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Understanding Intra-Party Politics through Text Analysis of Social Media:

Three applications to the Italian case

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Introduction

Although some scholars claim that unity is a source of party's strength, we hardly ever observe perfect cohesion within political parties. The party is by no means a monolithic structure as it is composed by politicians retaining similar but non-identical preferences. Those sharing the most similar views often cluster together and form party factions, in order to shape the party strategy and maximize their own share of benefits. Given this premise, the fact that many parties all over the world are factionalized comes as no surprise, particularly because factionalism is not necessarily damaging to the party's fortune (Boucek, 2012).

Scholars started to investigate the impact of intra-party politics showing that factional preferences and the different policy views of individual politicians affect party platform, policy agenda and parliamentary policy-making, coalition formation, and portfolio allocation (e.g. Ceron 2011, 2012a, 2012b; Giannetti and Benoit, 2009; Greene and Haber 2014; Haber 2015). Furthermore, intra-party differences also explain the voting behavior of MPs, intra-party competition during primary elections or phenomena like party switch and party fission (Bernauer and Braüninger, 2009; Ceron, 2014a, 2015; Giannetti and Laver, 2009; Heller and Mershon 2008; McElroy, 2009; Medzihorsky et al., 2014). Factional affiliation and individual preferences are also crucial to enhance a politician's career (Cox *et al.*, 2000).

Despite the relevance of this topic, the research on intra-party politics has remained underdeveloped for many years, mainly because assessing the preferences of politicians and party factions is a difficult task. Nowadays, some important advances in the field of quantitative text analysis allow to fill this gap. Scholars applied such techniques on several sources of textual data in order to evaluate the degree of ideological

heterogeneity by focusing on parliamentary speeches (Bäck *et al*., 2011; Benoit and Herzog 2015; Bernauer and Bräuninger 2009; Proksch and Slapin, 2010), debates held at party conferences or party rallies (Greene and Haber 2014; Medzihorsky et al., 2014) or documents drafted by intra-party subgroups (Ceron 2012b; Debus and Bräuninger, 2009; Giannetti and Laver, 2009).

The striking rise of social media and social network sites (SNS), like Facebook and Twitter, paves the way to a new potential revolution (King 2014) and provides scholars with a new and intriguing source of data – particularly textual data – on the tastes and the opinions of citizens and politicians. Indeed, a new stream of research has started to analyze social media in order to estimate the ideological placement of politicians or citizens (Barberá 2015; Barberá et al. 2015; Boireau 2014; Bond and Messing 2015; Boutet *et al.*, 2012; Conover *et al.*, 2010; Hanretty 2011; King *et al.*, 2011; Livne et al. 2011).

These types of data represent an opportunity to extract information on the degree of heterogeneity related to the policy views of party factions or individual politicians and can be of use to answer a variety of questions involving intra-party dynamics. In this regard, the present paper presents three different applications that show how quantitative text analysis of public statements released, by Italian politicians, on social media and SNS can be informative of intra-party politics. In particular, we will illustrate that intra-party differences can explain: (a) a politician's choice to endorse one or another candidate who ran for the nomination in the 2012 primary election of the centre-left; (b) a politician's likelihood to switch off from his/her party in the aftermath of 2013 Italian election; (c) a politician's probability to be deemed as a credible candidate for a ministerial position, by the media, or to be actually appointed as a minister of the Renzi cabinet in 2014.

1. Estimating policy positions from social media

The usage of internet and social media is growing at very fast rates. In 2014 around 40% of the world population got access to the web and most of them are also active on SNS. In 2015 more than 1.5 billion users are active on Facebook and Twitter reached the number of 300 million active users. The growth of the internet audience made the web attractive to parties and candidates, mainly as a device to mobilize support (e.g., Cardenal, 2011). Indeed, politicians have incentives to open a website or a social networking profile

and make use of social media to inform, mobilize, and cultivate personal votes (Vergeer *et al.*, 2012). To do that they express their opinions and release public comments trying to influence the agenda or to comment on the policy issues at stake. Politicians, however, tend to follow a top-down approach (Formenti, 2012; Vaccari, 2008) and, despite the interactive nature of Web 2.0, their behavior seems not strategically affected by the interaction with other users (Ceron 2014b).[1]

The usage of SNS by politicians is particularly relevant during electoral campaigns (e.g. Vergeer et al., 2013) and several studies analyzed the content broadcast on the official SNS accounts of politicians and parties in order to shed light on the dynamics of campaigns (e.g., Ceron and d'Adda 2015; Conway et al. 2013; Evans et al. 2014).

However, SNS data can be interesting even when general elections are faraway. As long as users publish online information on their tastes and opinions, several scholars suggest that the analysis of social media allows to scale – on an ideological axis – the position of citizens (Barberá 2015; Barberá et al. 2015; Boireau 2014; Bond and Messing 2015; Boutet *et al.*, 2012; Conover *et al.*, 2010; Hanretty 2011; King *et al.*, 2011) and politicians (Barberá et al. 2015; Boireau 2014; Bond and Messing 2015; Hanretty 2011; King *et al.*, 2011; Livne et al. 2011). These studies adopted two different methodologies: some of them follow a network approach (Barberá 2015; Barberá et al. 2015; Bond and Messing 2015; Hanretty 2011; King *et al.*, 2011; Livne et al. 2011), while others focus on the content of social media posts (Barberá et al. 2015; Boireau 2014; Boutet *et al.*, 2012; Conover *et al.*, 2010; Livne et al. 2011).

Taking the cue from these works, I contend that the information available on the web is particularly suitable to estimate the preferences of 'hidden actors', like formal and informal intra-party subgroups or individual politicians belonging to rival party factions, whose ideological viewpoints may be not formally recorded in official documents or publicly displayed through observable behavior.

In fact, estimating the policy positions of party factions is a challenging task. Several case studies indicate that parties are internally divided. However, party competition creates pressure to display cohesion in the eyes of the voters as unity may enhance a party's electoral fortune (Alesina and Cukierman, 1990: 847; McGann, 2002; Snyder and Ting, 2002).

As a consequence, members supporting contrasting views about the party line and strategy should try to work out their differences on their own (Evans, 2001; Messmer, 2003) so that 'internal disagreements are *usually* resolved before party positions are defined formally, as in party manifestos, or behaviorally, as in legislative votes and speeches' (Heller, 2008: 2, italic added).

Whether the solution stems from consensual bargaining and compromise or from loyalty and enforced discipline does not really matter for our purpose, as in both cases we would fail to observe disunity and we lack the information necessary to estimate the internal heterogeneity of policy views.

The display of party unity may hide internal division and it does not imply perfect cohesion. But even when we observe conflict and splits, for instance in roll call votes, the extent of disagreement inside the party could be misestimated.

While some scholars have been estimating factional preferences by scaling roll call votes (e.g. Spirling and Quinn, 2010), others argued that this technique only provides a description of the 'revealed behavioural space' (Hix and Jun, 2009) and a measure of ex-post behaviour instead of ex-ante preferences. Furthermore the actual level of division can be underestimated due to potential selection bias in the use of roll call (Carrubba *et al.* 2006, 2008). For these reasons Giannetti and Benoit (2009) suggest measuring factions' positions relying on what intra-party actors say (the declared preferences) instead of on what they do (the actual behavior). Since talk is cheap heterogeneous declarations are less damaging to the party compared to the cost of non-cohesive behavior. This is even more true in the internet age when politicians can take advantage of the new media to spread their ideas and to comment over any political event, virtually in real time. Then, 'politicians may often toe the party line while at the same time generating texts that show far less subservience to the mechanisms of party discipline' (Giannetti and Benoit, 2009: 233). The analysis of political texts allows discriminating contrasting preferences even when actors behave in the same manner (e.g. cast the same vote or endorse the same candidate) and therefore it is well suited to study intra-party politics.

Accordingly, several scholars measured the degree of intra-party heterogeneity by analyzing parliamentary speeches (Bäck *et al.*, 2011; Benoit and Herzog 2015; Bernauer and Bräuninger, 2009; Proksch and Slapin,

2010). However, it has been argued that speeches released during legislative debates are the outcome of an interplay between the party leader and backbenchers: Proksch and Slapin (2012: 16) analyzed MPs' discourses showing that they tend to misrepresent ideological polarization, hence are not the best source to catch intra-party divisions. In fact, speeches delivered in public and highly institutionalized arenas (like national parliaments) are easily observable and therefore subject to party whip. Different electoral systems alter the leader's propensity to employ the whip in order to impose discipline and affect MPs' incentives to express their sincere positions during the debate. Since the leader can decide whether to leave the floor to MPs or not, in competitive political systems where the value of party unity is higher (e.g. closed-list PR) she will be more likely to deliver the speech on his/her own or to give way to one of his/her followers. As a consequence, parliamentary speeches are subject to selection effects and 'may not reflect the true distribution of preferences' (Proksch and Slapin, 2012: 3) so that the analysis will overestimate party cohesion.

For these reasons, the analysis of debates held at party conferences or party rallies (Greene and Haber 2014; Medzihorsky et al., 2014) or documents drafted by intra-party subgroups (Ceron 2012b; Debus and Braüninger, 2009; Giannetti and Laver, 2009) has gained relevance in the literature on intra-party politics. During intra-party debates the whip should only slightly bind the sincere expression of preferences, compared to the discussions held in the parliamentary arena. Investigating these debates by means of content analysis on texts drafted by intra-party groups could be useful to identify their preferences (Benoit *et al.*, 2009). Through documents like factional motions, i.e. omni-comprehensive policy documents issued by factions during party congresses, any internal subgroup is (almost) completely free to present its idea about how party position and strategy ought to be. Given that their content should be minimally affected by leaders' control, some authors analyzed these programmatic documents that express 'opposing views on the ideological direction of the party' (Giannetti and Laver, 2009: 154) to map the distribution of preferences within the party.

Beside party conferences, social media represent another fruitful source of data on the preferences of individual politicians and intra-party subgroups. Furthermore, these kind of data also retain some specific advantages. First, social media are unmediated and self-expression oriented tools (Formenti, 2012) in which users release unsolicited (and sometimes impulsive) statements: this increases the likelihood that public

declarations posted on-line reflect the true preferences of political actors, particularly when these statements are perceived as being free preliminary personal opinions not subjected to party whip and not damaging for party unity. Although some statements could be instrumental, the extent of strategic behavior on-line should be lower if compared to what happens off-line in more formal environments. Texts written on-line are also more spontaneous compared to the content of interviews released to the media where politicians face direct (and sometimes unwanted) questions to which they must answer.

Second, while the analysis of party congresses display the preferences in a single point in time, social media data allow to record changes that happen between one congress and the following one and therefore is suitable to predict party fission or party switch; this point is particularly crucial in low-institutionalized contexts and inside young or fluid parties where subgroups are not steady and party members often make and break factions, shaping and reshaping the intra-party structure.

In light of this, the next sections will describe three applications that employ social media data to investigate intra-party dynamics. Focusing on the Italian case, we will use *Wordfish*, an automated scaling technique of text analysis (Proksch and Slapin, 2009a; Slapin and Proksch, 2008), to measure the ideological position of politicians and factions as it emerges from the comments published on blogs, or official Facebook and Twitter accounts.

2. Endorsing the party leader: Social media in the wake of 2012 centre-left primary election

In Italy, the importance of social media has been unveiled, for the first time, during the campaign for the 2012 centre-left primary election, which generated a heated debate on-line where hundreds of thousands messages have been posted by politicians, party activists, or common citizens to discuss the events of the campaign. The primary election was called to select the leader of the centre-left coalition 'Italia Bene Comune' in view of the 2013 general elections. Five candidates ran for the nomination but only two had a real chance to win the race: the frontrunner and party leader, Pierluigi Bersani, was challenged by the young mayor of Florence, Matteo Renzi. In December 2012, Bersani won the election and get appointed as leader of the coalition. Bersani and Renzi were the head of two different factions affiliated with the Democratic Party (PD). At that time, however, the internal life of the PD was not that simple.

Created in October 2007, as the merge of the Democrats of the Left (DS) and the centre-left party named 'The Daisy' (DL), the PD has been highly factionalized since its birth. Members gathered together and created intra-party associations that supported contrasting views. In 2007 and 2009 the party held direct elections (open to party members and non-members) to select the leadership and different factions grouped together to support a common candidate. In 2007 the party leader Walter Veltroni was sustained by a large number of factions including long-standing rivals tied to Massimo D'Alema ('*Dalemiani*') and the election was contested by only two alternative candidates: Roby Bindi (supported by the faction '*Democratici Davvero*') and Enrico Letta who led his followers ('*Associazione Trecentosessanta*'). In 2009 three candidates ran for the leadership: Bersani, supported by other several subgroups including Bindi's and Letta's factions in alliance with *Dalemiani*; Dario Franceschini (who became party leader after the resignation of Veltroni), supported by the faction '*AreaDem*', the liberals and the followers of Veltroni; Ignazio Marino ('*Vivi il PD*'). Bersani won the election with a narrow margin (53.2%). For the sake of preserving unity both Marino and Franceschini rejoined the party mainstream soon after the 2009 congress and sustained Bersani's attempt to rule the party through consensual internal dynamics. Veltroni disagreed with the drift made by Franceschini and decided to form a new liberal minority faction, '*MoDem*', to oppose the party mainstream. Between the 2009 congress and the 2012 centre-left primary election, many other reshuffles altered the factional structure of the Democratic Party.[2] New subgroups like '*Rottamatori*', '*Giovani Turchi*', and '*Prossima Italia*' were created by young party members (respectively Matteo Renzi, Stefano Fassina, and Giuseppe Civati) in order to promote leadership turnover and policy renewal (albeit in different directions).

In 2012, based on the definition of faction proposed by Boucek (2009), we can classify up to 11 distinct subgroups within the PD: *A Sinistra* (factional leaders: Livia Turco and Vincenzo Vita), *AreaDem* (Franceschini), *Bersaniani* (Bersani), *Dalemiani* (D'Alema), *Democratici Davvero* (Bindi), *Giovani Turchi* (Fassina), *MoDem* (Walter Veltroni and Paolo Gentiloni), *Prossima Italia* (Giuseppe Civati and Debora Serrachiani), *Rottamatori* (Renzi), *Trecentosessanta* (Letta), *Vivi il PD* (Marino). The policy position of each faction has been measured by applying Wordfish to analyze blogs, Facebook accounts and Twitter profiles of their factional leaders. We downloaded the comments published during the XVI Legislature, between April 2008 and December 2012, and retained only the posts with a political content. When there was no web

content available for a leader or when the amount of information was insufficient to carry out a reliable analysis we compensate using data related to other prominent politicians belonging to the same faction.[3] Overall 22 PD leaders have been considered and their individual positions, measured through another Wordfish analysis, are on average strongly correlated with the position of the faction (0.90).

Figure 1 displays the placement (with 95% confidence interval) of factions along the latent dimension, which can be interpreted as an ideological left-right scale. The vertical axis represents the mean of the individual positions of factional leaders.[4]

Figure 1 – Ideological placement of PD Factions at the end of 2012
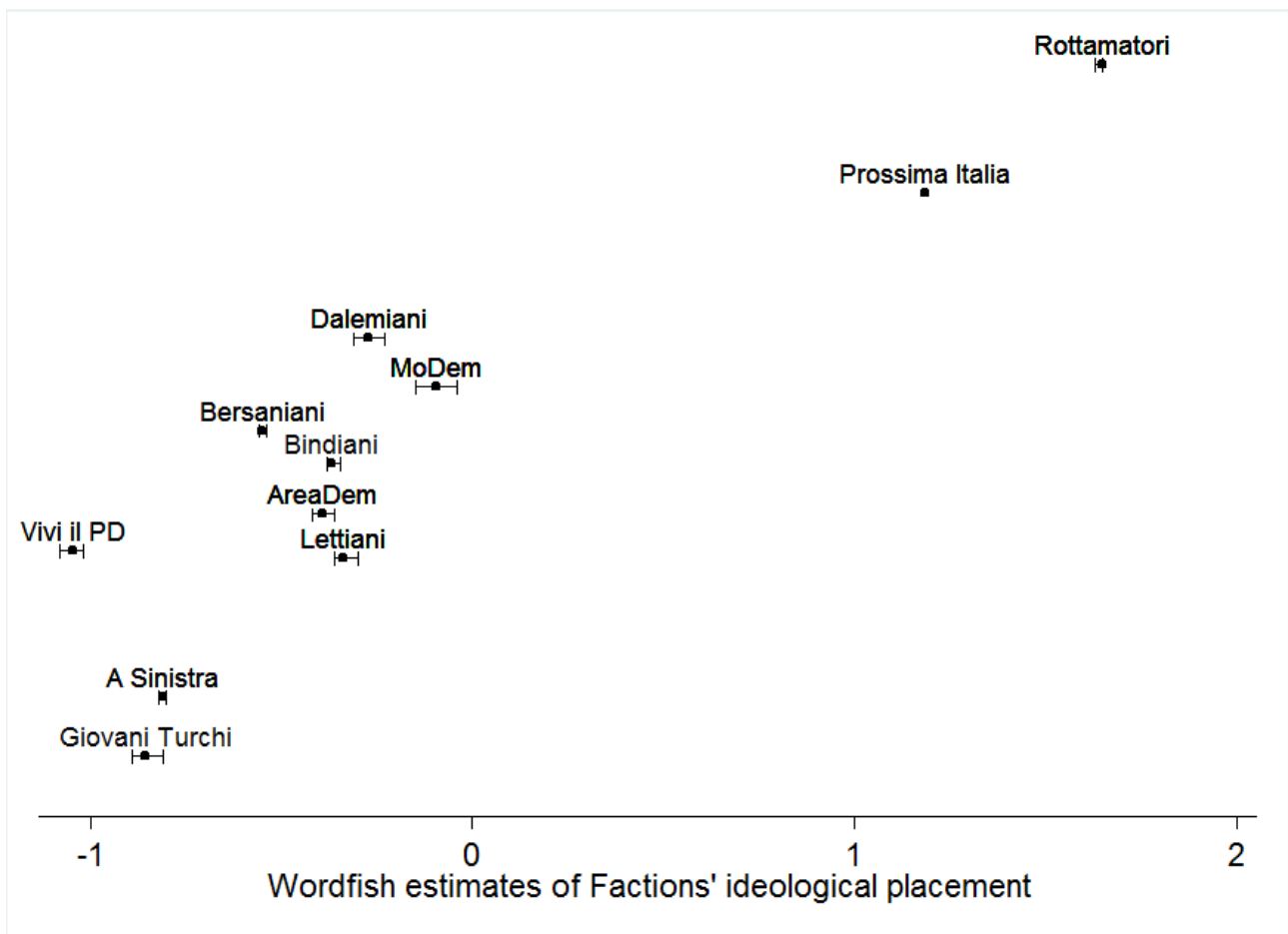
The policy positions of party factions are in line with the expectations. On the left side we find factions like *Vivi il PD*, *Giovani Turchi*, and *A Sinistra* that usually express left-wing positions. The *Bersaniani*, followers of the party leader, are still on the left though on a more moderate position and all the other factions that supported Bersani (*AreaDem*, *Bindiani*, *Lettiani*, and *Dalemiani*) are quite close as well. The position of the

MoDem is more centrist and statistically different from that of the mainstream factions rallied behind Bersani. Finally, liberals and reformist subgroups like *Rottamatori* and *Prossima Italia* (a splinter group of *Rottamatori*) are on the right wing. The positioning of *Bersaniani* and *Rottamatori* is similar to that based on the analysis of policy platforms presented by Bersani and Renzi during the 2012 primary election.

To double-check the validity of the estimates, we also performed content analysis of the textual documents considered and we observed that the distance between the position of each factional leader and the party leader Bersani is positively correlated (0.7) with the number of negative messages written against Bersani and posted online by politicians.[5]

Accordingly, we employ these estimates to test whether the online ideological alignment of factional leaders can explain their offline behavior. We do that focusing on the choice to openly endorse Bersani in the primary election campaign, drawing information from a list of endorsements made by PD politicians on the media (Seddone, 2012). The list has been gathered considering all the official declarations publicly released in national newspapers in the last weeks before the primary election.

Our dependent variable is *Endorsement*, which is equal to 1 when the politician supports the party leader Bersani, and takes the value 0 when not.[6] In model 1 we focus on the individual ideological placement of PD politicians considered in the analysis and we assess its effect on *Endorsement* through logistic regression. In model 2 we take into account all the politicians who are included in the endorsement list (Seddone, 2012), we assess the factional affiliation of each politician based on personal biography or membership in one of the rival intra-party associations, and we test the impact of their faction's ideological placement on *Endorsement*, through a multilevel logit. Our main independent variable is *Distance*, which records the absolute distance between the policy position of Bersani and that of politician *i* (Model 1) or that of his/her faction (Model 2). We also include *Experience*, which accounts for the number of years spent in parliament, as a control variable. The results are shown in Table 1.

Table 1 – Logit regression of Endorsement

Parameters	(I)	(II)
Distance	-2.169**	-2.417***
	(1.029)	(0.588)
Experience	0.017	-0.030
	(0.077)	(0.049)
Constant	1.775	2.689
	(1.230)	(0.565)
N	21	86
Log pseudolikelihood	-11.543	-31.445
% Correctly Predicted	66.7	87.2

Significance (two tailed): *** p<0.01, ** p<0.05, * p<0.1
Robust standard errors in parentheses

The results confirm that the ideological preferences estimated through the analysis of posts published on social media can explain a politician's choice to endorse or not the party leader Bersani in the primary election. Factional leaders whose position is closer to that of Bersani, or PD politicians affiliated with a faction ideologically tied to him are more likely to openly endorse Bersani rather than Renzi in the press and this likelihood decreases as *Distance* grows: a change in *Distance* by one standard deviation from its mean decreases the probability of *Endorsement* by 28.2 points (49.3%).

3. Factions, fission and switch in the aftermath of 2013 elections

Although parties should try to hide the conflict, they often end up washing their dirty linen in public. This happened, for instance, in the aftermath of the 2013 general elections, when all the main Italian parties were dealing with internal rivalries and dissent between the leadership and the backbenchers. Often, these conflicts became directly observable, through social network sites or through debate and interviews made on television and newspapers, and intra-party rivalries often produced a party breakup.

The occurrence of party fissions (Ceron 2015) has dramatically altered the shape of the Italian party system. Indeed, both small and large parties were (repeatedly) hit by party fissions or by switch of Members of Parliament (MPs). For example, a splinter group of the left-wing party ('Left, Ecology and Freedom') broke up to join the PD. Similarly, some MPs belonging to Civic Choice (SC), the young party created by the incumbent premier Mario Monti, rejoined the PD while others merged with a splinter group of a small

centrist party to create a new one and SC has now almost disappeared. Intra-party divisions also produced the split of one party that has long been considered homogenous: some MPs tied to a local party leader (Flavio Tosi), in fact, switch off from the Northern League (LN) to create their own party. Party switch and party fission also involved the three main parliamentary party groups. Beppe Grillo, the leader of Five Stars Movement (M5S) repeatedly decided to expel some rebels from the party, and in January 2015 a large number of MPs broke away to create an autonomous group. Berlusconi's Forza Italia (FI), which was already hit by two party fissions in 2010 and 2012, broke again in the Autumn 2014 when the Minister of the Interior (Angelino Alfano) contested Berlusconi's choice to withdraw the support to the cabinet and created a moderate party called New Centre-Right (NCD). Nevertheless, Forza Italia, was hit by two additional party fissions in June and August 2015, when party members loyal to Raffaele Fitto and Denis Verdini split.

Finally, in the highly heterogeneous PD, factional conflicts erupted as the leader of the minority, Matteo Renzi, won the congress and became the new party leader. The divisions inside the PD became particularly sharp after the labour market reform and the school reform, when a few MPs (including some factional leaders like Fassina and Civati) switch off the PD as a sign of disagreement.

Given the link between the ideological position and policy views of politicians and their propensity to leave the party (Ceron 2015) or switch off from the parliamentary party group (Heller and Mershon 2008; McElroy 2009), we want to assess whether the declarations published by MPs on social media allow to predict the occurrence of a party switch. Focusing on the three main parliamentary groups, PD, M5S and FI, we collected and analyzed the tweets written by 90 randomly chosen politicians, belonging to these parties. Per each party we selected 15 politicians representing the majority of the party (respectively: *Renziani* faction, within the PD; members of *Direttorio* loyal to the leader Beppe Grillo, within the M5S, and *Berlusconiani* inside FI) and 15 politicians belonging to minority groups (in detail: *Sinistra PD* and *Civatiani*, within the PD; *Dissidenti* within the M5S; *Fittiani* and *Verdiniani* within FI). We gathered tweets published in the official Twitter accounts during the last three months of 2014 and we tried to predict switches occurred in 2015. Tweets were analyzed through Wordfish. All the tweets written by the same account were pooled together to produce an estimate of the individual position of that politician. In addition, we also pulled together tweets written by MPs belonging to the same subgroup in order to estimate the ideological

placement of this six groups: *Renziani*, *Sinistra PD*, *Direttorio M5S*, *Dissidenti M5S*, *Berlusconiani* and *Fittiani-Verdiniani*. Figure 2 displays the placement (with 95% confidence interval) of these six groups along the latent dimension. The vertical axis represents the average position of the individual estimates of politicians belonging to that group. These two measures are strongly correlated (0.91).[7]

Figure 2 – Ideological placement of Factions at the end of 2014
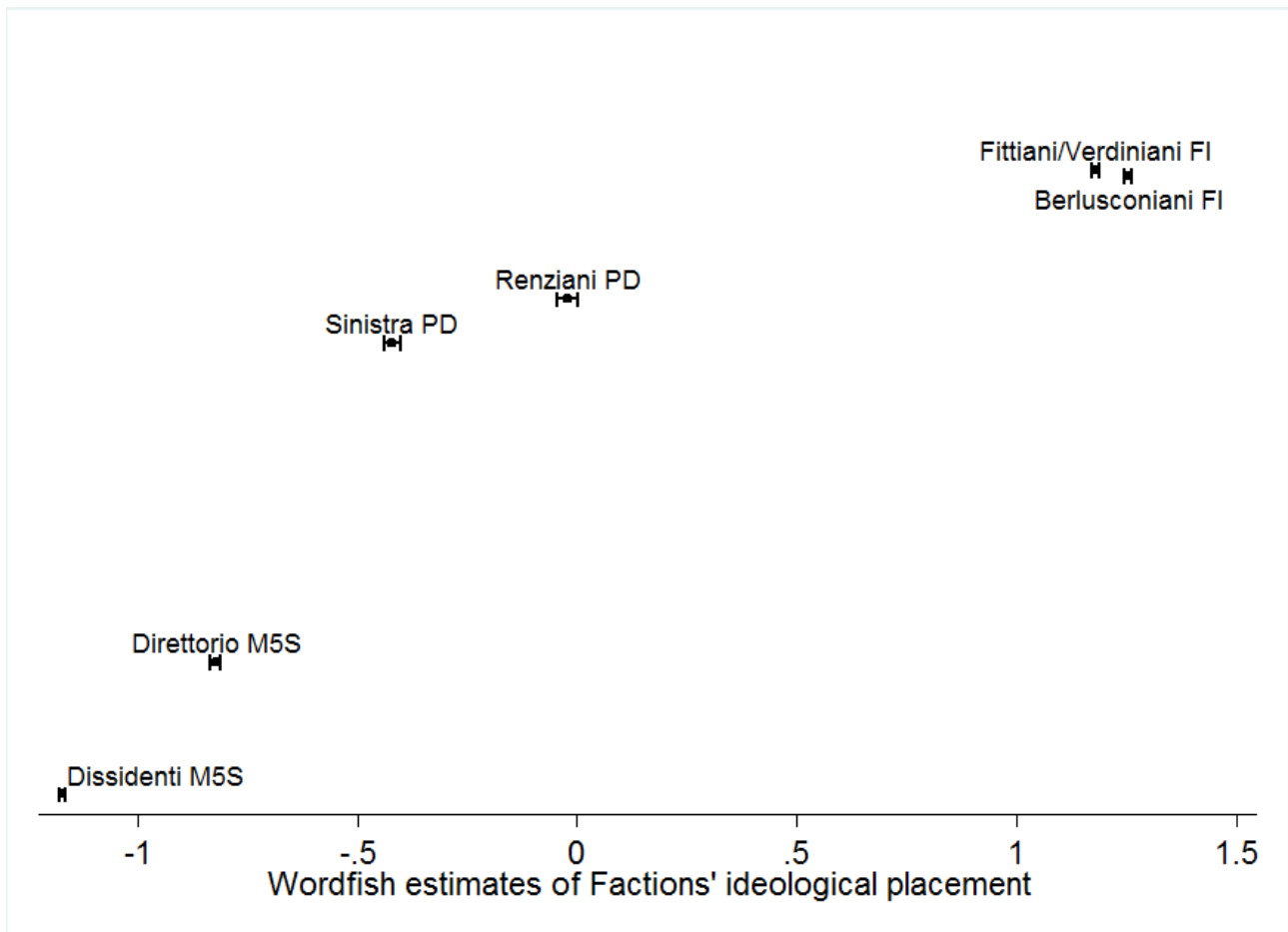
The policy positions of these subgroups are in line with the expectations: the minority faction of the Democratic Party (*Sinistra PD*) stands on the left of *Renziani* and it lies quite far away. The difference between the supporters of Grillo and the dissidents of M5S is quite large as well; the leadership of M5S appears to be slightly more conservative on the latent scale while the dissidents seems more left-oriented. Conversely, the distance between the subgroups of FI is very tiny, and this might suggest that the difference between the two factions is not primarily related to policy issues. What is more, the alignment of the three parties is coherent (r = 0.93) with the existing literature (Ceron and Curini 2014), hence we can interpret the

latent dimension as an ideological left-right scale. Based on this, we measure the *Distance* between each politician and the party leader (Matteo Renzi, Beppe Grillo and Giovanni Toti) to assess whether it affects a politician's choice to *Switch* off the party. The dependent variable *Switch* is equal to 1 when the politician decides to switch and equal to 0 when not; we also control for the level of parliamentary *Experience*, and given that observations are nested within parties, we include party dummies.

Table 2 – Logit regression of Switch

| Parameters	(I)
Distance	1.911**
	(0.799)
Experience	-0.298
	(0.256)
Constant	-1.292
	(0.428)
N	87
Log pseudolikelihood	-41.710
% Correctly Predicted	79.3
Significance (two tailed): *** $p<0.01$, ** $p<0.05$, * $p<0.1$	
Robust standard errors in parentheses. Party dummies embedded.	

The results confirm that the ideological preferences estimated through social media analysis is informative of the occurrence of a party switch. The higher the distance from the party leader, the stronger the probability that a politician leaves the party: a change in *Distance* by one standard deviation from its mean increases the probability of *Switch* by 8 points (34%).

4. Ministerial selection in the age of Twitter: The formation of Renzi cabinet in 2014

The last application focuses on ministerial selection. Taking the cue from recent studies (Kam et al. 2010; Fleisher and Seyfried 2015), we want to analyze whether the distance between a politician ideal point and the core of the party impinges on his/her political career and on the likelihood to be appointed as a minister. To do that we focus on the PD during the formation of the Renzi cabinet, in February 2014 . We considered the party in central office (PCO), which was renewed in December 2013 after that Renzi won the direct election and became party leader, as a 'bargaining pool'. We gathered data on 122 out of 185 members of the Executive body of the PD (*Direzione*), including all members that retained a Twitter account (66% of PCO).

We downloaded all the tweets published by PCO members between 8th December 2013 and 22nd February 2014, keeping only tweets with a political meaning and throwing away, for instance, comments that announced participation to television shows, etc. Furthermore, during the same time lapse, we collected all the tweets published by the official Twitter account of the party (@*pdnetwork*). These documents have been scaled through Wordfish in order to produce a matrix of similarities between PCO members and the @*pdnetwork* account, which lies at one extreme of the scale. Based on this, and under the idea that nowadays Twitter can be a device to signal its own loyalty to the party by broadcasting the party line as much as possible to the followers, we argue that the latent dimension can provide insights on how strong is a politician's loyalty toward the official party line. Figure 3 displays the placement of each PCO member and his/her distance from the position of @*pdnetwork*. Observations are clustered in three different groups: those who were deemed as potential minister by the media (circle),[8] those who actually became ministers (diamond), and those who were not judged appointable neither by the media nor by the premier (triangle).

Figure 3 – Distance between the estimates of PCO members and the PD Twitter account.

Distance between Wordfish estimates of PCO members and @pdnetwork
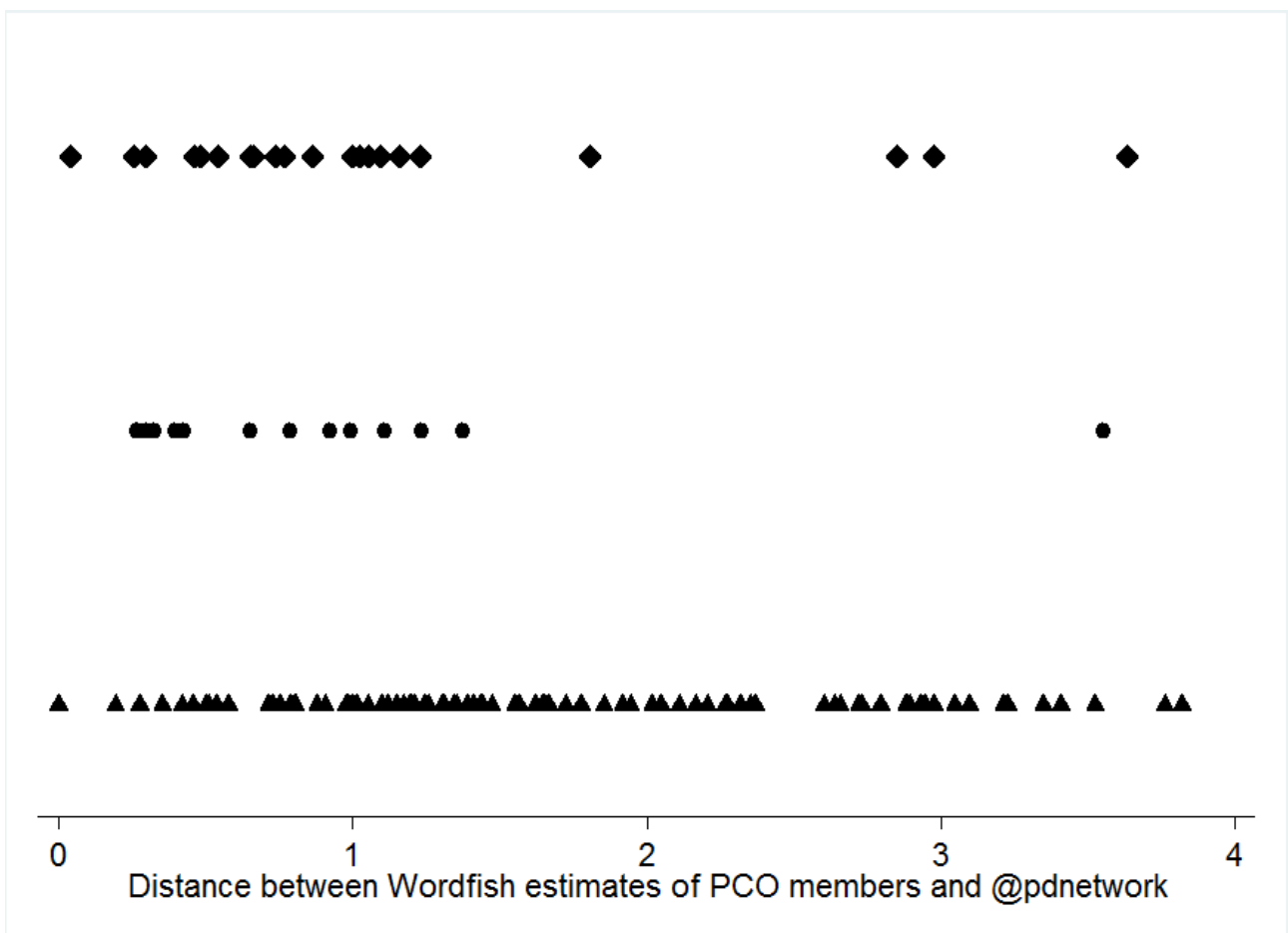
The distribution of ministers and potential ministers is closer to the party compared to that of all others politicians. The distance between each politician and the party is slightly correlated (0.4) with the results of a content analysis performed on the tweets of a subsample of politicians, made to assess the share of sentences written to support the new party leadership.

We then evaluate whether the variable *Distance* affects one of the two following dependent variables: a) *Ministerial Appointability* (Model 1), a dummy variable equal to 1 when the politician is considered as a favorite for ministerial appointment (also for a junior position), and equal to 0 when not; b) *Ministerial Appointment* (Model 2), a dummy variable equal to 1 when the politician has been actually appointed as minister (or junior minister), and equal to 0 when not. Table 3 displays the results of the logistic regression, while controlling for the degree of parliamentary *Experience*.

Table 3 – Logit regression of 'Appointability' and Ministerial Appointment

Parameters	(I)	(II)
Distance	-0.399***	-0.279**
	(0.144)	(0.139)
Experience	0.498***	0.615***
	(0.182)	(0.189)
Constant	0.856	-1.639
	(0.520)	(0.564)
N	122	122
Log pseudolikelihood	-52.571	-47.770
% Correctly Predicted	82.0	84.4

Significance (two tailed): *** $p<0.01$, ** $p<0.05$, * $p<0.1$
Robust standard errors in parentheses

Once again, the results confirm the role of social media analysis as a source of information and highlight the potential role of Twitter as a 'signal', useful to boost a politician's career. The higher the distance from the content of the official PD Twitter account, the lower the probability to be considered as a potential minister or to be appointed in office: a change in *Distance* by one standard deviation from its mean decreases the probability of *Ministerial Appointability* by 7.7 points (48.1%) and that of *Ministerial Appointment* by 5.2 points (37.2%).

5. Discussion

Following previous studies (Barberá 2015; Barberá et al. 2015; Boireau 2014; Bond and Messing 2015; Boutet *et al.*, 2012; Conover *et al.*, 2010; Hanretty 2011; King *et al.*, 2011; Livne et al. 2011), the present paper tries to exploit the striking rise in the usage of social media and social network sites (SNS) in order to extract information on the ideological placement of political actors like party factions and individual politicians.

Three applications of automated text analysis to the posts published by Italian politicians on blogs, Facebook and Twitter, between 2008 and 2014, have been presented. The results shed light on how online measured intra-party heterogeneity can explain several intra-party dynamics and in particular: (a) a politician's choice to endorse one or another candidate during primary election, (b) a politician's likelihood to switch off from his/her party, and (c) a politician's probability to be deemed as a credible candidate for a ministerial position, by the media, or to be actually appointed as a minister. Table 4 summarizes the features and the results of the three analyses.

Table 4 – Summary of the analyses

	Endorsement	**Switch**	**Ministerial Appointment**
Party	PD	PD, M5S, FI	PD
Source	Blog, Facebook, Twitter	Twitter	Twitter
Time Span	4 years	3 months	3 months
Case selection	Selected accounts	Random	Population
Validity of estimates	0.7	0.9	0.4
Significant effect	**/***	**	**/***
Magnitude of impact	49%	34%	37%-48%

The selection of cases varies, ranging from the choice of selected accounts (those of factional leaders) to the random selection of accounts (with a mix of leaders and backbenchers representing both the majority and the minority faction of the party), up to the attempt of analyzing the whole population of PCO members with a

Twitter account. In all the three analyses we tried to validate our estimates through a comparison with hand-coding and manual content analysis, finding a proper correlation in each analysis and reaching a satisfactory validation of data in at least two cases. Several statistical analyses show that the degree of intra-party heterogeneity measured through social media analysis has indeed an effect on a variety of topics and the magnitude of such effect seems quite relevant. Although social media are affected by some limitations and could not be able to substitute other types of data, these results suggest that social media can be a promising and precious sources of information on intra-party politics. Future research should investigate whether text analysis techniques can be profitably mixed with other methods based on network analysis in order to provide more valid estimates that can enhance our understanding intra-party dynamics. Furthermore, future studies could attempt to continuously monitor the evolution of ideological preferences over time, thereby providing a crucial improvement with respect to alternative sources of data on the preferences of individual politicians that can contribute to examine their political careers. Finally, social media analysis should be extended to study internal polarization across parties and countries, in a comparative perspective. In light of this, social media data can also be used to estimate the position of citizens and influent opinion makers, like bloggers, journalists and media, in order to assess the congruence of preferences between parties, activists, voters, media, and interest groups.

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[1] One possible exception is represented by the replies to someone else's messages. The replies, however, can be easily excluded from any analysis.

[2] The fractionalization of the PD yields effects on the party system. For instance, in the election of the Head of State, held in April 2013, factions supported different names and the party split during the vote when left-wings and right-wings coalesced to impose their veto on the two candidates supported by the party mainstream, Franco Marini and Romani Prodi. Note that several rebels publicly declared their dissent on the web. Indeed both politicians and citizen expressed their view on the preferred candidate on social media and SNS up to the point that several journalists highlighted the potential impact of online public opinion on the voting behavior of party MPs (Ceron 2014).

[3] For instance, to supplement Enrico Letta we analyzed declarations issued by Francesco Boccia (who can be considered his 'man-Friday') and similarly, to account for the position of Dalemiani we retained texts written by Nicola La Torre, the 'spokesman' of Massimo D'Alema.

[4] The placement of words on the latent dimension is in line with their substantial meaning in the Italian political language and this confirms that the analysis catches the actual meaning of those words. Terms like '*redistribuire*' (redistributing) and '*uguaglianza*' (equality) are located on the left as well '*disoccupazione*' (unemployment). Concerns about '*inflazione*' (inflation) are instead typical of the right of the party likewise support for the '*agendamonti*' (a platform of reforms proposed by the former centrist premier Mario Monti).

[5] Here is an example of a negative messages written against Bersani: '*We can't travel to the future with Bersani who has never written a single page talking about the future in the last years*'.

[6] Note that a few politicians explicitly declared their non-endorsement for both candidates. Considering the endorsement in favor of Renzi leads to similar results.

[7] Even in this example, the placement of words on the latent dimension is in line with their substantial meaning in the Italian political language: indeed, left-wing words (e.g., '*redistribuire*'/redistribution, '*giustiziasociale*'/social justice, '*democraziapartecipativa*'/participatory democracy) have been discriminated from right-wing ones (e.g., '*chiesa*'/church, '*patria*'/motherland, '*bastatassesullacasa*'/stop house tax). This seems to confirm that the political language is largely ideological in nature, even on Twitter.

[8] To assess which PD politicians were deemed appointable by the media we scrutinize newspapers (both in paper and digital edition) as well as newswire agency's data from the resignation of the Letta cabinet (February 14th) until the announcement of the Renzi cabinet (February 22nd). All the main newspapers (*La Repubblica*, *Il Corriere della Sera*, *Il Fatto Quotidiano*, *Quotidiano.net*, *Il Sole 24 Ore*, *Il Giorno*, *Il Giornale*, *Libero*, *Il Tempo*, *La Stampa*) and newswire agencies (*Agi*, *Asca*, *Ansa*, *Adnkronos*, *Italpress*) were considered.

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