Issue Yield and Party Communication on Twitter: Empirical Assessment of a Novel Research Design

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ABSTRACT

The issue yield model (De Sio/Weber in APSR 2014) introduces a theory of the heresthetic use of policy issues as strategic resources in multidimensional party competition. In this paper we introduce a novel research design that features: a) a large number of policy issues, compared to secondary analysis of existing survey data; b) the use of Twitter content for coding parties’ issue emphasis; c) an appropriate time sequence in the measurement of issue yield configurations and issue emphasis. We also introduce new hypotheses about issue yield dynamics in multi-party systems and perform an empirical application on Italy during the campaign for the 2014 European Parliament elections. Empirical results show first the soundness of the research design, including a very high reliability of the manual coding scheme of Twitter content. Secondly, the issue yield model is fully confirmed on Twitter data: political parties shape their Twitter communication according to the risk/opportunity configuration offered by different issues, as it emerges from public opinion data captured before the campaign. Moreover, our additional hypotheses about multi-party competition are also confirmed, showing how parties take also into account the issue yield configurations of other parties before exploiting specific issues.

1. Introduction

According to a growing body of literature, the dynamics and strategies of party competition have seen a gradual but steady change in recent decades. A number of studies have shown the increasing importance of the political issues of the day for voting behaviour, on both sides of the Atlantic (Page and Brody 1972; Pomper 1972; Miller et al. 1976; Nie, Verba, and Petrocik 1976; Carmines and Stimson 1980; Franklin 1985; Franklin et al. 1992; Alvarez and Nagler 1995, 1998;
Borre 2001; Heath, Jowell, and Curtice 2001; Aardal and van Wijnen 2005); at the same time, recent studies have clearly documented how parties have reacted to such changes, by increasingly restructuralizing their platforms, dedicating less and less space to issues related to the main left-right dimension, and more and more space to a wider variety of issues unrelated to traditional dimensions of party competition (Green-Pedersen 2007). These dynamics are also more and more interesting, as recent elections have shown increasing success of new, non-mainstream parties often focusing on a very narrow range of specific issues.

What has been missing so far, however, is a comprehensive and clear theoretical model of what issues should be emphasized by a party in a given campaign. While studies have shown that parties are in part responsive to a general party system agenda (McCombs and Shaw 1972; Nannestad and Paldam 1997), and in part focusing on a restricted set of issues that they are said to own (Petrocik 1996), no perspective had systematically (and empirically) investigated the process of strategic selection – performed by parties – of issues to be emphasized, e.g. according to heresthetics concerns such as those theorized by William Riker (1986).

Recently, a solution to fill this gap has been introduced through the issue yield model (De Sio 2010; De Sio and Weber 2014). This model posits that parties select issues to strategically emphasize in a campaign based on two considerations: a) whether their position on the issue is widely shared in the general electorate; b) whether such position is widely (perhaps almost unanimously) shared within their existing voters’ base, so as to avoid internal divisions. If both conditions are met, that issue will allow the party to successfully reach out to a larger voter base.

The model then develops an empirical strategy, by allowing to compute – from relatively simple survey questions – a specific issue yield index expressing the electoral potential offered by each issue to each party. The main testable implication of the model is that parties will give more emphasis to those issues that present a higher yield.

The model has then been tested on comparative data on EU party systems and on the U.S.: it has performed well in predicting: a) party strategy measured through Manifesto emphasis (De Sio and Weber 2014; Weber and De Sio 2016); b) the subjectively perceived importance of different issues at the individual level (De Sio 2010), as well as the weight of different issues for individual party preference (De Sio and Franklin 2012); c) the party competition dynamics on the EU integration issue in the post-financial crisis period (De Sio, Franklin, and Weber 2016). However, all applications so far have been conducted as secondary analyses, on datasets where the data collection process was not designed with issue yield theory in mind. This raises several concerns, related to: a) the number of issues covered; b) the adequacy of Manifesto data for testing the
model’s hypotheses; c) except for some studies (Weber and De Sio 2016), the appropriateness of the time sequence in the collection of data for constructing the independent and dependent variables.

In this paper we present – and apply empirically – a novel research design aimed at addressing such concerns, thus allowing a more rigorous testing of issue yield theory. Such design features – among others – the following components: a) a pre-electoral CAWI survey, featuring a questionnaire with a very large number of issues, aimed at capturing the issue yield configurations for each party before the campaign; b) the collection and coding of Twitter content for each party during the campaign (according to a coding scheme covering exactly the same issues included in the CAWI survey) in order to properly capture the strategic campaign choices by political parties. As a pilot study, we fielded such design at the occasion of the campaign for the European Parliament elections of 2014 in Italy.

The paper is structured as follows. After this introductory section, Section 2 briefly presents the issue yield model, with a specific theoretical development of the model in a multi-party context, while Section 3 discusses specific aspects concerning the use of Twitter data. Section 4 then presents the empirical strategy, and the methodological choices employed in the paper. Section 5 is finally dedicated to the presentation of empirical findings, followed by a concluding section.

2. Issue Yield as a model of strategic party communication

The dynamics that govern the selection by political parties of the issues that make up their agendas (and/or that they will employ in their electoral campaigns) lie at the core of the process of representation, and they present a direct relationship to party competition. This is already visible in early models of party competition (Downs 1957) which effectively show how the fundamental interaction between parties and voters that governs electoral competition takes place through a shared language (cf. Fuchs and Klingemann 1989) structured around policy issues. It is on such issues that voters assess party platforms, and it is on such issues that parties adapt themselves to fit the distribution of opinions among voters. According to Downs, such issue language is simplified in terms of a single dimension of conflict, which – under additional assumptions – allows the emergence of a Nash equilibrium, implicitly pushing parties towards the position of the median voter under normal political circumstances2. The virtue of such median position for party

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2 During time of harsh economic distress and growing populisms is probably worth reminding that Downs’ predictions in practice do not point univocally towards the median solution: “If voters’ preferences are distributed so that voters are massed bimodally near the extremes, the parties will remain poles apart in ideology”. Downs (1957: 118).
competition is that it effectively responds to the fundamental goal of parties of expanding their voter base, while retaining as possible their extant support, thus winning elections.

However, such conception has been also radically challenged, with the most notable example of the *valence politics* framework (Stokes 1963). According to Stokes, the same goal – expanding the electoral base while not jeopardizing extant support – can be reached by parties through very different means. Instead of focusing on *divisive* issues (issues where a distribution of preferences exists, and where parties employ a *positional* strategy), a party could selectively focus on few widely shared, non-divisive goals (historical examples are related to national security, corruption and economic prosperity), where it can claim superior competence and credibility.

The two models differ in a variety of aspects. However, from our point of view there is one aspect (overlooked by most literature) that is mostly distinctive between the two approaches, and which highlights the importance of political agendas. It is clear in Stokes’ contribution that the issue agenda is not considered fixed, and is instead considered as a *strategic resource* which parties have an interest in *dynamically* manipulating to their convenience.\(^3\)

Such intuition was not followed by a systematic theoretical development before the introduction of the idea of *heresthetics* by Riker (1986).\(^4\) According to Riker’s intuition, parties in an unfavourable position on the main dimension of conflict (often, the left-right dimension) will concentrate their emphasis and attempt to turn the campaign debate on other issues where they enjoy a more favorable position.

The introduction of this approach raises then a fundamental research question: what are such “most favourable issues” for each party? Can a general model be proposed, that captures the incentives and disincentives associated to each issue, from the point of view of a political party?

A systematic attempt to answer this question has been proposed in the recently introduced *issue yield* model (De Sio and Weber 2014). The model addresses such question in two steps: 1) it theoretically identifies some reasonable criteria that parties can use to assess the electoral risks and opportunities associated with each issue for electoral competition; 2) it develops a synthetic index

\(^3\) In the famous example reported by Stokes (1963), Eisenhower in 1952 decided to campaign on “Korea, Communism, and Corruption” – where he could claim far superior credibility – while carefully avoiding a more classic spatial strategy on the left-right dimension (as would be suggested by Downsian theory). Given the overwhelming support of Americans for New Deal policies, this latter strategy would have likely resulted in defeat.

\(^4\) Even the *saliency theory* approach (Budge and Farlie 1983), which highlighted the *selective issue emphasis* adopted by political parties in their manifestos, saw such emphasis mostly as a communication tool for presenting the *ideological* stances of the party in terms of general conflict dimensions, rather than with a genuine focus on issue politics (Budge 2015). *Issue ownership* approaches (Petrocik 1996) saw a clearer development in the direction of a strategic view of issue politics.
based on a combination of such criteria. In short, optimal issues meet two criteria: namely, that the party’s position on the issue is: a) as little internally divisive as possible, so as to minimize the risk of compromising the party’s standing voter support; 2) widely supported in the general electorate (well beyond the current level of party support), so as to offer a significant potential for electoral expansion. Finally, the model defines as bridge issues those issues that combine both characteristics (as they in fact represent a “bridge” allowing the party to reach out to a new, larger voter base) and predicts that such issues will receive the highest emphasis in party campaigns.

To help quickly grasping the key mechanisms of the model, we present in Table 1 a summarization of the electoral opportunities and risks presented by different issues to the four major Italian parties, according to an original CAWI survey administered in Spring 2014, during the European parliament election campaign (see below). For each policy statement, we report: a) the percentage of agreement among all respondents; b) the percentage of agreement among voters of each of the parties; c) values of the issue yield index for each party (separately for the pro and anti side) offered by each issue.

As clear from the table, values of the issue yield index offer a summarization of a positive combination of high support in general and very high support within the party. This can be effectively exemplified by contrasting the issue yield configurations for the center-left, mainstream Pd and for the right-wing, populist Northern League (Ln). Issues with the highest yield for the Pd are (ranked by decreasing yield): 1) support for sustainable development (0.89); 2) support for a budget reduction for F-35 fighter-bombers (0.88); 3) support for a reduction of income inequality (0.85) and 4) for EU integration (0.85); 5) hostility towards allowing macro-regions to secede from Italy (0.84 for the anti position, in the penultimate row of the table). As an example, the high value of the index for sustainable development (0.89) reflects the high support in the general electorate

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5 In a substantial departure from the Downsian model, the issue yield model assumes that parties will mostly attempt to not change their policy positions, as this often represents a costly and difficult strategy. The model instead posits that a party disadvantaged on some issue will downplay its importance and turn to other issues where it enjoys a more favorable position.

6 Party positions are operationalized in dichotomous form (for or against a given policy).

7 Identified through vote intention.

8 The issue yield index is calculated according to a non-linear expression (see De Sio and Weber 2014). Let p be the percentage of respondents supporting a party; i the percentage approving a policy statement, f the percentage jointly supporting the party and approving the statement; then the issue yield index is expressed

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yield = \frac{f - ip}{p(1 - p)} + \frac{i - p}{1 - p}.
\]
(87 %) and an even higher support within the party (93 %). As a result, such issue does not present risks of internal division, and offers large opportunities for potential electoral expansion.

Similar considerations apply for the Northern League. Its configuration shows, as top issues: 1) support for a tougher attitude against India in the Enrica Lexie case (0.98); 2) support for more restrictive laws against immigration (0.95); 3) support for privileging Italians in welfare access (0.93); 4) support for the legalization of prostitution (0.82) and 5) for a budget reduction for F-35 fighter-bombers (0.82). In the case of the marò issue, the value of 0.98 reflects the high support in the general electorate (80 %) and the almost unanimous support within the party (98 %). In general, it is clear that lower-yield issues, for each party, are associated with lower levels of general support and higher risks of internal divisions.

When tested on comparative data on EU party systems, issue yield performs well as a predictor of party strategy measured through Manifesto emphasis (De Sio and Weber 2014); it significantly affects the subjectively perceived importance of different issues for individual party preference (De Sio and Franklin 2012); it effectively captures the party competition dynamics on EU integration issue in the post-financial crisis period (De Sio, Franklin and Weber 2015).

The aforementioned tests also took into account some specific dynamics related to the particular characteristics of competition in a multiparty system. This necessity is simply understood when comparing the empirical patterns visible in Table 1 with the typical situation of a two-party

<table>
<thead>
<tr>
<th>Table 1 – Risks and opportunities for party competition related to several policy issues, according to the issue yield model (PD, M5S, FI and LN in 2014; source: CISE ISLE 2014 Study)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Policy</strong></td>
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<tr>
<td>Reduce spending for F-35 fighters</td>
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<tr>
<td>Change towards a sustainable model of development</td>
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<tr>
<td>Reduce income inequality</td>
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<tr>
<td>Tougher attitude with India on the Enrica Lexie case</td>
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<tr>
<td>More restrictive immigration laws</td>
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<tr>
<td>Reduce taxes before fighting tax evasion</td>
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<tr>
<td>Italian citizenship should be given to children born in Italy</td>
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<tr>
<td>Foreign companies selling services via the Internet should be taxed here</td>
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<tr>
<td>EU integration is a good thing</td>
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<td>Welfare chauvinism</td>
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<td>Heterologous inssimulation should be allowed</td>
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<td>Prostitution should be legalized</td>
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<td>A universal unemployment check should be introduced</td>
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<td>Introduce civil partnerships, even for gay couples</td>
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<td>Reduce the power of the judiciary</td>
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<td>Companies should have more freedom to hire and fire</td>
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<td>Founding NCD, Alfano betrayed Berlusconi</td>
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<tr>
<td>To fight tax evasion, cash transaction limits should be lowered</td>
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<tr>
<td>Soft drugs should be legalised</td>
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<td>Renzi's institutional reforms reduce democratic participation</td>
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<tr>
<td>Italy should leave the Euro</td>
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<tr>
<td>Italy should be split into macro-regions, with right to recession</td>
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<tr>
<td>Abortion should be made more difficult</td>
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</tbody>
</table>
system. In a two-party system, it is most likely that an issue with a high yield for a party will present a much lower yield for another party: as a result, the two parties will mostly choose different issues, as they will clearly “own” different sets of issues. In a multiparty system, the situation becomes more complex: in particular, it is likely that more than one party will have a high yield on the same issue. In principle, we would expect both parties to try to exploit the issue; in practice, however, it is very likely that both parties will carefully assess whether to use the issue or not, to avoid the risk that bringing the issue to the attention of voters might in the end favor the other party.

This problem cannot be directly addressed by the issue yield index alone, as it only takes into account one party at a time. In order to account for multiparty dynamics, we suggest to introduce two additional aspects, that concern respectively: a) the extent of issue yield differentiation among parties within the same issue; b) the relative position of a party – in terms of yield on a specific issue – vis-à-vis other parties.

As for the first aspect, it should be clear enough by comparing – in Table 1 – issue yield values for the *ius soli* issue (granting Italian citizenship to all babies born on Italian soil). The issue yield configuration appears clearly differentiated on this issue, ranging from a low 0.34 for Ln to a very high 0.82 for the Pd, and with clearly separated intermediate values of 0.54 for Fi and 0.67 for M5S. In such a scenario, we would expect issue emphasis to closely reflect issue yield, with the Pd likely emphasizing the issue and other parties presenting lower levels of emphasis. On the contrary, consider an issue such as heterologous insemination. Here values of yield for all parties are in a much narrower range (between 0.57 and 0.70): as a result, there is a high risk that – if one party attempts to move the public debate towards this issue – this effort might either raise an inconclusive discussion among different parties, none of which enjoys some particularly beneficial position (not even the one raising the issue), or become counterproductive increasing the perceived importance of an issue on which many—or at least few—other parties could potentially intercept the support with more convincing arguments during the campaign (given that the baseline levels are close). In this case, we expect parties to avoid wasting campaign energies on such unproductive or potentially damaging issues, leading to a lower importance of the logic of issue yield. Conversely, and in general terms, the higher the issue yield differentiation among parties on a given issue, the higher the impact of issue yield.

Regarding the second aspect, we argue that it is not enough for a party to have a relatively high yield on some issue, and that such issue presents yields across parties that are differentiated enough. A party also has to take into account its relative position vis-à-vis other parties. Having a
relatively high yield might still be compatible with the presence of another party with an even higher yield. In this scenario, once again the issue yield mechanism might be dampened, as the party would avoid emphasizing the issue, given that such emphasis might result in an electoral benefit for another party. As a result, we argue that – for a party – the issue yield mechanism will act in full force only for such issues where the party enjoys a favorable relative position (i.e. with the highest ranking yield on that issue). So, the higher the relative position of a party on an issue, the higher the impact of issue yield.

We finally express the aforementioned considerations in terms of basic research questions that directly translate into empirical hypotheses. We anticipate here that (as discusses in the next section) the case study concerns the campaign for the European Parliament 2014 election in Italy, and that the strategic emphasis placed by parties on issues will be measured through a coding of Twitter content. In light of these choices, our research questions translate into the following hypotheses:

H1: issue yield (measured pre-campaign) predicts Twitter emphasis in the campaign;
H2: issue yield presents a positive interaction with issue yield differentiation on a given issue;
H3: issue yield presents a positive interaction with the party’s relative position (in terms of issue yield) on a given issue.

3. Empirical testing of the issue yield model: a novel research design

As anticipated in the Introduction, there are already a number of contributions that have empirically tested the theoretical predictions of the issue yield model. All such contributions have so far employed secondary analysis, thus relying on existing datasets whose data collection process was not designed with issue yield theory in mind. As a result, we observe that a newly conceived research design aimed at testing issue yield theory might improve the data collection process in the following directions:

a) Scope and number of issues. So far, applications of the issue yield model have been relying, for calculating issue yield configurations, on the European Election Study Voter Component of 2009 (De Sio and Franklin 2012; De Sio and Weber 2014) and 2014 (De Sio, Franklin, and Weber 2016), on the U.S. Comparative Congressional Election Study for various years (Weber and De Sio 2016) and on data from the EU Profiler 2009 voting advice application (De Sio 2010). Except for the last analysis (which included 30 issues, but on a non-representative sample), other surveys included a relatively small number of policy issue statements (12 for the
EES 2009, 8 for the EES 2014), mostly aimed at capturing general orientations on broader value dimensions (economic, cultural, EU integration) than current and salient campaign issues. As a result, an original research design should aim at including a larger number of policy issues, ideally covering most of the questions that are salient in the political debate in a given country (as they would become the strategic resources employed by parties during the campaign).

b) Use of Manifesto data for measuring party issue emphasis. Of all the aforementioned applications, those working at the party level have operationalized the dependent variable (party’s emphasis on different issues) through Manifesto data. This poses at least two concerns. First and foremost, in general party manifestos are recognized to not actually represent the strategic communication employed by parties for electoral purposes. Not only manifestos inevitably reflect the compromises related to intra-party conflicts (and the need to accommodate the requests of party ideologists), but – most importantly – they inherently run in a logic that is much different compared to the issue yield model. While the model posits that parties will focus on a relatively small number of strategic issues, party manifestos are intrinsically aimed at covering a broad number of issues on most policy domains, in order to supply members and militants with the official position of the party on any potential issue that might emerge. This logic is clearly far from being aimed at electoral strategy, as described by the issue yield model. Secondly, Manifesto data introduce an additional difficulty for testing the issue yield model. Issue yield configurations (the main predictor) are measured by assessing public opinion on specific policy statements (in short, the combination of support at large and support within each party), while issue emphasis (the outcome) is measured as the proportion of a party manifesto that is devoted to a particular content category. Such categories, obviously, have been designed in general, and with no specific connection to actual survey statements. As a result, a stage of conceptual matching is required, assessing which survey statements can be associated with which Manifesto category. Such process of course yields matchings of variable quality; while some statements very closely match a Manifesto category, some often do not offer a very close match.

c) Time sequence of data collection. Except for one study, issue yield studies so far have computed the main predictor (issue yield) from post-electoral surveys, while computing the outcome (issue emphasis) from pre-electoral manifestos. Such studies have properly acknowledged this problem, preventing any causal interpretation, and arguing that in fact both measures were

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While the CCES included a larger number of issues, albeit in a variety of response formats.
capturing the effect of latent issue yield configurations; however, a proper design should attempt at measuring the predictor and the outcome by collecting data with an appropriate time sequence.\textsuperscript{10}

In light of these concerns, we developed a novel research design, which we immediately tested as a pilot study (based on an original data collection) at the occasion of the 2014 EP elections in Italy. Among others, the main distinguishing feature of the design is in the selection of Twitter content to capture the strategic communication choices performed by political parties.

Among the possible alternatives for capturing the strategic issue choices performed by political parties at campaign time, social media represent nowadays an interesting possibility. In a way, they represent perhaps the most widely accessible form of party communication, and party leaders are becoming increasingly aware of their power.

There are good reasons why party communication on Twitter might clearly show strategic considerations, in a similar way to Manifesto data: given the much higher temporal adaptability and interaction potential of Twitter content (compared to party manifestos) for shaping the actual electoral campaign (Graham et al. 2013), we expect a party to strategically use Twitter to emphasize the issues presenting the highest electoral potential.

This is not only due to a direct contact with party communication on the social media by voters themselves, but – and perhaps most importantly – to the systematic use that journalists (and other politicians) make of the official Twitter (or Facebook) accounts of political parties and leaders to learn about their political messages, or for directly broadcasting politicians’ tweets to a much wider and more traditional audience. As a consequence, Twitter is also increasingly attracting the interest of political behavior’s scholars (Barberá 2015; Dubois and Gaffney 2014; Vaccari et al. 2013). In Italy, Twitter has enormously enlarged its users’ pool in the last few years, passing from the 1.4 million Italian users in December 2010 to the 8.9 million in December 2014. As a result, all Italian political parties and party leaders make a systematic use of Facebook and Twitter accounts at campaign time. Therefore we decided to use political parties’ Twitter accounts to capture their strategic political communication, according to what we might identify as a press-release assumption: regardless of how many followers (and of which type) a party’s Twitter account might have, and regardless of how unrepresentative and elitarian the Twitter audience might be in a given country, we assume that parties will use Twitter anyway to communicate their desired messages to the media, just like in a press release. As a result, we deem party communication on Twitter a valid indicator of their actual strategic priorities.

\textsuperscript{10} See e.g. Weber and De Sio (2016).
Indeed, this identifies party communication on Twitter as a privileged field to test the predictions of issue yield theory: while party manifestos represent an excellent source to measure the underlying ideological stances, they may not fully capture short-term strategic emphases that characterize modern electoral campaigns. Also, while manifestos often contain compromise choices related e.g. to different groups within a party, Twitter can be expected to effectively capture the genuinely strategic component of party communication (Nooy and Kleinnijenhuis 2013; Shaw 2006).

As a result, the newly proposed research design – aimed at addressing the above concerns – features three stages, which we implemented in our specific case study.

First of all, we designed the questionnaire section concerning policy issues, by identifying potentially relevant issues in the 2014 EP campaign in Italy. Without constraints on the number of issues, and with the purpose of covering all the issues that might potentially be employed during the coming campaign (thus addressing the above concern (a)), we finally identified 23 positional statements, ranging from economic issues (tax evasion, income inequality, unemployment benefits) to social issues (civil partnerships, abortion) to issues specifically related to the European Union (EU integration, Euro). Actual question wordings for all issues can be found in Table A1 in the Appendix.\footnote{11}

Second, we fielded the questionnaire through pre-electoral CAWI (Computer Assisted Web Interviewing) interviews (N = 1610).\footnote{12} The data collected allowed us to compute the main predictor, the issue yield of each positional issue for each party (8 parties and 23 issues for a total of 184 observations\footnote{13}), at the correct point in time, i.e. based on \textit{pre-electoral} data. As previously stated, such yield is hypothesized to predict Twitter emphasis on the same issues.

\footnote{11} Furthermore, we have also selected 17 valence issues (see Table A1 in the Appendix for the specific question wording) which have been fielded, but then excluded from the analysis since they would have required a separate and explicit theoretical model. We do not consider them here because this issue yield analysis is only dedicated to positional issues.\footnote{12} We designed the ISLE (Issues and Leaders) 2014 survey at CISE (Italian Center for Electoral Studies), and then fielded it through CAWI, between April 29 and May 9, 2016, on a sample of the adult population resident in Italy. The survey included respondent positions on 23 positional issues, party credibility assessment on 17 issues, and party leader scores on four key leadership traits. Respondents were extracted – according to a quota sampling by sex, age and geographical area – from a Web respondent community. Results reported here were then weighted by stratification variables, level of education and past party vote recall. The post-electoral wave was fielded between 4 and 11 June, 2016 and included only questions about vote choice plus a subjective assessment of the importance of different issue areas. The response rate of the pre-electoral wave is 25.9\%, while the post-electoral wave has 68.6\%.

\footnote{13} For the sake of precision, note that the total number of observations for which the issue yield is computed is 368, since each issue has two sides (e.g., parties can campaign for the exit from the Euro or against it). The final number of observations is 184 (368/2) because only one side is chosen. We assumed that parties should choose the side with the highest yield, where they are expected to campaign.
Third, we have collected all Twitter communication made by the official accounts of the main Italian parties and their leaders\textsuperscript{14} during a campaign window of 21 days (from April 14 and May 4, between 6 and 3 weeks before the vote). All tweets have then been manually coded by two independent coders. Coders were required to assign each tweet to one of the 40 aforementioned issues (23 positional issues + 17 valence issues), or to classify them as dedicated to non-issue content. As reported in Table 3, the Cohen’s Kappa statistic, measuring inter-rater agreement, gives a value of 0.80.\textsuperscript{15} After controlling for inter-rater agreement, one of the two coders has been preferred for the higher number of tweets coded. Such classification of tweets has allowed the final computation of the outcome, i.e. issue emphasis by parties in Twitter communication.

\begin{table}[h]
\centering
\begin{tabular}{cccccc}
\hline
Agreement & Expected agreement & Kappa & Standard error & \(Z\) & P-value \\
\hline
81.75\% & 7.99\% & 0.80 & 0.01 & 73.79 & 0.0000 \\
\hline
\end{tabular}
\caption{Results of the classification of tweets, by two independent coders.}
\end{table}

The adoption of Twitter content rather than Manifesto content, in our view, goes in the direction of addressing the above concern b). On the one hand, because of the more strategic characterization of Twitter communication we argued previously; on the other hand – and perhaps most importantly – because the manual coding did not require a \textit{conceptual matching} stage: the guide for coders was not represented by general category coding guidelines to be then linked to survey statements (such as when using Manifesto data) but by the survey statements themselves. Finally, the measurement of issue yield configurations in pre-electoral data goes in the direction of addressing the above concern c), which was related to the time sequence of the data collection. The data collection process we achieved in fact is not a full implementation of the research design, as the data collection timeframes of both the predictor and the outcome are still in fact coincident, and not clearly sequenced as required by the design; however, this already represents a substantial improvement compared to previous applications, where in fact data for the outcome was collected \textit{before} the data for the predictor.\textsuperscript{16}

\textsuperscript{14} Specifically, we have coded tweets coming from the official accounts of the following parties: Democratic Party (PD), Five Star Movement (M5S), Forza Italia (FI), Northern League (LN), Brothers of Italy (FdI), New Center-right (NCD), Other Europe with Tsipras (Tsipras) and European Choice (SE); and from the official accounts of the following party leaders: Matteo Renzi, Beppe Grillo, Silvio Berlusconi, Giorgia Meloni, Angelino Alfano, Nichi Vendola e Andrea Romano.

\textsuperscript{15} Fleiss’s guidelines to interpret the meaning of the kappa statistic (1981) consider values over 0.75 as excellent.

\textsuperscript{16} Due to technical reasons, the Twitter data collection and coding process was limited to tweets before May 5, 2014.
4. Modeling choices and statistical issues

In addition to the general characteristics of the research design, there are few additional technical considerations related to the operationalization of specific indicators, as well as the choice of an appropriate statistical method for model testing.

4.1 Modeling multiparty competition

As anticipated in the theoretical section, interparty influences on political communication can be described in terms of the issue yield differentiation on a given issue, and of the relative position of a party – in terms of issue yield – on a given issue. In empirical terms, we operationalize issue yield differentiation by looking – for each issue – at the variation of issue yield across parties. Thus, we compute a measure of the issue yield range between the maximum and the minimum values registered for different political parties, for each single issue that is being considered. Figure A1 in the Appendix presents the distribution of this issue-level indicator. The relative position of political parties in terms of issue yield is finally operationalized by rescaling – within each issue, for all parties – the yield to vary between 0 and 1, where 0 is assigned to the minimum observed level of issue yield on that specific issue, 1 to the maximum observed value, and all intermediate values rescaled accordingly to intermediate values. As a result, the party with the highest yield on an issue will score 1 on this variable, the party with the lowest yield will score 0, and other parties will score intermediate values. This effectively captures the relative position of the party on the issue.23

Therefore, we will model the emphasis assigned by political parties to issues as depending on the issue yields, our main predictor, as well as by its interaction with the two aforementioned aspects of multiparty competition. In particular, we expect both the interaction coefficients between the multiparty competition variables and the yield variable to be positive: on the one hand, we expect political parties who are higher in the ranking of issue yields to display a disproportionately stronger effect of issue yields on issue emphasis. In fact, having the greatest yield on a certain issue, implies that the party either owns the issue or that is the closest one to its ownership, and thus the return for emphasizing it are higher than for the other parties.

On the other hand, a greater range between the minimal and maximal issue yield implies that the specific issue is less competitive (some parties will clearly avoid the issue), and again the parties with the higher yield are more clearly advantaged by its emphasis. When such range is smaller, it

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23 Such rescaling to 0-1 eliminates between-issue differences in issue yield differentiation, which are separately captured by the previous index. As a result, we can separately assess these two distinct conceptual aspects.
means that the highest and lowest issue yields are closer to each other, and therefore emphasizing that issue might not result as a productive strategy for political parties. Given that our model is introducing two interaction terms, the direct coefficient for the issue yield should be interpreted accordingly. In particular, it will indicate the effect of issue yield on Twitter emphasis conditioned on the coefficients of the two interacting variables (issue differentiation and relative position) being equal to zero. Under such extreme conditions of absence of differentiation (all the parties would have the same yield) and equal position, the parties have a strong incentive to de-emphasize the issue. Finally, for the same reason we also expect a negative direct effect for the direct effect of issue yield differentiation on the issue emphasis.

4.2 Twitter emphasis as censored data

Are political parties’ tweets resulting from strategic computations that can be predicted by the issue yield model, or rather they represent erratic expressions detached from the underlying dynamics in the public opinion? To provide an answer to this important question we have to model our dependent variable correctly, and this requires few additional considerations.

In the first place, issue emphasis in our study is measured by the proportion of tweets that have been assigned to issue categories. This implies that the statistical model that we intend to fit has to take into account the fact that the dependent variable represents proportions. In other words, twitter emphasis is constrained between 0 and 1. Moreover, the distribution of tweets is asymmetrical, with a large majority of party-issue combinations (71.2%) presenting no tweets at all (see Figure A2 in the Appendix). In this case, predictions from a linear model are likely to fall outside of the zero threshold, producing logically impossible expectations of negative emphasis. Moreover, because of this fact the variance will also necessarily decrease as the values of the dependent variable approach to 0, leading to an underestimation of the uncertainty in our inferences. For all these reasons, OLS regression does not appear appropriate.

There are various ways in which we could possibly handle the problem. In the first place, we could simply fit a linear model on the logit transformation of the dependent variable, that would thus be mapped almost into a real domain (Papke and Wooldridge 1996). Just almost and not completely, because the 0s and 1s cannot be mapped, thus requiring a separate treatment. This problem appears particularly relevant: in our dependent variable the 0s have to be part of the

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24 This is not surprising, and indeed a confirmation that parties tend to concentrate their emphasis on a relatively small number of issues among all the potential issues available.

25 Another, though unsatisfactory, solution could be to offset the 0s and the 1s towards the mean as a workaround.
distribution because they occur empirically, and indeed represent the mode of the distribution. This problem also prevents us from modeling the tweets’ proportions through the beta distribution.\footnote{An additional concern might arise from the consideration that the tweets’ proportions are \textit{ipsative}, i.e. the proportion of tweets regarding one issue are not isolated from the proportion of the other issues. This derives from the mathematical property that the sum of the proportions across all issues is bounded to 1 (simplex structure). In these cases, one potential solution might be to fit a Dirichlet distribution model, as this family of distributions can be seen as a multinomial Beta distribution, thus having support in the K-1 dimensional open space (0,1). For instance, a triangle in $\mathbb{R}^3$ or a regular tetrahedron in $\mathbb{R}^4$. The support is also called open standard (K-1)-simplex and for this property is often used in text analysis (Statistical Topic Models). However, in our case the issue does not appear to be relevant, as: a) the omission of (already coded) valence issues breaks the ipsative nature of the coding; b) more in general, we obviously do not assume that our selection of tweets exhausts all possible issue content. In fact, coders introduced some additional issues that were not included in the original scheme and survey, and thus cannot be modeled in issue yield terms. Given that such issues are included in the overall percentages of positional issue content, their presence breaks the ipsative nature of our dependent variable.} The alternative is to treat the proportions as a distribution censored in 0. This corresponds to the idea that parties would decrease emphasis even below zero, if that would be possible, for issues that are really unfavourable; while, in principle, some issues would receive an actual zero emphasis as they are simply not considered very relevant to be mentioned (see De Sio and Weber 2014). As a result, the dependent variable might be considered as censored at 0, thus leading to the choice of a Tobit model, which we adopt for our analysis. As a result, the estimated Tobit model is the following:

\begin{equation}
Emph_{ij} = \alpha + \beta \text{Yield}_{ij} + \gamma \text{Yield}_{ij} \cdot \text{Diff}_{j} + \delta \text{Yield}_{ij} \cdot \text{Rel}_{ij} + \theta \mathbf{X} + \varepsilon_{ij}
\end{equation}

\begin{equation}
Emph_{ij} = \begin{cases} 
    y_{ij}' & \text{if } y_{ij}' > 0 \\
    0 & \text{if } y_{ij}' \leq 0 
\end{cases}
\end{equation}

where: \(i\) indexes the political parties and \(j\) the policy issues, and the dependent variable \(Emph_{ij}\) is modeled as censored at 0. \(Yield_{ij}\) indicates the computed index of issue yield for party \(i\) on policy issue \(j\); \text{Diff}_{i} refers to the issue differentiation component of multiparty competition; and \text{Rel}_{ij} stands for the relative position of the political party in the specific issue. The quantities of interest are \(\beta, \gamma, \delta\) and are expected to be greater than zero. All the main terms of the interactions have been included in \(\theta \mathbf{X}\) to facilitate readership: \(y_{ij}'\) is the unobserved uncensored variable; \(\varepsilon_{ij}\) is a stochastic component clustered within parties.
5. Descriptive statistics and empirical results

Before moving to the empirical analysis and testing if issue yield is able to predict issue emphasis in Twitter communication, it is useful to take a look into the descriptive data related to the positional issues and the emphasis parties put on them.

Table 4 reports, for each party\textsuperscript{27}, the total number of tweets coded as positional issues, the total number of tweets coded as valence issues, the total number of tweets made by non-issue content and finally the total number of tweets made during the 21 days of electoral campaign under analysis. As can be easily noted, the total number of tweets coded as issues (both positional and valence) represents only about a third of the total number of tweets made by the official accounts of parties and their leaders during the campaign (942 out of 2832). It follows that about two thirds of the tweets (1890) were actually dealing with the campaign dynamics, often mentioning other political actors rather than more substantive topics. The ratio between issue and non-issue content is even more unbalanced as concerns the M5S, where as high as 83.6\% of the total tweets are not related to issues.

<table>
<thead>
<tr>
<th>Party</th>
<th>Positional issues</th>
<th>Valence Issues</th>
<th>Non-issue content</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N</td>
<td>%</td>
<td>N</td>
<td>%</td>
</tr>
<tr>
<td>Pd</td>
<td>19</td>
<td>16.8</td>
<td>24</td>
<td>21.2</td>
</tr>
<tr>
<td>M5S</td>
<td>32</td>
<td>7.8</td>
<td>35</td>
<td>8.6</td>
</tr>
<tr>
<td>Fi</td>
<td>192</td>
<td>14.7</td>
<td>202</td>
<td>15.5</td>
</tr>
<tr>
<td>Ln</td>
<td>160</td>
<td>33.1</td>
<td>27</td>
<td>5.6</td>
</tr>
<tr>
<td>Se</td>
<td>79</td>
<td>48.5</td>
<td>21</td>
<td>12.9</td>
</tr>
<tr>
<td>FdI</td>
<td>25</td>
<td>28.1</td>
<td>4</td>
<td>4.5</td>
</tr>
<tr>
<td>Ncd</td>
<td>59</td>
<td>29.2</td>
<td>44</td>
<td>21.8</td>
</tr>
<tr>
<td>Tsipras</td>
<td>8</td>
<td>11.9</td>
<td>11</td>
<td>16.4</td>
</tr>
<tr>
<td>Total</td>
<td>574</td>
<td>20.3</td>
<td>368</td>
<td>13.0</td>
</tr>
</tbody>
</table>

This finding should not come as a surprise as it is one of the earliest findings of political communication research, going back to the work of the Columbia School: “The most talked-about subject matter during the campaign was the campaign itself” (Lazarsfeld, Berelson, and Gaudet 1944, 115). Focusing on the positional issues, note that there is a large variability in the number of tweeted messages made by each party: it ranges from only eight tweets made by the extreme-left party list ‘Other Europe with Tsipras’ and its leader Nichi Vendola to 192 made by Forza Italia and

\textsuperscript{27}Each row represents the sum of the official account of the party and that of the respective party leader.
its leader Silvio Berlusconi. Notwithstanding the emphasis pundits and commentators usually put on the ability of Beppe Grillo and his M5S as well as of Matteo Renzi on the use of social media for political communication, the campaign of the two main Italian parties, PD and M5S, is characterized by a lower number of tweeted messages compared to other parties and particularly to those belonging to the center-right bloc: *Forza Italia* and the Northern League together cover 61% of all positional tweets coded. Therefore, Italian parties follow different strategies on Twitter, either selecting a few number of tweets (about one for each day of the campaign) that emphasize the position of the party on a given issue or flooding the potential audience with a massive number of tweets (more than 9 per day as regards *Forza Italia*), often repeating the same tweet more than once during the same day or in following days.

Table 5 illustrates the frequency distribution of tweets across issues and parties. Overall, out of the 184 possible cells (23 issues per 8 parties) only 53 were actually filled. This means that, on average, each party focuses on only about seven issues during the campaign (from a minimum of five for ‘Other Europe with Tsipras’ to a maximum of nine for *Forza Italia*). Moreover, while some issues are only mentioned by a single party, such as the sustainable development (owned by the M5S), others are mentioned by many parties (like immigration or Renzi’s institutional reforms). We have already noted the huge variation in the number of tweets made by each party during the campaign. A similar variation occurs as far as issues are concerned: out of the 23 issues selected by the research team as potentially relevant for the campaign, only 16 have actually received attention by parties, while seven have been completely ignored. Moreover, among the 16 issues on which parties have put at least some emphasis, we find a large number of issues with a few tweets only (11 issues range between 4 and 18 tweets), while six policies receive larger attention, with more than 20 tweets across the 21 days of campaign.

The most important policy areas on which parties focus are immigration, Europe, Renzi’s institutional reforms and economic redistribution. The most tweeted issue is immigration (107 tweets), receiving a large emphasis especially from the two opposition parties that share the most negative views on immigrants: the Northern League and Brothers of Italy, for which this issue accounts, respectively, the 39% and the 32% of their positional tweets. Not by chance Northern League and Brothers of Italy are by far the two parties with the highest yield on this issue (0.95 and 1 respectively). Considered together, the two issues of EU integration and exit from the Euro area are the most salient during the campaign, with 185 tweets: this finding could be considered surprising, given that one of the assumption of the second-order election theory is that the campaign is usually dominated by national issues (Reif and Schmitt 1980). However, this finding is consistent
with the claim of recent studies emphasizing the increased relevance of EU-related issues during the campaign for the 2014 EP elections (De Sio, Garzia ad Trechsel 2014). Parties that have a positive stance towards Europe usually focus on EU integration (the overall majority of tweets on this issues come from European Choice that has a very high yield on this issue, 0.88), while the issue related to the possible exit from the Euro area is owned by the Northern League (80 tweets out of 94) that carried out a heated campaign against the single currency. The issue of Renzi’s institutional reform is only partially exploited by Renzi and the PD (the 16% of their tweets are on this issue) but it becomes the main issue – negatively – emphasized by the M5S. On the contrary, Renzi’s party chooses to focus on the reduction of income inequality (42% of its tweets are on this issue) given the fiscal bonus of 80 euro provided by the government to low-income people just before the start of the electoral campaign. Another very important issue is related to the controversy emerged within the center-right bloc about the supposed ‘betrayal’ of Alfano against Berlusconi: not surprisingly, the only parties to talk about that are the two ones involved in the controversy, namely Forza Italia (28 tweets) and New Center-right (29 tweets). Furthermore, note that 72 tweets have been classified as ‘other issues’, since they deal with positional issues falling outside the 23 surveyed ones.
Table 5 – Frequency distribution of tweets across positional issues, by party

<table>
<thead>
<tr>
<th>Policy</th>
<th>Party</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Change towards a sustainable model of development</td>
<td>Pd</td>
<td>M5s</td>
</tr>
<tr>
<td>Reduce spending for F-35</td>
<td>8</td>
<td>5</td>
</tr>
<tr>
<td>Reduce income inequality</td>
<td>8</td>
<td>6</td>
</tr>
<tr>
<td>The government should have a tougher attitude against India about 'marò'</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Foreign companies selling services via internet should be taxed</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Italian citizenship should be given to children born in Italy</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>EU integration is a good thing</td>
<td>1</td>
<td>31</td>
</tr>
<tr>
<td>Heterologous fecundation should be allowed</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Prostitution should be legalized</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Immigration laws should be more restrictive</td>
<td>22</td>
<td>63</td>
</tr>
<tr>
<td>Before fighting tax evasion, taxes should be reduced</td>
<td>1</td>
<td>12</td>
</tr>
<tr>
<td>Civil partnerships</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>A universal unemployment check should be introduced</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>Welfare chauvinism</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>To fight tax evasion, cash limit should be lowered</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Soft drugs should be legalized</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Reduce the power of the judiciary</td>
<td>1</td>
<td>5</td>
</tr>
<tr>
<td>Companies should have more freedom to hire and fire</td>
<td>1</td>
<td>5</td>
</tr>
<tr>
<td>Founding NCD, Alfano betrayed Berlusconi</td>
<td>28</td>
<td>29</td>
</tr>
<tr>
<td>Renzi’s institutional reforms reduce democratic participation</td>
<td>3</td>
<td>12</td>
</tr>
<tr>
<td>Pro life</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>Italy should leave the Euro</td>
<td>2</td>
<td>80</td>
</tr>
<tr>
<td>Italy should be split into macro-regions</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Other issues</td>
<td>4</td>
<td>57</td>
</tr>
<tr>
<td>Total</td>
<td>19</td>
<td>32</td>
</tr>
</tbody>
</table>

Exploring the data we have already pointed out a number of relevant empirical findings, and most importantly we have implicitly assessed at face validity our measure of Twitter emphasis. We can finally proceed with the empirical testing of the three hypotheses presented in section 2. In particular we want to test whether the emphasis that parties place on the policy issues is influenced by issue yield, and secondly whether the influence of other parties’ strategies can be effectively modeled through our two indicators.
Table 6 – Regression analysis of Twitter emphasis

<table>
<thead>
<tr>
<th></th>
<th>Model (1)</th>
<th>Model (2)</th>
<th>Model (3)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yield</td>
<td>0.55***</td>
<td>-0.34</td>
<td>-1.80***</td>
</tr>
<tr>
<td></td>
<td>(4.632)</td>
<td>(-1.178)</td>
<td>(-3.136)</td>
</tr>
<tr>
<td>Rel</td>
<td>⋅</td>
<td>-0.57</td>
<td>-0.65**</td>
</tr>
<tr>
<td></td>
<td>(-1.806)</td>
<td>(-2.418)</td>
<td></td>
</tr>
<tr>
<td>Yield × Rel</td>
<td>⋅</td>
<td>1.05**</td>
<td>1.26***</td>
</tr>
<tr>
<td></td>
<td>(2.337)</td>
<td>(2.686)</td>
<td></td>
</tr>
<tr>
<td>Diff</td>
<td>⋅</td>
<td>⋅</td>
<td>-2.33**</td>
</tr>
<tr>
<td></td>
<td>(2.592)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yield × Diff</td>
<td>⋅</td>
<td>⋅</td>
<td>2.90***</td>
</tr>
<tr>
<td></td>
<td>(2.883)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Observations</td>
<td>184</td>
<td>184</td>
<td>184</td>
</tr>
<tr>
<td>Pseudo-$R^2$</td>
<td>.09</td>
<td>.14</td>
<td>.19</td>
</tr>
</tbody>
</table>

Note: table entries represent coefficients for the Tobit regression of issue emphasis on the hypothesized predictors. The dependent variable is censored at 0. T-statistics reported in parentheses. *p<0.05, **p<0.01, ***p<0.001.

We present three empirical specifications of the model. In the first column, we simply regress Twitter emphasis on issue yield; in model (2) we also add the relative position’s component of multiparty competition; finally in model (3) we estimated the full theoretical model. The results are striking. Issue yield on itself reduces the log-likelihood by 10% compared to the null model of tweets’ proportions. The coefficient indicates that this average effect is positive and statistically significant: as a result, Hypothesis 1 is confirmed: issue yield (measured before the campaign) is a predictor of Twitter emphasis of specific issues during the campaign, with a remarkable and statistically significant effect. The second model’s specification introduces the relative component alone. As recalled, in this case the coefficient for issue yield indicates the absence of an effect on tweets’ proportions for those issues where the party – compared to other parties – has the lowest level of issue yield. The result is reasonable, because when a party has the lowest yield on an issue compared to other parties, then emphasizing it (regardless of the low or high value of yield) will be counterproductive, ending up favouring a competitor. Differently, for non-zero values of the Rel
variable the effect of issue yield is positive and significant: the better the party ranking on the issue, the stronger the effect of issue yield. Also, adding this component of multiparty competitions the pseudo $R^2$ increases up to 14%. These findings are a clear confirmation for Hypothesis 3.

Finally, the main specification, includes both component of multiparty competition. The fact that the coefficient of issue yield is negative is now signaling that political parties that have a low ranking of yield (conditioning on Rel = 0) and for issues with no differentiation (conditioning on Diff = 0), the emphasis placed by political parties will be systematically lower. We find indeed a positive and significant effect of issue yield on issue emphasis both for issues with greater differentiation across parties, as well as for the parties scoring higher in the ranking of issue yields. However, it has to be considered that the models are nonlinear. Therefore, we can only have indications regarding the presence and the sign of the relationships, because the coefficients represent the marginal effect on the latent uncensored dependent variable ($\beta = \frac{\partial E[y|x]}{\partial x}$). It is thus opportune to further estimate the effect of the covariates on the censored distribution:

$$\beta \cdot \Phi(x' \beta) = \frac{\partial E[y|x_y>0]}{\partial x}.$$ 

In this case, the marginal effect of issue yield on the number of tweets for a certain issue ranges from -0.12 when issue yield is equal to its minimum ($Yield = 0.294$) and +0.14, for the maximum level of $Yield = 1$. To better assess the magnitude of the relations, especially because the three measures are modelled interactively, we also provide a graphical representation of the marginal effects in the following Figure 2.

28 The results hold even if we model the issue emphasis with simple OLS regression. Moreover, we further hypothesized that the 0s recorded in the tweets’ proportion could follow a qualitatively different data generating process than the proportion recorded for the values in (0,1). One may think the position on the (0,1) interval as a decision over a continuous quantity, regarding an amount: “how much” shall the party talk about this issue? In the former case instead, for values equaling 0, the choice could be thought as discrete: shall the party talk about this issue or not? A proper distribution in which these two data-generating processes coexist is a mixture distribution known as the zero-inflated beta distribution (Ospina and Ferrari 2012). The idea is to fit a mixture of a beta distribution (modeling the internal values) and a Bernoulli distribution (to inflate the 0s). Empirical results are indeed similar: the distance component of multiparty competition appears to systematically affect the zero-inflated component of the mixture, while issue yields and the relative component of party competition still positively interact for the continuous beta component of the mixture.
Note: the graphs represent graphically the Tobit model (3) reported Table 6. The left pane represents the conditional effect of issue yield on Twitter emphasis for varying values of issue differentiation. The right pane represents the same effects for varying values of the relative position of the parties with respect to the issues. Only the values for the subpopulation of issues with at least one tweet $E(\text{Emph}_{ij} | \text{Emph}_{ij} > 0)$ are reported. Vertical bars represent 95% confidence interval.

On the left pane, the figure shows that the effect of issue yield on the Twitter communication is conditioned on the parties being enough differentiated on the given issue. Thus, parties systematically tend to emphasize a topic only insofar as they are not too uncertain about the potential electoral return. This result provide supporting evidence for hypothesis 2: issue yield dynamics are relevant on issues where parties’ yields are sufficiently differentiated; otherwise, parties refrain from emphasizing issues where – regardless of the yield level – other parties have similar yields, thus with the risk of being benefited by the party’s emphasis.

The graph on the right pane shows how the effect of issue yield on the number of tweets for a certain topic increases for political parties ranking higher in the issue yield for the topic. Out interpretation of this finding is that political parties are aware that they are likely to be favored if the
salience of the topic increases. Differently the coefficient turns negative for lower rankings, which we read as the willingness of the parties to silence the topic as they anticipate they could be sanctioned by the voters. The average marginal effect of issue yield on the number of tweets for a given issue thus ranges between -0.07 for the parties with the lowest issue yield, to +0.22 for the parties ranking first with respect to the issue yield measure. Overall, we find that the issue yield theory is not disconfirmed by the empirical exercise.

6. Conclusions
The main focus of this paper was the introduction of a novel research design, aimed at testing the issue yield model by overcoming some of the limitations of previous studies. In particular, the crucial innovation was in the adoption of Twitter content for measuring the outcome, i.e. the issue emphasis employed by different parties on different issues. In this regard, a first striking finding concerns the very possibility of developing a coding scheme for matching Twitter content to positional issue statements. Results are impressively positive: despite the complexity of the scheme (23+17 issues), independent coders with no particular previous training were able to reach extremely high levels of inter-coder reliability. This yield a very optimistic scenario for the replication of this design in new contexts. Secondly, the results clearly confirm the relevance of issue yield dynamics even in Twitter communication: issue yield is a significant predictor of Twitter issue emphasis, also providing a non-trivial amount of variance explained. In a way, this finding also represent an additional confirmation of the soundness of the newly proposed research design: issue yield dynamics are correctly captured even on Twitter data. Additionally, the performance of the model significantly improves when specifically calibrated by taking into account the complex dynamics of multi-party competition. This is perhaps an aspect where we claim a further specific contribution of this paper. By focusing on a single case study, our attention to specific parties and issues led us to focus on an appropriate discussion and operationalization of multi-party dynamics, leading to the introduction of the concepts of issue yield differentiation and issue yield relative position, which – through their significant effect and important contribution to variance explained – appear as valid, empirically supported measures of how issue yield mechanisms are moderated by the dynamics of multi-party competition.

In our view, this suggests further developments in terms of future research. On the one hand, an attention should be dedicated to data collection, by promoting the replication of this research design (involving a large number of issues, Twitter data, and an appropriate time sequence) on more elections and countries, in order to allow to test issue yield dynamics of multiparty competition.
across a variety of party systems. This might be especially relevant for a deeper understanding of how specific issues have become a strategic resource for party competition, in times when more and more new parties are using few issues to successfully challenge the existing structure of more and more party systems.

References


### Appendix

**Table A1 – Potentially relevant issues (with question wordings) for the 2014 EP campaign in Italy, as selected by the research team**

<table>
<thead>
<tr>
<th>Type</th>
<th>Keyword</th>
<th>Question</th>
</tr>
</thead>
<tbody>
<tr>
<td>Positional</td>
<td>Model of development</td>
<td>The actual model of development should be changed to get it more sustainable from an environmental and social viewpoint</td>
</tr>
<tr>
<td>Positional</td>
<td>Military spending</td>
<td>Italy should reduce spending for the F-35 fighter-bombers</td>
</tr>
<tr>
<td>Positional</td>
<td>Income inequality</td>
<td>Income inequalities should be reduced</td>
</tr>
<tr>
<td>Positional</td>
<td>Marò</td>
<td>The government should have a tougher attitude against India about the 'marò' issue</td>
</tr>
<tr>
<td>Positional</td>
<td>Webtax</td>
<td>Foreign companies selling services via internet in Italy should be taxed by the Italian tax authorities</td>
</tr>
<tr>
<td>Positional</td>
<td>Citizenship</td>
<td>Italian citizenship should be given to children born in Italy from legally resident foreign parents</td>
</tr>
<tr>
<td>Positional</td>
<td>EU integration</td>
<td>EU integration is a good thing</td>
</tr>
<tr>
<td>Positional</td>
<td>Heterologous insemination</td>
<td>Heterologous insemination should be allowed in Italy</td>
</tr>
<tr>
<td>Positional</td>
<td>Prostitution</td>
<td>Prostitution should be legalized</td>
</tr>
<tr>
<td>Positional</td>
<td>Immigration</td>
<td>Immigration laws should be more restrictive</td>
</tr>
<tr>
<td>Positional</td>
<td>Taxes</td>
<td>Before fighting tax evasion, taxes should be reduced</td>
</tr>
<tr>
<td>Positional</td>
<td>Civil partnerships</td>
<td>Civil partnerships between same sex should be recognized</td>
</tr>
<tr>
<td>Positional</td>
<td>Unemployment check</td>
<td>A universal unemployment check should be introduced</td>
</tr>
<tr>
<td>Positional</td>
<td>Welfare chauvinism</td>
<td>Social services should protect above all Italians, and only later, possibly immigrants.</td>
</tr>
<tr>
<td>Positional</td>
<td>Cash limit</td>
<td>To fight tax evasion, cash limit should be lowered</td>
</tr>
<tr>
<td>Positional</td>
<td>Soft drugs</td>
<td>Soft drugs should be legalized</td>
</tr>
<tr>
<td>Positional</td>
<td>Judiciary</td>
<td>The power of the judiciary should be reduced</td>
</tr>
<tr>
<td>Positional</td>
<td>Freedom of enterprise</td>
<td>Companies should have more freedom to hire and fire</td>
</tr>
<tr>
<td>Positional</td>
<td>Alfano</td>
<td>Founding NCD, Alfano betrayed Berlusconi</td>
</tr>
<tr>
<td>Positional</td>
<td>Institutional reforms</td>
<td>Renzi's government institutional reforms could reduce the opportunities for democratic participation</td>
</tr>
<tr>
<td>Positional</td>
<td>Abortion</td>
<td>Abortion should be made more difficult</td>
</tr>
<tr>
<td>Positional</td>
<td>Euro</td>
<td>Italy should leave the Euro</td>
</tr>
<tr>
<td>Positional</td>
<td>Secession</td>
<td>Italy should be split into macro-regions provided with the right of secession</td>
</tr>
<tr>
<td>Valence</td>
<td>Costs of politics</td>
<td>Which party is more credible to reduce the costs of politics</td>
</tr>
<tr>
<td>Valence</td>
<td>Growth vs. austerity</td>
<td>Which party is more credible to push Europe to favor economic growth, instead of austerity, on public finance</td>
</tr>
<tr>
<td>Valence</td>
<td>Jobs</td>
<td>Which party is more credible to create new jobs</td>
</tr>
<tr>
<td>Valence</td>
<td>Italy's interests</td>
<td>Which party is more credible to enforce Italy's interests in Europe</td>
</tr>
<tr>
<td>Valence</td>
<td>Pay debts</td>
<td>Which party is more credible to quickly pay State's debt to creditor businesses</td>
</tr>
<tr>
<td>Valence</td>
<td>Boost economy</td>
<td>Which party is more credible to boost Italian economy</td>
</tr>
<tr>
<td>Valence</td>
<td>Political class</td>
<td>Which party is more credible to renew the political class</td>
</tr>
<tr>
<td>Valence</td>
<td>Crime</td>
<td>Which party is more credible to make citizens safer from crime</td>
</tr>
<tr>
<td>Valence</td>
<td>Politics vs. technicians</td>
<td>Which party is more credible to put back the decisions taken in Europe in the hands of politics, instead in those of non-elected technicians</td>
</tr>
<tr>
<td>Valence</td>
<td>Gender equality</td>
<td>Which party is more credible to provide more space to women in politics and society</td>
</tr>
<tr>
<td>Valence</td>
<td>Bureaucracy</td>
<td>Which party is more credible to simplify the bureaucracy</td>
</tr>
<tr>
<td>Valence</td>
<td>Justice</td>
<td>Which party is more credible to make justice more efficient and faster</td>
</tr>
<tr>
<td>Valence</td>
<td>Mafia</td>
<td>Which party is more credible to fight organized crime</td>
</tr>
<tr>
<td>Valence</td>
<td>Access to credit</td>
<td>Which party is more credible to facilitate access to credit for citizens and businesses</td>
</tr>
<tr>
<td>Valence</td>
<td>School</td>
<td>Which party is more credible to relaunch the Italian school</td>
</tr>
</tbody>
</table>
Which party is more credible to fight pollution and the disruption of the territory
Which party is more credible to protect and promote the cultural and artistic heritage

Figure A1 – Variation in issue yield across issues

Figure A2 – Histogram of the distribution of the main DV, issue emphasis in Twitter communication