcomes were exceptional for Swiss politics but were consistent with the election campaign, which

was dominated by the environment issue (Gilardi et al., 2020), and with the record number of women who ran for office (Giger et al., 2021). By contrast, two issues that have been key to Swiss politics and elections during the past three decades—immigration and the relationship between Switzerland and the EU—were widely perceived as playing a less central role during the 2019 elections. We will discuss the selection of issues more in detail in Section 4.1.

For the purposes of this paper, a key question is how environment and gender came to play a central role in the elections. On the one hand, the environment issue was made prominent by the international movement "Fridays for Future" which led to multiple demonstrations also in Switzerland. These events originated from outside the Swiss political system, and can therefore be considered as exogenous to the election campaign even though, of course, the Green and Green-Liberal parties could take advantage of them. On the other hand, the salience of the gender issue originated within the Swiss political system, but with only an indirect link to the election campaign. The key event was the national women's strike held on June 14, 2019, over four months before election day. Labor unions (specifically the Schweizerische Gewerkschaftsbund) took a leading role, but the strike was eventually supported by several different parties (not only on the left) and many organizations. Importantly, the idea of a strike was first floated as early as in January 2018 and was all but set by September 2018, more than a year before the elections. Therefore, the strike can be considered "external" to the election campaign in the sense that it was not part of a given party's electoral strategy. An additional aspect of the gender issue is the "Helvetia ruft!" ("Helvetia is calling!") campaign coordinated by the women's organization "Alliance F." However, the campaign was aiming squarely to increase the number of female candidates on party lists, and not to increase the salience of gender equality as an issue for the election campaign (Giger et al., 2021).

Although both issues—environment and gender—were prominent aspects of the 2019 elections, their actual salience in the media were very different. An analysis of the campaign showed that they were not equally dominant and present (Gilardi et al., 2020). The

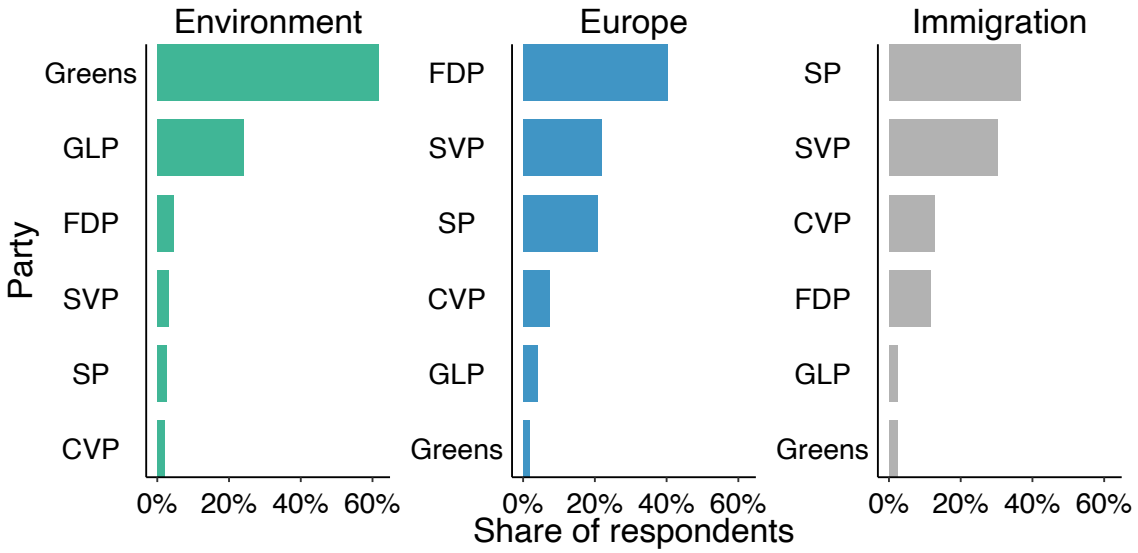

Figure 1: *Most competent party for the issues of environment, Europe, and immigration according to respondents of the Selects election panel (first wave).*

environment issue was consistently central in the traditional media and one of the more present topics on social media. By contrast, the gender issue was discussed intensely around the June 14 strike, but was otherwise not a central theme in news coverage and social media discussion (Gilardi et al., 2020). The two issues thus illustrate two different aspects of the election campaign: a constant high presence and relevance for the environment issue, and a one-time but lingering importance for gender equality (Gilardi et al., 2020). Both issues ultimately influenced the elections, on the one hand with the "green wave" by which Green parties won an unprecedented number of seats (Figure A2), and on the other hand with a historical increase in the share of women in both the National Council and the Council of States.

Data from the 2019 Selects Election study allow us to document issue ownership. Figure 1 shows how voters attached competence to parties for the environment issue as well as two issues that have dominated Swiss politics in the past years and indeed decades, namely Europe and immigration. (Unfortunately, the gender issue was not included in the survey.) The Green party was considered the most competent at dealing with the

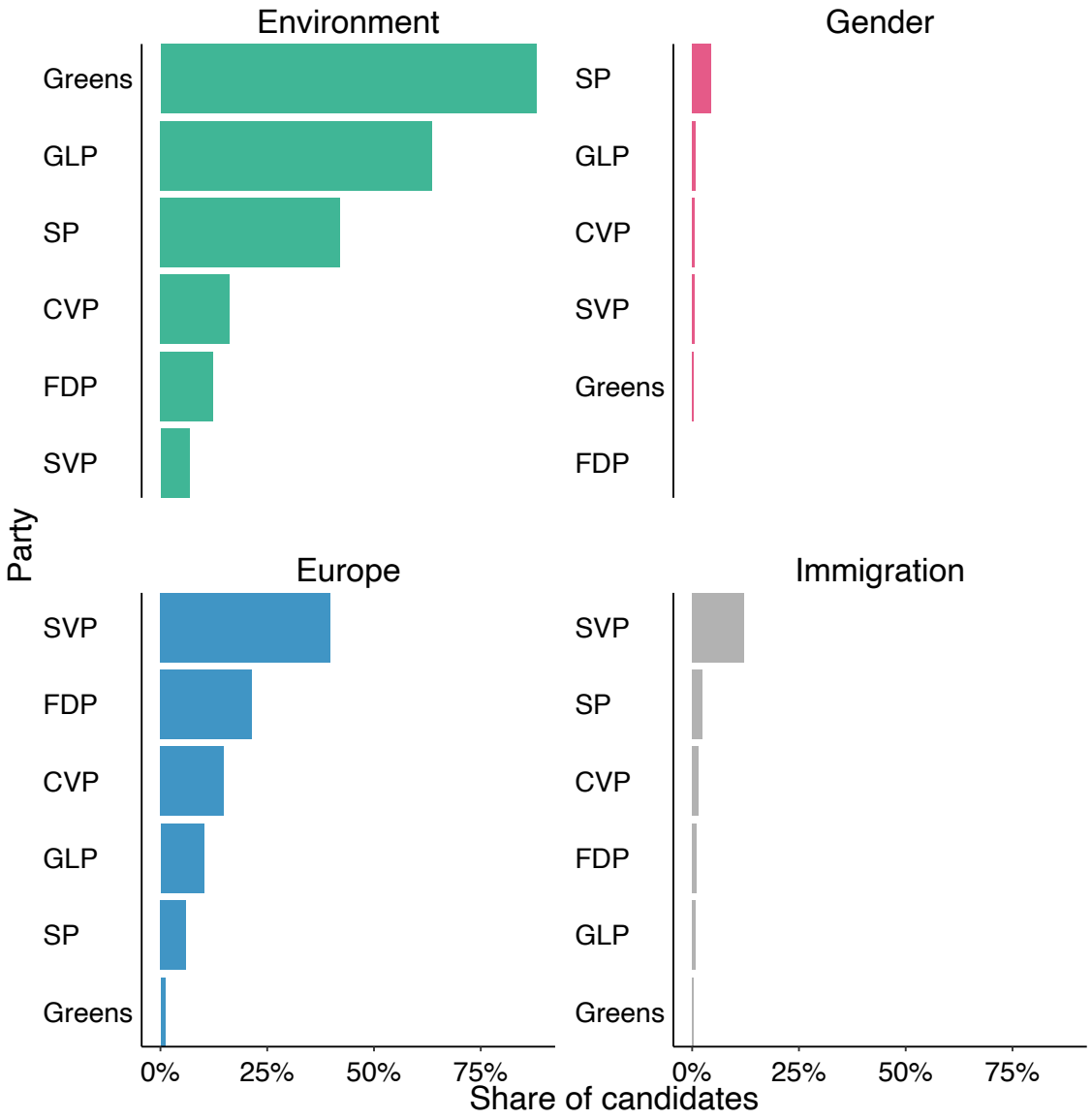

Figure 2: *Most important issue according to the Selects candidates survey by parties.*

environment (followed by the Green Liberals), the FDP was considered most competent party at dealing with the EU (followed by SVP and SP), and—maybe surprisingly—the SP (followed closely by the SVP) was considered the most competent party at dealing with immigration. The party ranking regarding immigration can be explained by differential response depending on party identification, shown in Figure A1 in Appendix A. The vast majority of SP, Green, and to some extent GLP voters see the SP as the most competent party for immigration, and do not consider the SVP competent in that area, even though regulating and limiting immigration is at the heart of the SVP's political agenda.

As a complement to voters' views on competence, it is useful to see which issues are considered as the most important by candidates. Candidate priorities are not a measure of issue ownership. However, they help us better understand how different issues played a role in the 2019 elections. Figure 2 shows a rather intuitive pattern. Most Green and GLP candidates, and a large minority of SP candidates, considered the environment the most important issue. Europe was considered the most important issue especially by SVP candidates, whereas immigration was a marginal issue for most candidates of all parties, even though SVP candidates were by far more likely to consider it important. Finally, we see that the gender issue had little salience across all parties, including the SP, which tops the ranking with a low percentage.

To conclude, from the perspective of this paper, the 2019 Swiss national elections are a case of an election campaign during which some issues were unusually salient for reasons largely external to the election campaign itself (though of course not completely exogenous to the political system). Therefore, the case presents an opportunity to study the connection between issue ownership and agenda setting in a context where parties are confronted with the salience of some issues that usually do not receive a high degree of attention during elections.

3 Theoretical Background

Influence over the political agenda is a central source of power (Bachrach and Baratz, 1962; Schattschneider, 1960). By setting the agenda, political actors determine what politics is about at a certain moment in time. A well-established view of the political agenda, which is based on Kingdon's classic definition,[2] defines it as "the list of issues to which political actors pay attention" (Walgrave et al., 2008, 815). Consequently, "agenda-setting is the process by which some issues, but not others, attract political attention" (Gilardi et al., 2021b, 3). The agenda-setting process is always ongoing. It does not have a clear starting point, and it never ends. The media play an important role. Policy-makers can have significant influence on media attention, but this does not mean that the news are easy to control (Boydstun, 2013, 204). The relationship between political actors and the media can have particular characteristics depending on the period. One of the main distinctions is between election campaigns and "routine" times (Walgrave and Van Aelst, 2006), in particular regarding relative influence of parties and the media on agenda setting. There is a consensus that, in general, the media play a crucial role (McCombs and Shaw, 1972, 1993). For example, Van Aelst and Vliegenthart (2014) found that in the Dutch case, most parliamentary questions can be traced back to the news coverage of the preceding days, but have little influence on subsequent coverage. By contrast, during election campaigns, parties can typically shape which issues the media focus on (Hopmann et al., 2012). Walgrave and Van Aelst (2006, 96) conclude that "during campaigns, the media's impact on candidates' and parties' agendas is limited or even absent." Media influence on the political agenda has been well documented also in the Swiss case (Tresch et al., 2013; Tresch and Feddersen, 2019; Sciarini et al., 2020), although primarily with a focus on routine instead of election times.

During election campaigns, agenda setting may be linked to issue ownership, that is, the extent to which certain parties are associated with certain issues, or are perceived

[2] "[T]he list of subjects or problems to which governmental officials, and people outside of government closely associated with those officials, are paying some serious attention at any given time" (Kingdon, 1984, 3).

to be particularly competent to address them (Walgrave et al., 2015, 778). If citizens base their vote choice on an issue for which they believe a party to be competent, a party may benefit electorally. Moreover, parties that own an issue may have a better chance at placing their message in media coverage on this issue. Parties and politicians therefore try to be regarded as competent on a variety of issues. Yet, some parties have a reputation of being more competent to deal with certain political issues. For instance, Green parties are usually seen as competent when talking about energy policy and environmental protection.

Hence, the concept of issue ownership captures the attribution of competence, which may also shape media coverage of a party. Journalists link issues to parties that have emphasized these issues in past elections or increase their attention to the issue during an electoral cycle (Merz, 2017). This often coincides with issue ownership. Especially smaller parties are mostly covered for issues they own and struggle to receive media attention for their stances on other issues (Schwarzbözl et al., 2020). However, recent studies have also highlighted the opposite mechanism: Studies on the agenda-setting capacity of press releases have argued that 'news value' shapes media coverage of party positions (Haselmayer et al., 2017). Surprising issues and positions may be covered more extensively, and media may specifically look for a party's stance on issues that this party rarely addresses. Experimental evidence about the messages selected by Swiss political journalists supports this assumption. Helfer and Aelst (2016) show that journalists are more likely to select a fictional party press release about an issue the party does not own. Unexpectedness of a message can increase newsworthiness and media coverage. This would suggest that party's agenda-setting capacity is largest for issues a party does *not* own. As previous results have been somewhat conflicting, our first expectation considers whether parties that own an issue are more likely to shape the agenda of the media:

H1: Parties that are issue-owners are more successful at shaping the media agenda on this issue, compared to those that do not own the issue.

The competition over the ownership of issues often structures the relationship be-

tween parties. Prior work focuses on two approaches to understand how parties compete: the sociological and the strategic approach (De Vries and Marks, 2012; Rovny, 2015). The sociological approach takes a "bottom-up" view assuming that party competition over issues reflects existing social conflicts. The strategic approach assumes that the competition between political parties drives issue content (Green-Pedersen, 2019). Naturally, the strategic approach which analyzes the considerations of parties as political entrepreneurs is more appropriate for understanding immediate party responses during an election campaign.

While there is a general consensus within the literature on strategic party competition that issue ownership and parties' emphasis on an issue matter for the relationship between parties, scope conditions influence whether parties can in fact set the agenda of other parties. This is because a party's agenda-setting capacity ultimately depends on the response of their competitors: Previous findings emphasize strategic considerations that go into other parties' decision to ignore or engage with an issue that is owned by their competitors (Meguid, 2005; Abou-Chadi, 2016). Notably, parties differ in their responsiveness depending on their size and proximity (Meguid, 2005), ideological constraints (Green-Pedersen and Mortensen, 2015) or their organizational structure (Meyer and Wagner, 2017).

Here, we want to highlight an additional factor, namely the prominence of an issue. When an issue shapes an election campaign (such as the environment in the case of the 2019 Swiss national elections, as discussed earlier), issue owners may lead the public debate and make other parties react. In the literature, electoral pressure by issue owners has often been suggested as a factor that may "force" other parties to react (Meguid, 2005). For example, radical-right parties typically "own" the issue of immigration policy, and other parties and the media may respond to these parties by increasing their emphasis on the same issue. Abou-Chadi and Krause (2020) test this assumption and find that the success of radical right parties increases the salience of topics relating to multiculturalism.

However, we posit that the mechanism behind electoral pressure—namely, that an

issue endorsed by a challenger seems timely—is not limited to the electoral success of challengers but may also be a consequence of the prominence or salience of a topic. Gessler and Hunger (2021) show that radical-right parties had a significant impact on the salience of immigration for mainstream parties during the 2015 immigration crisis. This is based on Ansolabehere and Iyengar (1994)'s idea of "riding the wave:" campaigning on issues that dominate the news cycle allows politicians to appear responsive. Similarly, Green-Pedersen (2019, 32) argues that information about a policy problem is crucial because political actors need a hook to draw attention to their core issues. This holds both for focal events that have been the center of many recent studies (Muñoz et al., 2020) and, as we shall argue, more long-term shifts in attention. Hence, when external events change the salience of an issue, competitors may change a party's strategic calculus (Green-Pedersen, 2019; Ennser-Jedenastik et al., 2021). In other words, the context of an electoral campaign and the salient issues in the media may affect parties' capacity to set the agenda. When an issue is seen as incidental, competitors may easily ignore it. If an issue is central to a campaign ("prominent"), a parties' competitors may experience pressure to take up an issue even if it is unfavorable to them. Based on these arguments, we expect that context determines whether parties take up issues owned by other parties:

H2: Parties emphasize issues that they do not own if they are prominent during the election campaign.

4 Research Design

4.1 Case Selection

We focus on the 2019 Swiss national elections because we are substantively interested in this case, as explained in Section 2. Within this context, several choices need to be motivated, including the set of issues we study as well as the time period. We analyze four issues: environment, gender, Europe, and immigration. The prominence of the first two

was a key feature of the 2019 elections, as explained in Section 2. By contrast, Europe and immigration are useful as contrast, because they are two issues with longstanding salience in Swiss politics, which, however, played a less prominent role compared to previous elections. Figure 3 (which we well discuss more in detail in Section 5) shows that media attention to the environment issue throughout the year can hardly be overstated, whereas attention to the gender issue was relatively low on average, but very high during the week of the women's strike. Attention to the Europe issue was high in particular during the first half of the year and peaked in the context of a referendum held in May, which had direct implications for the relationship between Switzerland and the European Union. Finally, immigration received a low, relatively constant level of attention.

The observation period of our analysis goes from January 2019 to election day in October 2019. This time frame is longer than in other studies of agenda setting during election campaigns, which typically focus on a few weeks (e.g., Hopmann et al., 2012; Haselmayer et al., 2017). Our choice is motivated by the fact that we are not restricted by data availability, as described in Section 4.2, as well as by substantive reasons. There is a consensus in Switzerland that the election campaign kicks off in August. However, conversations with several Swiss journalists confirmed that the media treat anything happening during the election year as relevant for election campaign. Given that the media is a central component of our study, this perspective is important. Moreover, another specificity of the Swiss case is that national referenda are held four times per year (usually in February or March, May or June, September, and November), except in election years, where the two latter slots are not used because of the ongoing election campaign. Of course, referenda are discussed extensively by parties and the media, so it is important to consider which issues were voted upon in 2019, and specifically how they relate to the four topics we focus on in our analysis. The first referendum, held in February, had to do with urban development, while the second and third, held in May, were related to the pension system and the implementation of an EU directive on weapons in the context of the Schengen agreement. The latter referendum is of course relevant for

the present study, because it increased the salience of the Europe issue.

4.2 Data

We draw the data for this study from four sources: tweets posted on the official accounts of Swiss parties, articles published in Swiss newspapers, official press releases by parties, and data from the Selects election studies. For the first three sources, we use a subset of the documents of Selects (2020c) collected by Gilardi et al. (2020) published between January 1st, 2019 and October 20st, 2019. For the three data sets, this results in 77,284 tweets (excluding retweets), 1,148,101 articles from 80 newspapers and 2,115 press releases. All data was collected daily through an ingestion system distributed over multiple machines which collects the data from the different sources and immediately stores it in a database (Gilardi et al., 2021). We include the following parties in the analysis: SVP (Swiss People's Party), SP (Social Democratic Party), FDP (Liberal Party), CVP (Christian Democratic Party), Greens, GLP (Green Liberal Party). We exclude the BDP (Conservative Democratic Party) due to a very low number of tweets by the party and their politicians. We then pool the press releases from parties with their respective tweets to not only measure social media effects but also the official statements by the parties.

To measure the parties' agenda, we constructed a corpus including all tweets from the six largest parties in the national council of Switzerland: SVP (Swiss People's Party), SP (Social Democratic Party), FDP (Liberal Party), Greens, CVP (Christian Democratic Party), and GLP (Green Liberal Party). These parties alone published 3,706 tweets over the course the election campaigning period. In addition, we collected all official press releases published by these parties, since they are an important medium for parties to communicate their policy positions and issue emphasis (Haselmayer et al., 2017; Gessler and Hunger, 2021). The parties published 2,115 press releases during our observation period, of which which 444 covered one of our four issues. Together, tweets and press releases are our measure for the parties' agenda.

To measure the media agenda, we use a subset of newspaper articles collected and

classified in Selects (2020c). The original articles are available through the *swissdox* database. The corpus from January 2019 up to the election date on October 21st consists of over 1.1 million articles. 36,415 of these articles cover one of the four topics of interest. In Table A1, in Appendix B, we report the average number of articles each paper published at a given day over the full two year period along with the maximum and minimum number of articles for each topic.

In addition to the datasets on the (social) media analysis (Selects, 2020c), we use two additional components of the Swiss Election Study. We identify issue owners based on the first wave of the 2019 panel survey (Selects, 2020b). To measure this we use the three questions asking the respondents for each of our policy issues: "Which party is the most competent in environmental / immigration / EU politics?".[3] In addition, we rely on the candidate study (Selects, 2020a) to compare how the candidates perceive the importance of the four issues analysed in this paper. To measure this we use the question in the survey asking candidates about the most important political problem in Switzerland.

4.3 Methods

Our first task is to identify the issues discusses in the texts included in our corpus (party tweets and press releases, and newspaper articles). To do so, we set up two classification systems to assign tweets and newspaper articles to policy areas, which we discuss in detail in Appendix C. We rely on two supervised ensemble machine learning algorithms to classify the topics for the tweets and the longer news articles separately (Gilardi et al., 2020).[4] The two ensemble methods are similar, but differ in one central way. For the text corpus of news articles we add a keyword-based classification tree to remove articles that do not relate to Swiss politics, but to other issues such as sports or culture. We do not require such a classification tree for our second corpus because parties' tweets are by definition political texts (Gilardi et al., 2021b).

[3]The panel surveys do not include gender equality as an answer option.

[4]We use the classification system developed for newspaper articles to classify the content of press releases.

We train our classifier for newspaper articles on a dataset of hand-coded issue areas of newspaper articles from APS (Année Politique Suisse).[5] The number of annotated articles included in the training set for the newspaper classification range from 1,210 (gender) to 9,889 (environment) German articles and from 318 (gender) to 1,460 (immigration) French news articles. This allows us to use supervised machine learning for the classification instead of unsupervised techniques (such as topic models). For the classification of tweets we rely on data from politicians, parties, organisations and experts participating in the weekly political TV show *SRF Arena*, published between 1 January 2019 and 1 September 2019. We extract the 2,000 most frequent hashtags mentioned in tweets about the SRF arena. Around 300 hashtags for each language could be assigned to a policy area. All remaining hashtags were used to identify 'other' issue. Having classified the policy area based on hashtags, we use the texts of tweets that mention these hashtags to train the machine learning classifiers. The number of annotated tweets per class range from 345 to 1,956 French tweets and from 5,320 to 13,410 German tweets.

The ensemble classifier combines three different algorithms to classify the texts (Géron, 2019). The feature engineering is based on word embeddings (Gilardi et al., 2021b; Mikolov et al., 2013). The ensemble classifiers for tweets and news articles perform well for all topics of interest. Our ensemble method results in out-of-sample accuracy of at least 80% for all issue areas in German and French (see extensively Gilardi et al., 2021b). Tables A2 and A3 summarise the performance of our classifiers. Our ensemble method is suitable for our classification task, performs well, and does not suffer from systematic classification error.

For the analysis, we apply vector autoregression models (VAR) with topic-fixed effects. VAR models explain the change over time of multiple variables based on their own lagged values as well as the lagged values of the other variables incuded in the model, which allows us to analyze the relationships between several variables over time. VAR models are well suited to capture the process between endogenous variables and have been used

[5] https://anneepolitique.swiss/.

by similar studies (Barberá et al., 2019; Wood and Peake, 1998; Edwards and Wood, 1999; Gilardi et al., 2021b,a). Specifically, our model mirrors the design of Barberá et al. (2019), who uses a VAR model with a set of stationary time series Y_i representing the share of the daily attention each group i paid to the topics j of interest. We express the endogenous relationship of our variables as a system of equations like where each variable Z_i is a function of its own previous lags and the lags of the remaining variables. We expect fast responses on social media, while responses in newspapers may be delayed by a few days. To account for this possibility, we opt for a lag structure of seven days which also captures both weekday and weekend editions of newspapers. Our model can thus be expressed as:

$$Z = log\left(\frac{Y}{1-Y}\right)$$

$$Z_{i,j,t} = \alpha_j + \sum_{i}^{7}\sum_{p=1}^{days} \beta_{i,p} Z_{i,j,t-p} + \varepsilon_{i,j,t}$$

We follow Barberá et al. (2019) also to estimate how an increase of issue attention by one group relates to subsequent issue attention of other groups. We use cumulative impulse response functions (IRFs) to estimate how a 10 percentage point unit increase in attention to a given topic by one group changes the cumulative attention that the other actors contribute to the same topic over time. We do this for short changes in attention of 10 percentage points (from 0% to 10%) for one day on day zero.

5 Results

We begin the discussion of the results with an overview of the salience of the four issue (environment, gender, immigration, and Europe) in the media and party agendas (Figure 3). The first row shows the salience of the four issues in the media, specifically the number of articles per week. The salience of the environment issue is clearly visible. Throughout the year, Swiss newspapers published about 400 stories per week on that topic, with peaks of almost 800 articles. This is way more than any of the other issues.

Moreover, although there were some ups and downs, the environment issues remained highly salient during the whole year up to election day. By contrast, the salience of the gender issue in the media followed a very different pattern. On average, its salience was quite low, although relatively comparable to that of immigration. However, there was a peak mid-June during the women's strike. During that week, the media published about 500 articles on gender, which is comparable to the some of the peaks of the Europe issue during the the referendum held in May 2019. Therefore, even though its salience in the media was low on average, in combination with the fact that a record number of women ran for office and were elected, gender can be considered a prominent issue during the election campaign. Turning to the Europe, the issue was clearly salient in the media, but much more so in the first half of the year. The trend can be explained in particular by the referendum held in May 2019, which had direct implications for the relationship between Switzerland and the European Union. After the referendum, the Europe issue lost salience in the media while maintaining a relatively high degree of attention. Finally, attention to the immigration issue was remarkably stable throughout the year, at a low level.

While the first row of Figure 3 shows the media agenda, the rest of the figure reflects the salience of the four topics for political parties, based on their tweets and press releases. A few patterns stand out. First, parties tended to emphasize the issues they own. The Greens and GLP devoted more attention to the environment issue than the other parties, while the SVP emphasised immigration and (at least in the post-referendum period) Europe at higher rates than other parties. The gender issue was addressed particularly by the Greens and SP. Second, parties largely neglected the Europe issue after the May referendum, to a larger degree than the media did. This supports our argument that Europe was not a prominent issue for the election campaign. Its salience, shown in Figure 3, is mostly linked to the referendum, after which parties no longer focused on that issue. Third, most parties neglected immigration. Even for the SVP, the salience of immigration was barely larger than that of the environment issue.

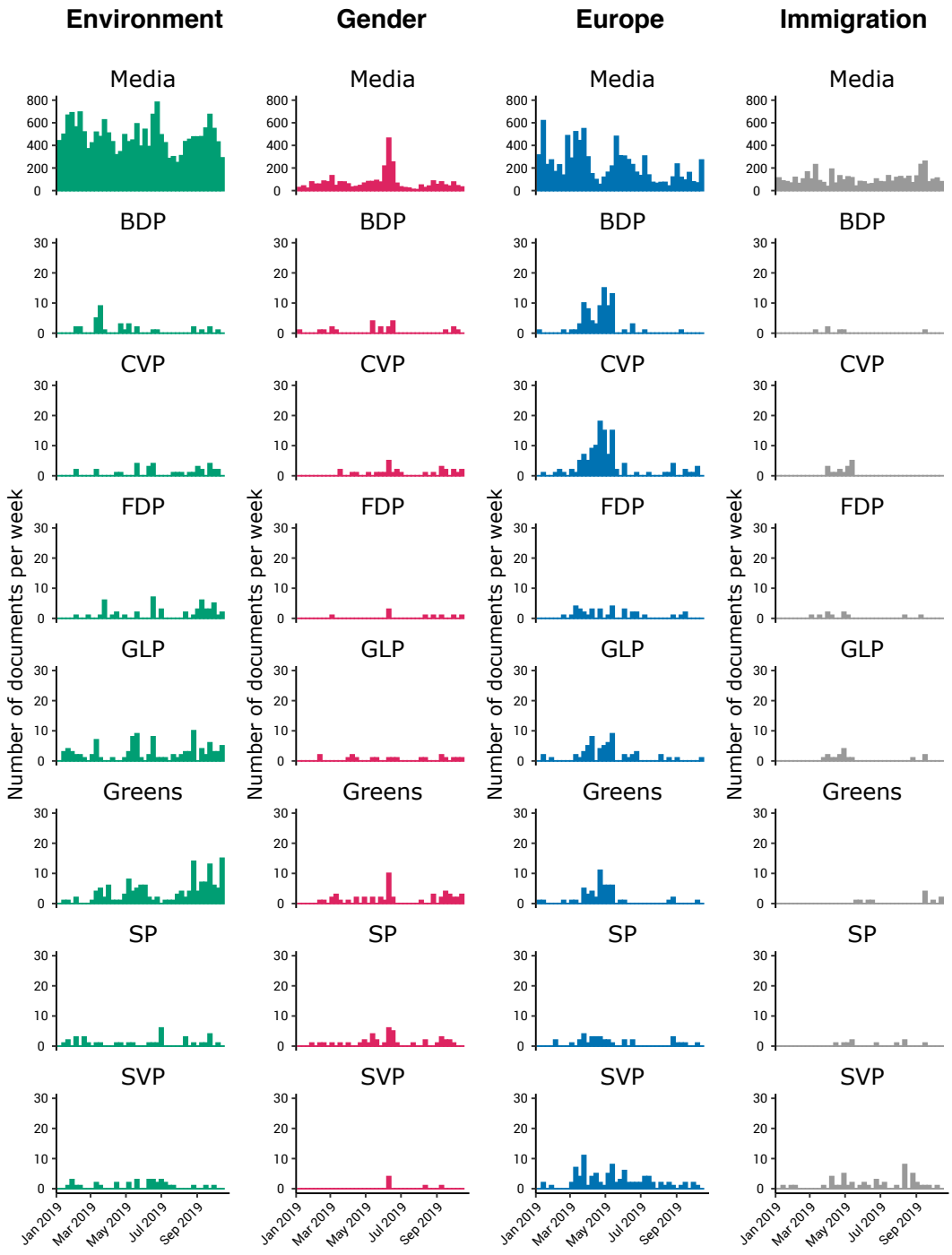

Figure 3: *Distribution of the four topics over time for each party. The numbers show the sum of tweets and press releases by week. For example, in January 2019 newspaper published about 500 articles per week on the topic of the environment, and about 100 on immigration. Mid-June, newspapers published about 500 articles per week on gender, and the Green party published about 10 tweets or press releases on that issue.*

We now turn to our main results and discuss whether and how parties lead the media agenda, and how the agendas of the different parties influenced one another. To ease the interpretation, we display the results visually; the estimated coefficients are reported in Appendix D. Figure 4 shows how newspapers responded to the attention parties gave to the four issues in tweets and press releases. Specifically, the figure reports the percentage-point change in the attention newspapers gave to the four issues as a response to a 10 percentage-point increase in attention by parties. For example, a ten percentage point increase in the number of tweets or press releases published by the SP on gender is associated with about two percentage point increase in the number of articles published by newspapers on that issue. The relationship is statistically significant because the confidence interval does not include zero. The figure contrasts the two issues that featured prominently in the campaign (environment and gender) with those that we use as a contrast (immigration and Europe). First, media responsiveness to parties' agendas was overall limited. Notably, attention to the environment issue in newspapers was not related to the degree to which parties emphasized in press releases and on social media. Moreover, there is no indication that issue ownership played a role for the environment. If anything, newspapers were more responsive to the SVP (which neither owns the issue nor would benefit from increasing its salience) than to the Greens or GLP. A similar pattern of non-responsiveness emerges for immigration and Europe, with the partial exception of the FDP. The pattern is different for the gender issue, however. Newspapers seemed to respond to parties on this issue. The strongest relationship occurred between the Greens and news outlets: a 10-point increase in attention to the gender issues by this party was associated with about 2.8 percentage point increase in newspaper attention. While this result, and a similar one for the SP, fits well with issue-ownership arguments, others do not. We see that on the gender issue, newspapers were responsive also to the FDP and even for the SVP, which are not issue owners. The GLP's emphasis on the gender issue does not does correlate with higher newspaper coverage in subsequent days. This finding is unexpected given that the GLP initiated several legislative proposals on gender equality.

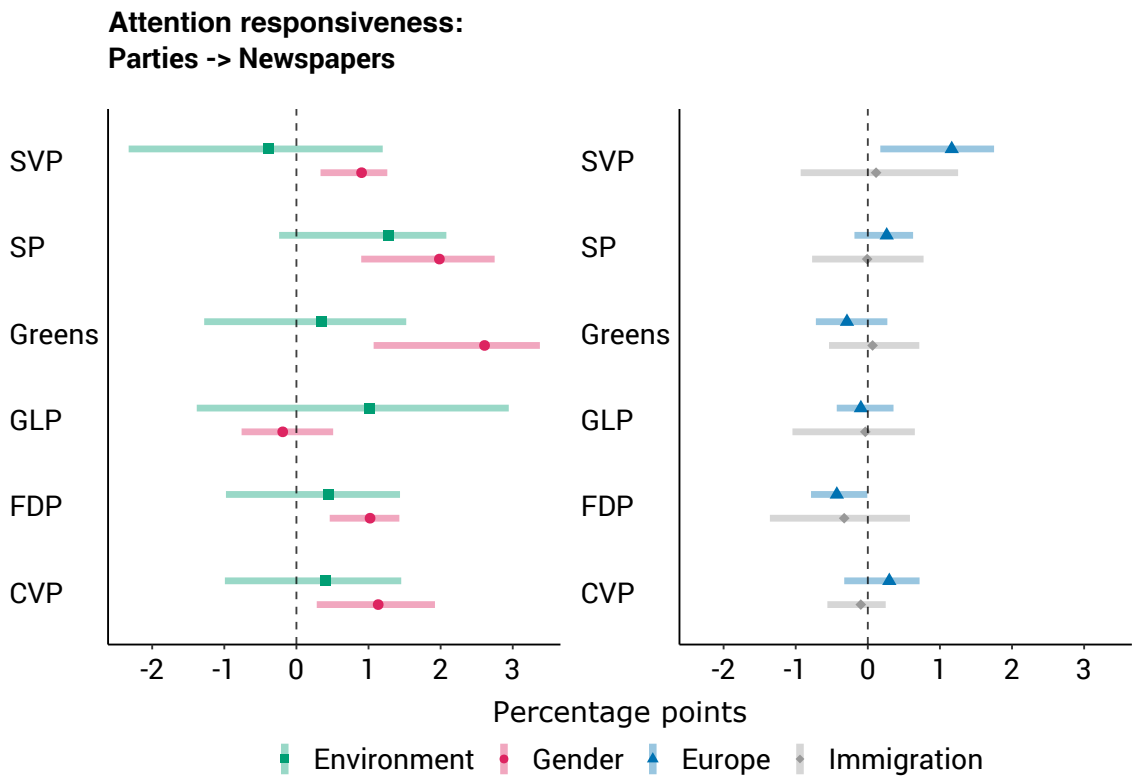

Figure 4: *Agenda setting: attention responsiveness of newspapers to parties. Bars denote 95% confidence intervals. For example, a ten percentage point increase in the number of tweets or press releases published by the SP on gender is associated with about two percentage point increase in the number of articles published by newspapers on that issue. The relationship is statistically significant because the confidence interval does not include zero.*

In short, the media agenda on gender was responsive to parties, but not in ways that fit with issue-ownership arguments. Therefore, the result are not consistent with our first hypothesis, which stated that parties that are issue-owners are more successful at shaping the media agenda on this issue, compared to those that do not own the issue. Although our hypothesis focuses on how parties shape the media agenda, we also report results for the opposite relationship, in Appendix E. Figure A1 shows that parties generally do not react to newspapers. The most notable exception is the SVP, which increased attention to the gender following media attention to that issue.

Turning to the relationship between parties, Figure 5 paints a similar picture as Fig-

ure 4—that is, that the agenda-setting capacity of parties was limited and mostly unrelated to issue ownership. The figure should be read as follows: looking at the chart on top left corner, a ten percentage point increase in the number of tweets or press releases published by the CVP on the topics of gender or the environment is associated with about two percentage point increase in the number of tweets or press releases published by the SVP on those issues. The relationship is statistically significant because the confidence interval does not include zero. However, for most party-issue combinations, parties did not give more attention to a given issue following other parties increasing their attention to those issues. This is the case almost uniformly for the immigration and Europe issues, whereas we see a bit more variation for the environment and gender issues. In particular, on gender, the CVP led the SVP, the FDP led the SVP and marginally led the Greens, the GLP marginally led the FDP and CVP, and the Greens led the SVP. For the environment issue, the GLP led the CVP, and the FDP led the CVP. One should be careful not to over-interpret any individual correlation given the large number of actors and mutual relationships. Therefore, we emphasize instead the overall pattern emerging from Figure 5, which is that parties, including issue owners, could not increase the attention other parties gave to the four issues alone. The evidence does not support our second hypothesis, which stated that parties emphasize issues that they do not own if they are prominent during the election campaign. Instead, the salience of the four issues during the election campaign was largely unrelated to inter-party dynamics, and likely due to events outside of the election campaign.

One concern with our analysis is that our dataset might be too sparse, that is, that there might be too many days without tweets or press releases by parties. We address this issue in Appendix F. Although the data do have a relatively high degree of sparsity, Figure A2 shows that there is considerable variation in issue emphasis over times well as a high degree of covariance across parties. Moroever, we re-estimated the model with data aggregated at the week level, which reduces sparsity. Figure A3 shows that the substantive findings are unchanged wen doing so. Therefore, sparsity is not an issue for

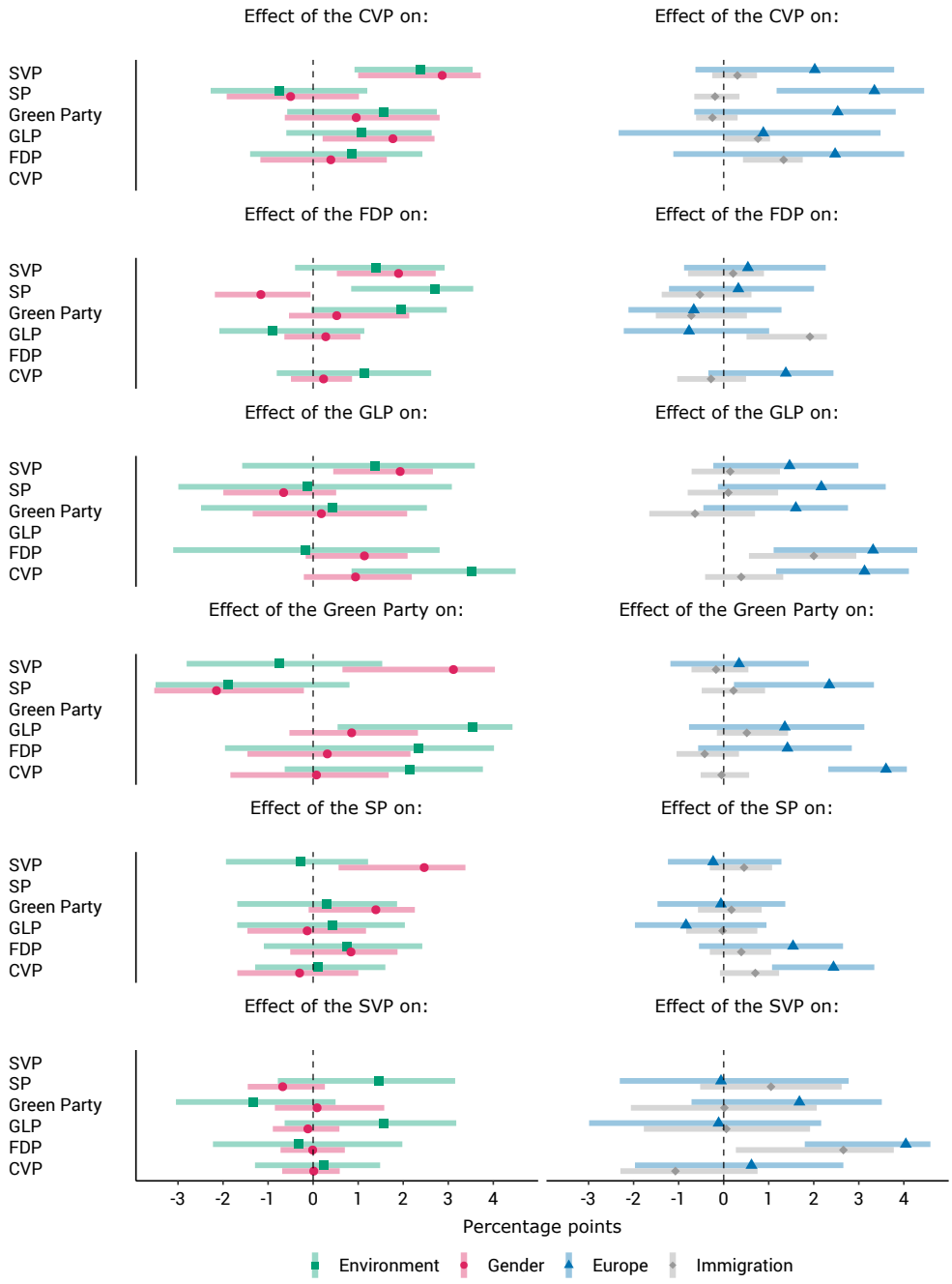

Figure 5: *Party competition: attention responsiveness among parties. Bars denote 95% confidence intervals. For example, looking at the chart on top left corner, a ten percentage point increase in the number of tweets or press releases published by the CVP on the topics of gender or the environment is associated with about two percentage point increase in the number of tweets or press releases published by the SVP on those issues. The relationship is statistically significant because the confidence interval does not include zero.*

our analysis and estimating the model with daily data does not influence our results.

6 Conclusion

In this paper, we studied the interplay between issue ownership and agenda setting during the 2019 Swiss national election campaign, which was characterized by the unusual prominence of two issues, environment and gender, which we compared with two issues that have played an important role in Swiss politics, namely the relationship with the European Union and immigration, but which were less dominant compared to previous elections. Based on agenda-setting and issue-ownership theory, we first expected that parties would be able to shape the media agenda on issues they own. Instead, we found limited evidence for such effects. We could find evidence of agenda-setting capacity only for the gender issue; moreover, such capacity was not linked to issue ownership. Second, looking at the relationship among parties, we expected that parties would react to other parties on issues they do not own when those issues were salient during the campaign, but not otherwise. Instead, we found that what parties emphasized was generally unrelated to what their competitors were focusing on, regardless of issue ownership. Therefore, we conclude that issue emphasis during the 2019 election campaign, and in particular the very high salience of the environment issue, was largely exogenous to parties and media. This result points to the limited relevance of issue ownership for agenda setting in contexts where issues are salient for reasons unrelated to party competition.

A distinctive aspect of our approach is that we included tweets as part of the parties' agendas. One could argue that tweets by political parties may not receive as much media attention as other forms of communication. Yet, recent work shows that journalists frequently pick up tweets by parties and politicians in their newspaper articles (Oschatz et al., 2021). Tweets are considered as official statements by parties, making it a citeable and reliable source. We would therefore expect journalists to follow parties on social media, and include the content of tweets or a direct quote to their articles. Recall that our

measure of parties' issue attention also includes press releases, adding an additional source of party communication. Therefore, we conclude that our measure captures meaningful party communication in the year of the election.

Dynamics throughout the electoral cycle (e.g., Sagarzazu and Klüver, 2017; Müller and Louwerse, 2020) could be an alternative explanation for the unexpected results that issue emphasis by non-issue owners correlates with newspaper coverage in the subsequent days. For example, Seeberg (2020) argues that parties focus on the issues they own in non-campaign periods. Yet, when an election draws closer, parties realize that they may not be able to set "their" agenda and therefore focus on rival parties' issues. An analysis of press releases in Denmark provides support for this assumption (Seeberg, 2020). As a result, the limited agenda-setting powers of issue owners in the Swiss case could potentially be a function of the closeness to the next election. Future studies should investigate an even longer time period or apply the empirical approach to other countries to test whether our results hold in different contexts. While such an analysis is beyond the scope of this paper, Twitter's new policies that allow for access to the full archive of tweets[6] would enable scholars to conduct such an analysis.

Due to some of our methodological choices, our results cannot be directly compared to those of other studies. Our analysis considered a much longer time period, relied on fine-grained data at the daily level, and included data sources that other studies seldom consider, such as social media. However, our arguments and findings can inform further research on the Swiss case as well as comparatively. We analyzed whether increased emphasis on a certain issue by one party correlates with more attention on this issue by other parties. We also tested whether parties' issue focus drives to newspaper coverage on this issue. Yet, we limited our analysis to the general discussion of the issues without assessing whether parties mention each other or whether newspapers refer directly to the party that increased attention to an issue. Future work could address these questions using named entity recognition methods for newspaper coverage or direct mentions of

[6] https://developer.twitter.com/en/products/twitter-api/academic-research.

other accounts on social media.

Furthermore, our results speak to salience theory, which posits that parties tend to emphasize issues they own and talk past each other, rather than engaging in a direct confrontation (Budge and Farlie, 1983). Prior work assumes that parties avoid talking about solutions to an issue they "own," and try to shift attention to this issue in general instead (Dolezal et al., 2014). Future studies should test whether these assumptions hold in parties' communication on social media, which have become an important channel for agenda setting (Gilardi et al., 2021b). Combining the issue classification and indicators of whether parties or politicians refer to each other in tweets, could help us understand whether political actors choose a more confrontational style on social media. Moreover, one could investigate whether (given media preferences for coverage of conflicts) parties who describe issues in a more confrontational way have a better chance of influencing the media agenda on these issues.

To conclude, our analysis of the 2019 Swiss national elections shows that, to a large extent, neither the media nor parties were responsible for the very high salience of the environment issue, and that issue ownership neither facilitated nor hampered the agenda-setting efforts of parties. Although we focused on a specific election and country, we believe that our arguments and approach could be helpful for further work both on the Swiss case and comparatively.

References

Abou-Chadi, T. (2016). Niche party success and mainstream party policy shifts – how green and radical right parties differ in their impact. *British Journal of Political Science 46*(2), 417–436.

Abou-Chadi, T. and W. Krause (2020). The causal effect of radical right success on mainstream parties' policy positions: A regression discontinuity approach. *British Journal of Political Science 50*(3), 829–847.

Ansolabehere, S. and S. Iyengar (1994). Riding the wave and claiming ownership over

issues: The joint effects of advertising and news coverage in campaigns. *Public Opinion Quarterly 58*(3), 335–357.

Bachrach, P. and M. S. Baratz (1962). Two faces of power. *American Political Science Review 56*(3), 947–952.

Barberá, P., A. Casas, J. Nagler, P. J. Egan, R. Bonneau, J. T. Jost, and J. A. Tucker (2019). Who leads? Who follows? Measuring issue attention and agenda setting by legislators and the mass public using social media data. *American Political Science Review 113*(4), 883–901.

Bélanger, É. and B. M. Meguid (2008). Issue salience, issue ownership, and issue-based vote choice. *Electoral Studies 27*(3), 477–491.

Belluci, P. (2006). Tracing the cognitive and affective roots of 'party competence': Italy and Britain, 2001. *Electoral Studies 25*(3), 548–569.

Boydstun, A. E. (2013). *Making the news: Politics, the media, and agenda setting.* Chicago: University of Chicago Press.

Budge, I. and D. J. Farlie (1983). Party competition: Selective emphasis or direct confrontation? an alternative view with data. In H. Daalder and P. Mair (Eds.), *West European Party Systems: Continuity & Change*, pp. 267–305. London: SAGE Publications.

De Vries, C. E. and G. Marks (2012). The struggle over dimensionality: A note on theory and empirics. *European Union Politics 13*(2), 185–193.

Dolezal, M., L. Ennser-Jedenastik, W. C. Müller, and A. K. Winkler (2014). How parties compete for votes: A test of saliency theory. *European Journal of Political Research 53*(1), 57–76.

Edwards, G. C. and B. D. Wood (1999). Who influences whom? The president, congress, and the media. *American Political Science Review 93*(2), 327–344.

Ennser-Jedenastik, L., C. Gahn, A. Bodlos, and M. Haselmayer (2021). Does social media enhance party responsiveness? how user engagement shapes parties' issue attention on Facebook. *Party Politics* (online first).

Gessler, T. and S. Hunger (2021). How the refugee crisis and radical right parties shape party competition on immigration. Working Paper, URL: http://theresagessler.eu/assets/pdf/gessler_hunger_refugee.pdf.

Giger, N., D. Traber, F. Gilardi, and S. Bütikofer (2021). The surge in women's representation in the 2019 Swiss federal elections.

Gilardi, F., L. Baumgartner, C. Dermont, K. Donnay, T. Gessler, M. Kubli, L. Leemann, and S. Müller (2021). Building research infrastructures to study digital technology and politics: Lessons from Switzerland. *PS: Political Science & Politics* (online first).

Gilardi, F., C. Dermont, M. Kubli, and L. Baumgartner (2020). Der Wahlkampf 2019 in traditionellen und digitalen Medien. Selects Medienstudie 2019. URL: https://digdemlab.io/docs/SelectsMedienstudie2019.pdf.

Gilardi, F., T. Gessler, M. Kubli, and S. Müller (2021a). Social media and policy responses to the COVID-19 pandemic in Switzerland. *Swiss Political Science Review 27*(2), 243–256.

Gilardi, F., T. Gessler, M. Kubli, and S. Müller (2021b). Social media and political agenda setting. *Political Communication* (online first).

Green, J. and S. B. Hobolt (2008). Owning the issue agenda: Party strategies and vote choices in British elections. *Electoral Studies 27*(3), 460–476.

Green-Pedersen, C. (2019). *The Reshaping of West European Party Politics: Agenda-Setting and Party Competition in Comparative Perspective*. Oxford: Oxford University Press.

Green-Pedersen, C. and P. B. Mortensen (2015, Oct). Avoidance and engagement: Issue competition in multiparty systems. *Political Studies 63*(4), 747–764.

Géron, A. (2019). *Hands-On Machine Learning with Scikit-Learn, Keras, and TensorFlow: Concepts, Tools, and Techniques to Build Intelligent Systems*. New York: O'Reilly Media.

Haselmayer, M., M. Wagner, and T. M. Meyer (2017). Partisan bias in message selection: Media gatekeeping of party press releases. *Political Communication 34*(3), 367–384.

Helfer, L. and P. V. Aelst (2016). What makes party messages fit for reporting? an experimental study of journalistic news selection. *Political Communication 33*(1), 59–77.

Hopmann, D. N., C. Elmelund-Præstekær, E. Albæk, R. Vliegenthart, and C. H. d. Vreese (2012). Party media agenda-setting: How parties influence election news coverage. *Party Politics 18*(2), 173–191.

Kingdon, J. W. (1984). *Agendas, Alternatives, and Public Policies*. New York: Longman.

McCombs, M. E. and D. L. Shaw (1972). The agenda-setting function of mass media. *Public opinion quarterly 36*(2), 176–187.

McCombs, M. E. and D. L. Shaw (1993). The evolution of agenda-setting research: twenty-five years in the marketplace of ideas. *Journal of Communication 43*(2), 58–67.

Meguid, B. M. (2005). Competition between unequals: The role of mainstream party strategy in niche party success. *American Political Science Review 99*(3), 347–359.

Merz, N. (2017). Gaining voice in the mass media: The effect of parties' strategies on party–issue linkages in election news coverage. *Acta Politica 52*(4), 436–460.

Meyer, T. M. and M. Wagner (2017, Oct). It sounds like they are moving: Understanding and modeling emphasis-based policy change. *Political Science Research and Methods*, 1–18.

Mikolov, T., K. Chen, G. Corrado, and J. Dean (2013). Efficient estimation of word representations in vector space. *arXiv preprint arXiv:1301.3781*.

Müller, S. and T. Louwerse (2020). The electoral cycle effect in parliamentary democracies. *Political Science Research and Methods 8*(4), 795–802.

Muñoz, J., A. Falcó-Gimeno, and E. Hernández (2020). Unexpected event during survey design: Promise and pitfalls for causal inference. *Political Analysis 28*(2), 186–206.

Oschatz, C., S. Stier, and J. Maier (2021). Twitter in the news: An analysis of embedded tweets in political news coverage. *Digital Journalism online first*.

Petrocik, J. R. (1996). Issue ownership in presidential elections, with a 1980 case study. *American Journal of Political Science 40*(3), 825–850.

Rovny, J. (2015). Riker and rokkan: Remarks on the strategy and structure of party competition. *Party Politics 21*(6), 912–918.

Sagarzazu, I. and H. Klüver (2017). Coalition governments and party competition: Political communication strategies of coalition parties. *Political Science Research and Methods 5*(2), 333–349.

Schattschneider, E. E. (1960). *The Semisovereign People: A Realist's View of Democracy in America*. New York: Holt, Rinehart and Winston.

Schwarzbözl, T., M. Fatke, and S. Hutter (2020). How party–issue linkages vary between election manifestos and media debates. *West European Politics 43*(4), 795–818.

Sciarini, P., A. Tresch, and R. Vliegenthart (2020). Political agenda-setting and -building in small consensus democracies. *The Agenda Setting Journal 4*(1), 109–134.

Seeberg, H. B. (2020). First avoidance, then engagement: Political parties' issue competition in the electoral cycle. *Party Politics online first*.

Selects (2020a). Candidate survey - 2019 [dataset]. distributed by FORS. URL: https://doi.org/10.23662/FORS-DS-1186-1.

Selects (2020b). Panel survey (waves 1–3) – 2019 [dataset]. distributed by FORS. URL: https://doi.org/10.23662/FORS-DS-1184-1.

Selects (2020c). Selects: (social) media analysis - 2019 [dataset]. distributed by FORS. URL: https://doi.org/10.23662/FORS-DS-1187-1.

Thesen, G., C. Green-Pedersen, and P. B. Mortensen (2017). Priming, issue ownership, and party support: The electoral gains of an issue-friendly media agenda. *Political Communication 34*(2), 282–301.

Tresch, A. and A. Feddersen (2019). The (in)stability of voters' perceptions of competence and associative issue ownership: The role of media campaign coverage. *Political Communication 36*(3), 394–411.

Tresch, A., P. Sciarini, and F. Varone (2013). The relationship between media and political agendas: Variations across decision-making phases. *West European Politics 36*(5), 897–918.

Van Aelst, P. and R. Vliegenthart (2014). Studying the Tango: An analysis of parliamentary questions and press coverage in the Netherlands. *Journalism Studies 15*(4), 392–410.

Walgrave, S., S. Soroka, and M. Nuytemans (2008). The mass media's political agenda-setting power: A longitudinal analysis of media, parliament, and government in Belgium (1993 to 2000). *Comparative Political Studies 41*(6), 814–836.

Walgrave, S., A. Tresch, and Lefevere (2015). The conceptualisation and measurement of issue ownership. *West European Politics 38*(4), 778–796.

Walgrave, S. and P. Van Aelst (2006). The contingency of the mass media's political agenda setting power: Toward a preliminary theory. *Journal of Communication 56*(1), 88–109.

Wood, B. D. and J. S. Peake (1998). The dynamics of foreign policy agenda setting. *American Political Science Review 92*(1), 173–184.

Issue Ownership and Agenda Setting in the 2019 Swiss National Elections

Online Appendix

A Descriptive Plots

Figure A1 shows the most competent party for the four policy issues, conditional on the vote choice of respondents. Figure A2 shows the vote shares of parties included our analysis in elections between 1987 and 2019.

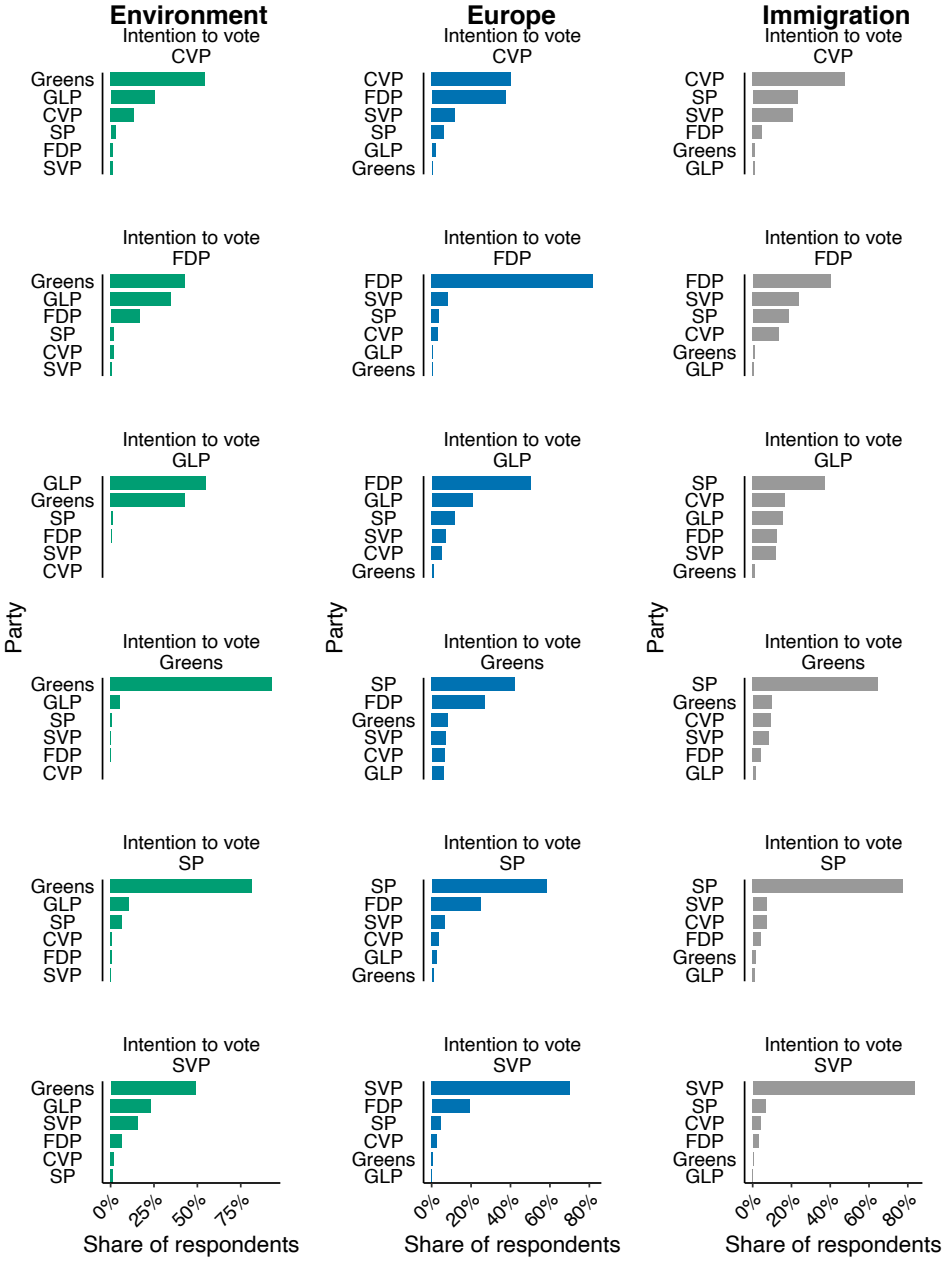

Figure A1: *Most competent party by vote intention.*

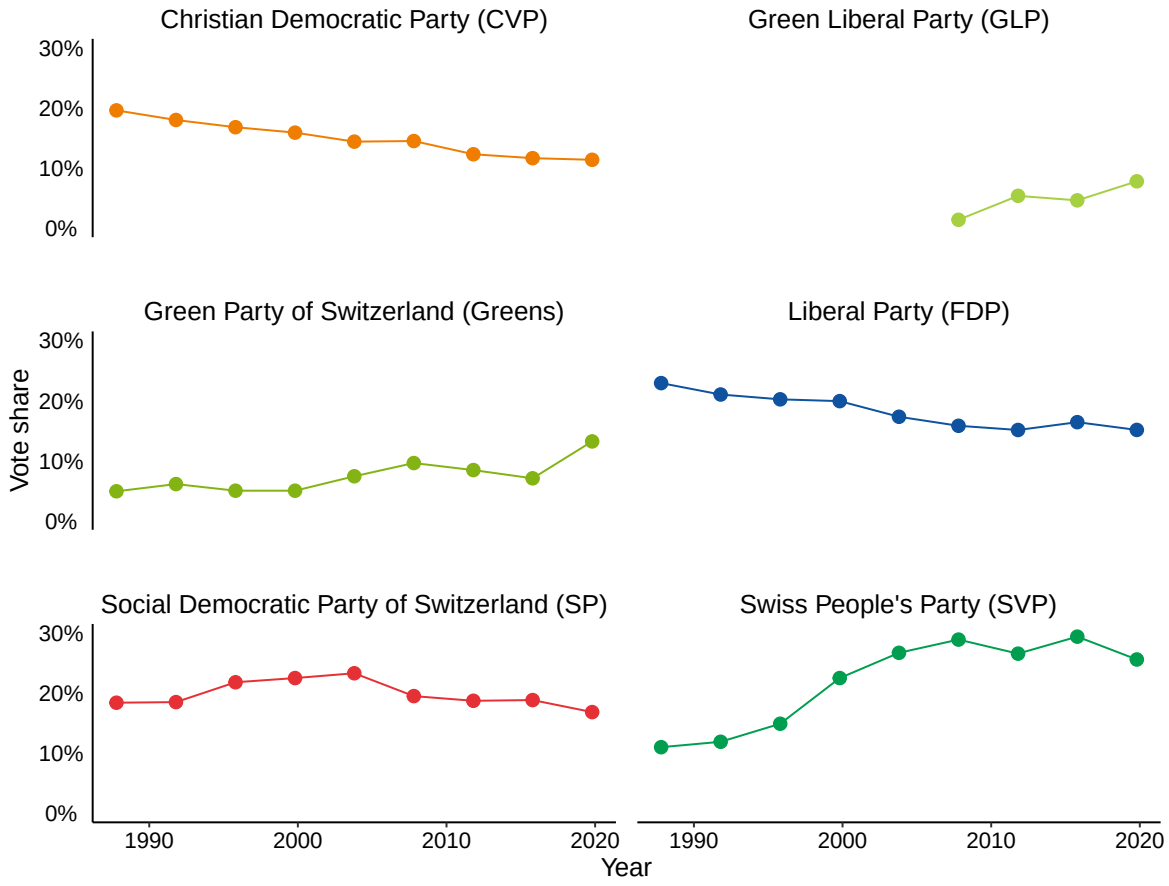

Figure A2: *Vote shares in national elections for parties included in our analysis, 1987–2019.*

B Newspaper Articles by News Outlet

Table A1: Number of Articles per Newspaper.

Newspaper	Total	Daily Average	Daily min	Daily max
20 minuten	65769	226.79	33	366
24 heures	45210	155.9	33	342
Aargauer Zeitung	23576	117.88	8	237
Agefi	9568	54.36	1	79
Anzeiger von Uster	839	3.48	1	7
Appenzeller Zeitung	23425	96.8	68	149
Arcinfo	13868	57.54	27	162
Basellandschaftliche Zeitung / MLZ	10663	69.24	41	121
Basler Zeitung	42057	145.02	29	284
Berner Oberländer	19082	78.85	60	99
Berner Zeitung	46949	161.89	30	249
Bieler Tagblatt	14573	60.22	43	80
Bilanz online	915	4.4	1	10
Blick	11139	46.22	30	95
Bote der Urschweiz	18884	79.34	34	119
Bündner Tagblatt	12938	53.46	23	74
Cash Online	43903	151.39	29	265
Coopzeitung	5798	138.05	36	184
Das Magazin	546	14.37	10	23
Der Bund	36373	125.42	15	196
Der Landbote	17075	70.85	51	98
Die Weltwoche	2314	59.33	49	82
Die Wochenzeitung	1392	37.62	31	51

Continued on the next page...

Table A1: Number of Articles per Newspaper

Newspaper	Total	Daily Average	Daily min	Daily max
Finanz und Wirtschaft	8924	35.7	1	78
Freiburger Nachrichten	14728	61.37	43	93
Furttaler	1400	33.33	17	48
GHI	1065	27.31	1	49
Glattaler	1170	28.54	18	43
Glückspost	3342	83.55	74	95
Handelszeitung	6173	22.45	1	106
Infosperber	840	2.9	1	7
L'Illustré	1833	43.64	24	82
La Broye	2633	67.51	43	96
La Liberté	19462	81.09	55	113
Le Journal du Jura	12898	53.3	36	93
Le Matin	28057	97.42	3	148
Le Matin Dimanche	4385	104.4	76	119
Le Nouvelliste	14036	58.48	34	133
Le Temps	11327	47.2	27	90
Limmattaler Zeitung / MLZ	12731	63.97	46	86
Luzerner Zeitung	25306	104.57	58	290
Medienwoche	119	1.51	1	3
Migros-Magazin	4448	108.49	73	144
Neue Zürcher Zeitung	20262	84.07	54	123
Nidwaldner Zeitung	20382	85.64	60	145
NZZ am Sonntag	4922	117.19	95	147
Obersee Nachrichten	1263	33.24	24	46
Obwaldner Zeitung	20552	85.63	60	145

Continued on the next page...

Table A1: Number of Articles per Newspaper

Newspaper	Total	Daily Average	Daily min	Daily max
Oltner Tagblatt / MLZ	8407	42.25	22	61
Ostschweiz am Sonntag	1872	72	56	86
Rümlanger	1511	35.98	21	53
Schweizer Bauer	6201	75.62	51	118
Schweizer Familie	1168	30.74	24	37
Schweizer Illustrierte	1921	45.74	31	87
Seetaler Bote	2376	59.4	19	129
Solothurner Zeitung / MLZ	15490	77.84	58	102
Sonntagsblick	4024	95.81	80	130
SonntagsZeitung	3837	91.36	74	107
srf.ch	37290	128.59	66	291
St. Galler Tagblatt	24674	101.96	74	147
Südostschweiz	17158	70.9	33	102
swissinfo.ch	3280	11.31	3	23
Tagblatt der Stadt Zürich	2024	48.19	35	63
Tages-Anzeiger	42538	146.68	45	205
Thurgauer Zeitung	28786	118.95	82	185
Toggenburger Tagblatt	22851	94.43	58	144
Tribune de Genève	41844	144.29	27	308
Urner Zeitung	20244	84.7	28	147
Volketswiler	73	1.78	1	3
Walliser Bote	18148	75.62	57	105
watson.ch	14736	50.81	21	96
Werdenberger / Obertoggenburger	16613	68.65	43	123
Willisauer Bote	5721	68.93	26	127

Continued on the next page...

Table A1: Number of Articles per Newspaper

Newspaper	Total	Daily Average	Daily min	Daily max
zentralplus	7253	25.18	2	80
Zentralschweiz am Sonntag	2534	97.46	87	112
Zofinger Tagblatt / MLZ	14471	72.72	55	92
Zuger Zeitung	21988	91.62	58	159
Zürcher Oberländer	16855	69.94	49	106
Zürcher Unterländer	15352	63.7	42	80
Zürichsee-Zeitung	17747	73.64	53	98

C Classification of News Articles and Tweets

To classify news articles, we created training datasets using fine-grained hand-coded news articles from the Année Politique Suisse (APS). We matched the APS coding of the topic with full text from the Schweizer Mediendatenbank (SMD) database using keyword matching from the title, newspaper name, and the publication date. This allowed us to combine the human coding from the APS with clean, machine-readable text from the SMD. Our four topics of interest (environment, gender, Europe, immigration) are defined by a list of APS coding associated with each topic. We assigned the topic on equality between men and women from the APS to our gender issue. The environment issue consists of articles assigned to energy, spatial planning, environmental protection, nature and cultural heritage protection, and protection from natural disasters. The issue of Europe captures articles belonging to the topics of European organizations, the relations with neighboring countries, and the relations with the rest of Europe. Finally, the immigration topic consists of all articles covering citizenship, the freedom of establishment and freedom to provide services, asylum laws, refugees, migration issues, and cross-border commuters.

For the classification of tweets, we create a training set based on tweets about the weekly political TV show SRF Arena. As outlined in the main text, we select the 2,000 most frequent German and English hashtags mentioned in tweets about the show between 1 January 2019 and 1 September 2019. Around 300 hashtags in each language could be matched with one of eight policy areas. We then assign tweets that mention these hashtags to the respective policy area.

The set-up of the ensemble classification is described extensively in the Supporting Information of (Gilardi et al., 2021b). The combination of different algorithms achieved a classification performance that is very satisfactory across all policy areas. The average F1 score for newspaper classification of German texts amounts to 0.78 and 0.86 for French texts (Table A2).

Topic	German			French		
	Precision	Recall	F1	Precision	Recall	F1
Agriculture	0.91	0.80	0.85	0.95	0.85	0.89
Public Health	0.90	0.87	0.88	0.96	0.89	0.92
Education & Culture	0.87	0.80	0.83	0.86	0.86	0.86
Environment & Energy	0.84	0.81	0.83	0.86	0.88	0.87
Public Services & Infrastructure	0.83	0.82	0.82	0.91	0.88	0.89
Economy	0.83	0.83	0.83	0.91	0.88	0.89
Immigration & Asylum	0.81	0.77	0.79	0.85	0.80	0.83
Finance & Taxes	0.81	0.77	0.79	0.85	0.80	0.83
Political System	0.81	0.70	0.75	0.86	0.82	0.84
Social Security & Welfare State	0.79	0.80	0.80	0.87	0.84	0.85
Gender Issues & Discrimination	0.78	0.84	0.81	0.83	0.91	0.87
Law & Order	0.77	0.77	0.77	0.96	0.92	0.94
International Relations	0.75	0.73	0.74	0.82	0.77	0.79
Other Problems	0.75	0.74	0.74	0.87	0.80	0.83
EU & Europe	0.73	0.79	0.76	0.77	0.85	0.81
Labour Market	0.71	0.77	0.74	0.91	0.85	0.88
Regions & National Cohesion	0.71	0.71	0.71	0.83	0.78	0.81
Not Classified	0.49	0.67	0.57	0.76	0.82	0.79
All Topics	0.78	0.77	0.78	0.87	0.85	0.86

Table A2: *Classification Performance for Newspaper Articles*

For the classification of tweets, we selected the same set of models as for the newspaper articles and press releases. The French classifier works less reliably (possibly caused by fewer tweets), with an average F1 score of 0.65, compared to an average F1 score of 0.88 for German tweets. The F1 scores for the four policy areas considers in this paper range from 0.53 to 0.73 (French) and 0.86 to 0.89 (German classifiers). For details on all classes, see Table A3.

Table A4 lists all topics for the classifiers of tweets (left-hand column) and news articles (right-hand column), along with the proportions of tweets/articles falling into each category. 80.4% of newspaper articles and 55% of tweet are classified as non-political.

Given that we rely on a very large, manually annotated dataset by the APS, we neither

Topic	German			French		
	Precision	Recall	F1	Precision	Recall	F1
Not Classified	0.97	0.98	0.98	0.94	0.96	0.95
Public Health	0.95	0.89	0.92	0.54	0.84	0.65
Elections	0.91	0.85	0.88	0.90	0.69	0.78
Finance & Taxes	0.90	0.88	0.89	0.50	0.81	0.62
EU & Europe	0.89	0.89	0.89	0.64	0.85	0.73
Social Security & Welfare State	0.84	0.89	0.87	0.31	0.72	0.43
Environment & Energy	0.84	0.88	0.86	0.46	0.63	0.53
Immigration & Asylum	0.84	0.91	0.87	0.54	0.77	0.64
Gender Issues & Discrimination	0.83	0.91	0.87	0.55	0.68	0.60
Polls	0.68	0.84	0.75	0.47	0.79	0.59
All Topics	0.87	0.89	0.88	0.58	0.77	0.65

Table A3: *Classification Performance for Tweets*

Tweets and Press releases		Newspaper Articles	
	Topic		Topic
		Agriculture	0.6 %
		Economy	1.5 %
		Education & Culture	1.5 %
Elections	24.6 %		
Environment & Energy	6.3 %	Environment & Energy	1.7 %
EU & Europe	4.0 %	EU & Europe	0.8 %
Finance & Taxes	0.6 &	Finance & Taxes	0.6 &
Gender Issues & Discrimination	2.4 %	Gender Issues & Discrimination	0.3 %
Immigration & Asylum	1.1 %	Immigration & Asylum	0.4 %
		International Relations	1.0 %
		Labour Market	0.2 %
		Law & Order	1.1 %
		Political System	1.8 %
Polls	0.3 %		
Public Health	0.3 %	Public Health	1.0 %
		Public Services & Infrastructure	2.1 %
		Regions & National Cohesion	0.7 %
Social Security & Welfare State	1.8 %	Social Security & Welfare State	1.0 %
Not Classified	58.6 %	Not Classified	1.1 %
		Other Problems	0.5 %
		Not Political	82.2 %

Table A4: *Topic proportions for tweets and press releases combined, and newspaper articles (1 January 2019–20 October 2019*

need nor can measure intercoder reliability, for news articles. However, we validated the assignments of tweets to policy areas using classified hashtags. We hand-coded a random sample of 250 tweets into the policy areas and test whether the hashtags in these tweets relates to the same issue. Table A5 lists the percentage of correctly assigned tweets per class. These values are very promising. The correct classification for the four issues analyzed in the main paper range from 80% (EU & Europe) to 100% (Gender Issues & Discrimination).

Topic	Correctly Classified
Elections	96 %
Environment & Energy	96 %
EU & Europe	80 %
Finance & Taxes	100%
Gender Issues & Discrimination	100 %
Immigration & Asylum	88 %
Polls	84 %
Public Health	96 %
Social Security & Welfare State	100 %
Not Classified (Not Political)	96 %

Table A5: *Twitter Classifier Validation Sample for Training Data*

D Estimated VAR Coefficients

	Media	SVP	SP	FDP	CVP	Greens	GLP
Media (l1)	−0.058*	0.091	−0.098	0.067	0.022	−0.092	0.150*
FDP (l1)	−0.007	0.008	−0.007	−0.056*	0.066**	0.047	−0.005
GLP (l1)	−0.011	0.029	−0.007	−0.008	−0.0004	−0.001	−0.069**
Greens (l1)	−0.004	0.061*	−0.017	0.080***	0.023	−0.051	0.020
SP (l1)	−0.006	−0.026	−0.014	0.014	−0.036	0.006	−0.061
SVP (l1)	−0.022**	−0.055*	0.019	−0.007	−0.033	−0.065**	−0.030
CVP (l1)	−0.022*	0.004	0.046	−0.019	−0.045	−0.003	0.039
Media (l2)	−0.138***	−0.088	−0.037	−0.040	−0.054	−0.088	−0.022
FDP (l2)	0.001	0.007	0.016	−0.015	0.054	0.036	−0.008
GLP (l2)	−0.010	0.0002	−0.019	0.013	−0.009	0.018	−0.008
Greens (l2)	0.008	−0.020	0.001	0.022	−0.030	−0.020	0.002
SP (l2)	0.027*	−0.005	0.012	0.002	0.060*	0.058	0.089**
SVP (l2)	0.004	0.024	0.028	0.0003	0.038	0.018	−0.008
CVP (l2)	−0.003	0.001	−0.027	0.015	−0.017	0.059	0.090**
Media (l3)	−0.031	0.139	−0.027	0.011	−0.101	−0.174**	0.102
FDP (l3)	0.004	0.034	−0.034	−0.004	−0.027	−0.040	0.018
GLP (l3)	0.014	0.032	−0.004	−0.021	−0.012	−0.004	−0.011
Greens (l3)	−0.020*	−0.013	−0.027	−0.002	−0.011	−0.032	−0.053*
SP (l3)	0.004	−0.020	0.011	0.063*	0.033	0.014	0.036
SVP (l3)	0.015	−0.040	0.003	0.052**	0.021	0.048	0.018
CVP (l3)	−0.001	0.019	0.056**	−0.001	−0.033	0.041	−0.066*
Media (l4)	0.510***	0.168**	0.021	0.171***	−0.079	0.221***	0.272***
FDP (l4)	0.034***	0.052	−0.017	−0.014	0.017	−0.023	0.024
GLP (l4)	0.023**	0.007	0.045**	−0.045*	0.086***	0.080***	0.076**
Greens (l4)	−0.012	−0.045	0.012	0.023	0.034	0.132***	0.059*
SP (l4)	0.033**	0.032	0.020	−0.018	0.005	−0.030	0.008
SVP (l4)	0.005	0.137***	0.015	0.040	0.077***	0.010	0.015
CVP (l4)	0.011	0.079**	0.027	0.109***	0.124***	0.079**	0.235***
Media (l5)	0.004	−0.001	0.011	−0.091	0.089	0.036	−0.078
FDP (l5)	0.006	−0.026	0.027	−0.071**	0.036	0.010	−0.074*
GLP (l5)	0.010	0.090***	−0.037	0.042*	−0.014	−0.032	0.033
Greens (l5)	−0.010	−0.033	0.053**	−0.028	0.019	0.005	−0.042
SP (l5)	−0.039***	0.053	0.023	0.036	−0.045	−0.012	0.015
SVP (l5)	0.021**	−0.009	−0.016	0.003	0.006	0.007	−0.005
CVP (l5)	−0.005	−0.064*	0.010	0.026	−0.0001	0.012	0.026
Media (l6)	−0.128***	−0.025	−0.098	−0.105	−0.077	−0.028	−0.129
FDP (l6)	−0.010	−0.008	0.032	0.031	−0.019	−0.009	0.008
GLP (l6)	−0.006	0.015	0.064***	0.051**	0.032	0.026	−0.003
Greens (l6)	−0.023**	−0.026	0.029	−0.013	−0.005	0.040	0.028
SP (l6)	0.016	−0.017	−0.073**	0.0001	0.004	−0.065*	0.020
SVP (l6)	−0.007	−0.014	0.059**	−0.015	0.034	−0.007	0.009
CVP (l6)	−0.011	0.104***	0.002	0.029	0.047	−0.029	−0.009
Media (l7)	−0.037	−0.098	−0.108	−0.019	−0.058	0.008	−0.056
FDP (l7)	−0.023*	0.030	−0.022	−0.012	−0.019	−0.010	0.023
GLP (l7)	0.016	0.004	−0.032	−0.025	−0.016	−0.030	−0.003
Greens (l7)	0.006	0.014	0.002	0.006	−0.012	0.016	0.003
SP (l7)	0.004	0.027	0.021	0.048	−0.009	−0.023	0.009
SVP (l7)	−0.005	0.011	0.013	−0.002	−0.013	0.001	0.029
CVP (l7)	−0.012	−0.089**	0.011	−0.026	−0.015	0.018	0.011
Intercept	−3.120***	−1.690*	−4.112***	−2.977***	−3.310***	−2.978***	−0.960
Observations	1,165	1,165	1,165	1,165	1,165	1,165	1,165
R^2	0.550	0.096	0.062	0.084	0.119	0.106	0.139
F Statistic (df = 49; 1115)	27.842***	2.404***	1.496**	2.078***	3.079***	2.710***	3.663***
Note:							*p<0.1; **p<0.05; ***p<0.01

Table A6: Estimated coefficients of the daily VAR model, for every lag-order (lx).

	Equation Media	Equation SVP	Equation SP	Equation FDP	Equation CVP	Equation Greens	Equation GLP
Media (l1)	0.0003	0.245	0.072	0.403*	0.805***	0.538**	0.437*
FDP (l1)	0.016	−0.086	0.176**	−0.097	−0.048	−0.029	−0.122
GLP (l1)	0.043	0.023	−0.027	0.007	−0.097	−0.165**	−0.284***
Greens (l1)	−0.022	0.216**	−0.088	−0.033	0.091	−0.185*	0.013
SP (l1)	−0.058	−0.063	−0.071	0.018	0.137	−0.049	−0.127
SVP (l1)	0.036	−0.086	0.084	0.059	0.049	0.104	0.049
CVP (l1)	−0.171***	−0.180**	−0.058	−0.225**	−0.269***	−0.112	−0.134
Intercept	−3.878***	−2.529***	−2.702***	−2.693***	−0.612	−1.888***	−2.641***
Observations	167	167	167	167	167	167	167
R^2	0.154	0.108	0.064	0.076	0.175	0.127	0.131
Adjusted R^2	0.117	0.068	0.022	0.035	0.139	0.088	0.093
Residual Std. Error (df = 159)	0.931	2.161	1.956	2.293	2.103	2.286	2.619
F Statistic (df = 7; 159)	4.135***	2.741**	1.541	1.867*	4.831***	3.292***	3.433***
Note:							*p<0.1; **p<0.05; ***p<0.01

Table A7: This table shows the coefficients of the weekly VAR Model for each single lag-order (lx) used in the model.

E Responsiveness of Parties to Newspapers

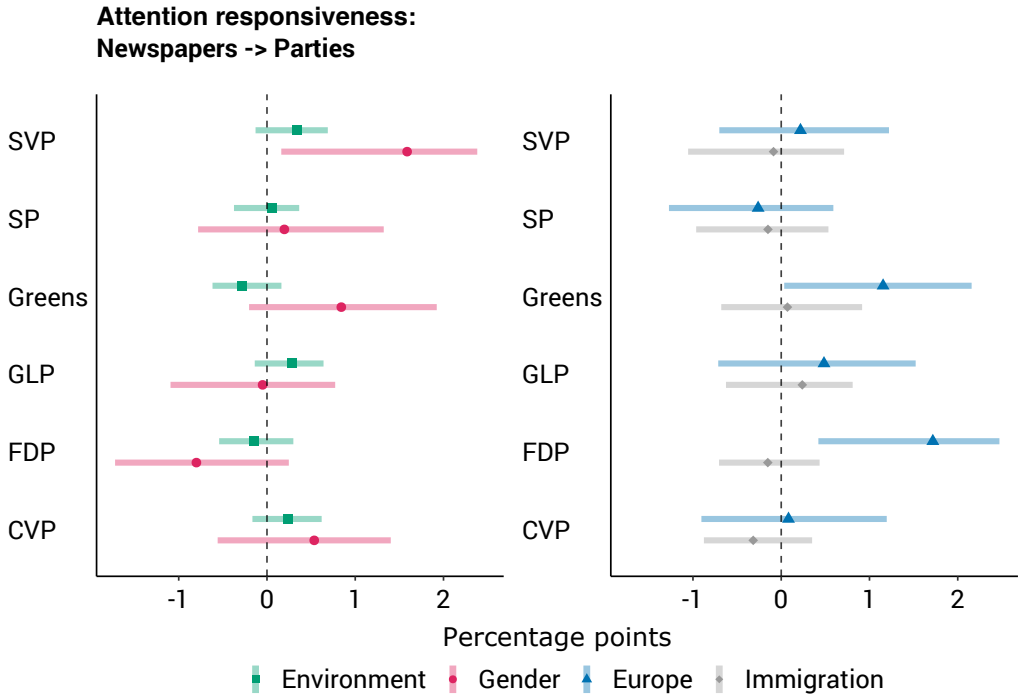

Figure A1: *Attention responsiveness of parties to newspapers. Bars denote 95% confidence intervals.*

F Data Sparsity

Working with sparse daily data, as we do, could potentially be an issue for the analysis. Figure A2 shows that the distribution issue attention at the daily level, while not very dense, it is not critically sparse. The key point is that the density of the data is correlated between the different actors, which facilitates the analysis. Overall, sparsity is 83.6% over all dependent variables and actors. However, when the data is sparse for a group, the actual data points are mostly centered around a few brief time intervals. This introduces variation over time which is all the model needs to work properly. A problematic scenario would be if the data is very sparse in combination with little variation over time for many groups. Fortunately, we are not in this scenario.

To test if the results depend on the choice to work with daily or weekly data, we rerun the analysis after aggregating the data to the level of weeks, rather than days. Figure A3 displays the responsiveness of newspapers to parties with a one week lag (weeks start on Mondays), thus replicating Figure 4 with weekly aggregation. The results are very similar.

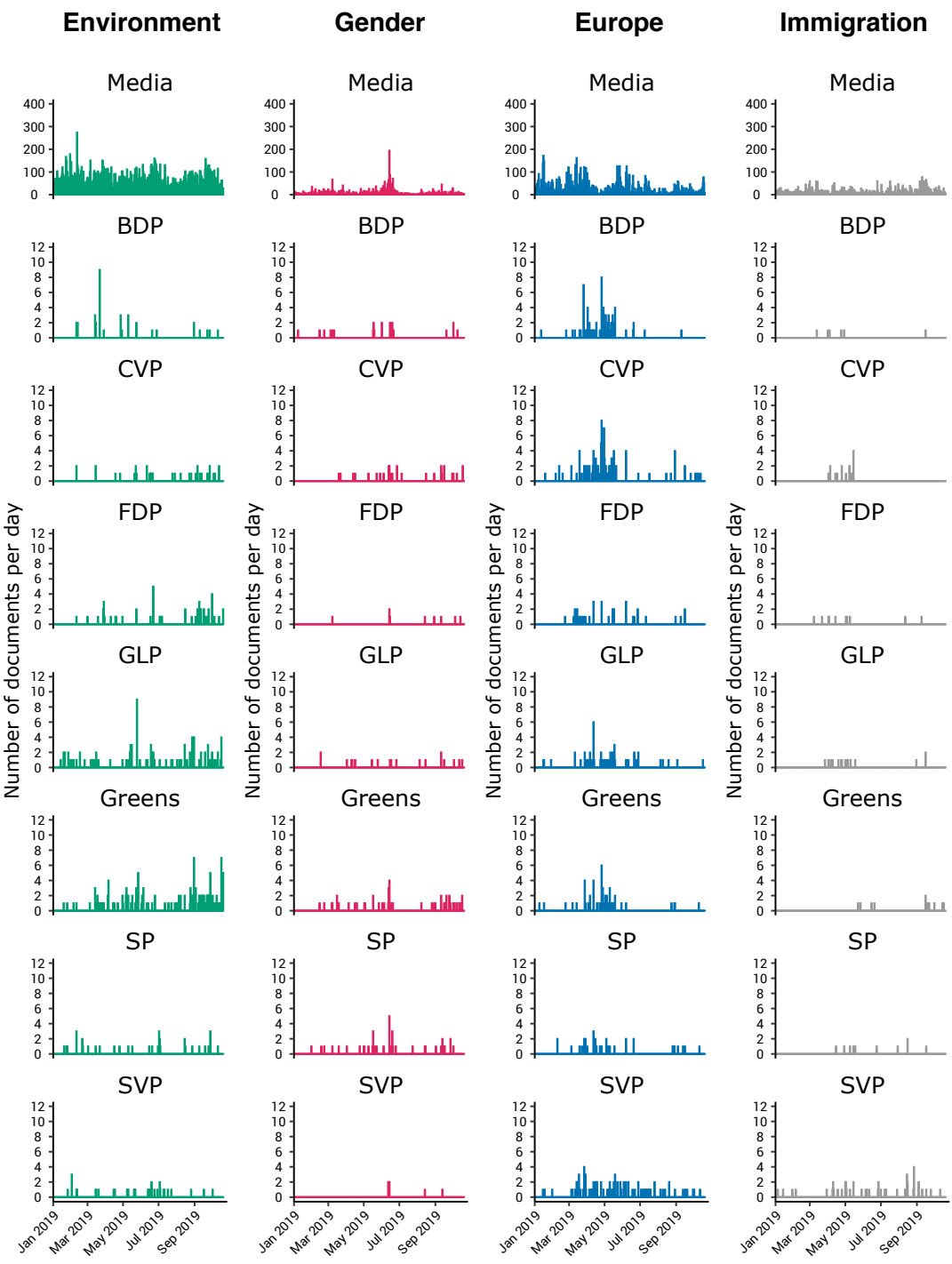

Figure A2: *Distribution of the four topics over time for each single party. The numbers show the sum of tweets and press releases by day.*

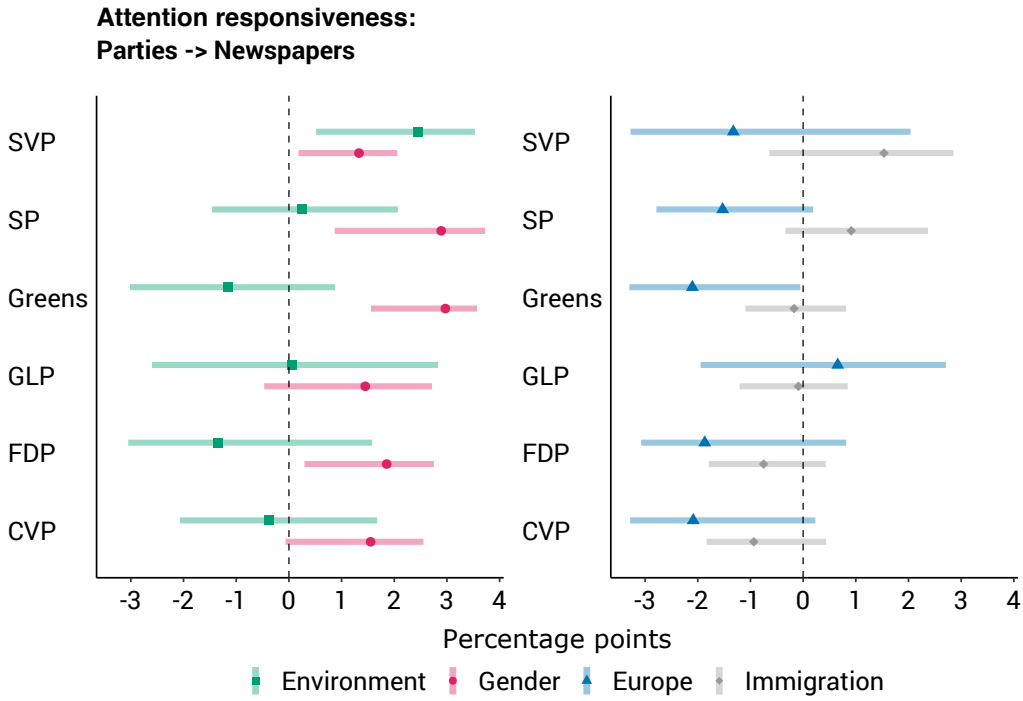

Figure A3: *Agenda setting: weekly attention responsiveness of newspapers to parties. Bars denote 95% confidence intervals.*