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A spatial analysis of the XIII Italian Legislature

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A spatial analysis of the XIII Italian Legislature *

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Abstract

We present a spatial map of the Italian House during the XIII Legislature obtained by applying the Poole and Rosenthal methodology to roll call data. We obtain coordinates for almost all the 650 MPs that were on the House's floor at the time, and we aggregate them according to parties. We find that voting patters generate basically a two dimensional political space. The first dimension represents loyalty to either the ruling coalition or the opposing one. The second dimension may describe differences at the constitutional level. This finding is consistent with the exceptional case of the party Northern League, which at the time did not belong to either coalition, and presented itself as a northern and anti-system party. Last, we compute the average dispersion of party coordinates along each dimension and compare them with the Rice index of cohesion, the agreement index (which takes into account abstention), and one other index we construct to account for absence from voting. We find that absence is significantly correlated with the dispersion of parties along the second dimension. We use this to motivate the importance of further analysis on the massive absence in Italian Parliament from voting sessions.

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1 Introduction

This paper offers a spatial map of the Italian political space as it unravels from the final votes cast by the members of the House (the lower chamber of the Italian Parliament) in the course of the XIII legislature (1996-2001). We apply the methodology developed and applied to the U.S. Congress by Poole and Rosenthal [10] (PR henceforth) and we then address three basic questions: 1) what is the dimensionality of the Italian party system? 2) What do these dimensions mean? 3) How do our results relate to previous spatial studies? Further, we look at how party cohesion is related to dispersion in each dimension of the political space, and we find some suggestive evidence about the strategic role played by absence from and abstention in voting sessions.

The Italian political space has been investigated for the past three decades, under a variety of methodologies and in different time frameworks: Party positions have been estimated by using expert surveys data (Warwick [15]), mass survey data (Sani and Sartori [14], Corbetta, Parisi and Schadee [3]), ecological data (Ricolfi [11]), and party manifesto data (Budge et alii [1], Campus [4], and Pelizzo [8]).

Little agreement has been achieved about the number and the nature of the dimensions of the political space under investigation. Some have in fact suggested that the Italian political space is or can be properly represented as uni-dimensional, with parties ordered along the (ideological) left-right dimension. This is the interpretation given by Sani and Sartori [14] for the mid seventies, by Corbetta, Parisi and Schadee [3] for the 1966-1983 period, by Campus [4] for the 1996 elections, and by Pelizzo [8] for the 1948-1996 period. Others have argued that the Italian political space is multi-dimensional. This is the evidence found by Ricolfi [11] and [12] for the periods 1953-1992 and 1994-1996, by Loera and Testa [7] who have investigated the dimensionality of the perceptual space of the voters in the new millennium. It is however interesting to note that the scholars advocating the multi-dimensional interpretation of the Italian political space have not reached a consensus as to what are the structuring dimensions of the Italian political space. For several decades it was believed that the first dimension of the Italian political space was the left-right dimension and that the second dimension divided pro-system parties from anti-system parties (Sani [13]). Recent studies have instead suggested not only that the second dimension might have a different meaning (Ricolfi and Testa 2002) but also that the left-right dimension may no longer represent the main dimension of the Italian political space (Ricolfi [9] [page 31]).

By applying the PR methodology, we can estimate the political coordinates of each party and the dimensionality of the political space as they unravel from voting behaviors in the House. We find that the Italian political space is best understood as two-dimensional, and we discuss the nature of these two political dimensions. Specifically we argue that the first dimension structuring the parliamentary party system is the loyalty to the group each party belongs to, either Freedom Pole (Polo) or Olive tree (Ulivo), while the second dimension reflects differences at Constitutional level that are somehow related to the North-South cleavage. Moreover, we estimate parties' dispersion along each dimension, which constitutes another element of inter-party differences and similarities, and we find that dispersion on each dimension relates to different factors. In particular, dispersion on the first dimension is smaller and significantly correlated with the Rice agreement index. On the other hand, dispersion on the second dimension is significantly correlated with an agreement index we generate to account for absence in voting sessions. We take this as suggestive evidence of the strategic and yet not very well understood role of absenteeism in parliamentary dynamics.

The remainder of the paper is organized as follows: section 2 discusses the data we collected, section 3 describes in some detail the PR methodology; section 4 reports the spatial map so obtained and discusses the dimensionality of the political space and its interpretation, while section 5 discusses the relationship between the parties' cohesion and the nature of these political dimensions. Section 6 discusses some possible implications of our findings and suggests some possible venues for future research.

2 The data

Voting procedure in the Italian Parliament is very elaborate. In the standing orders of the House at least twelve articles (with several subarticles) that discipline parliamentary votes. In particular, any time the number of *Yea* (*Nay*) exceeds *Nay* (*Yea*) and at least half of the MPs are participating to the vote (i.e. if the quorum is met), a bill is passed (rejected). MPs that are absent because on duty, are considered as present in the computation of the quorum. Similarly, MPs that show up but abstain, i.e. do not express either *Nay* or *Yea* , are considered as present.

Voting is managed electronically or can be done by raising hand (the most common), by splitting the house in two groups, or by roll call. In some specific instances, such as for bills dealing with human and family rights,

constitutional bodies, and electoral rules, voting is secret. In other cases, bills may be passed within Committees, without involving the whole House. (See article 92.1 of the standing orders.)

During the XIII Legislature, 905 bills were published in the Gazzetta Ufficiale. [1] Some may have been approved during the previous Legislature, some may have been passed with secret vote, while some others may have been approved within Commissions. As a result we a have track of voting records for 630 bills. The House hosts 630 MPs, but because of some turnover we have a record of as many as 651 of them. For each bill we know whether each MPs was absent, on a justified absence, present and voted *Yea* , or *Nay* or abstained. We just coded votes *Yea* and *Nay* while treated all the other cases as missing. The dataset so created has been used to estimate MP's policy positions according to the PR methodology, which we describe in the next section. [2]

3 The methodology

The methodology of estimating roll calls developed by PR is based on a spatial model of probabilistic voting in which MPs are assumed to have single peaked preferences, represented by a normal utility function, over an n-dimensional space (to be determined empirically). From now on we will refer to these peaks as MPs' bliss points or MPs' coordinates interchangeably. MPs vote for the alternative (*Yea* or *Nay*) they prefer the most. The probability of making a mistake when voting is normally distributed and i.i.d across roll calls and alternatives.

As a consequence, the payoff associated to the, say, *Yea* outcome of roll call j, in an s dimensional policy space is given by

$$u(i,j,y) = \beta e^{-\frac{1}{2}\sum_{k=1}^{s} w_k d^2_{ijky}}, \tag{1}$$

where β is a scaling factor which is proportional to the variance of the error term, w_k are the salience weights, and d^2_{ijky} is the squared distance of legislator i from the *Yea* outcome along the dimension k. By letting ϵ_{ijk} denote the error term, it follows that the distribution of the difference between the two utilities is

$$U(i,j,y) - U(i,j,n) \sim N(u(i,j,n) - u(i,j,y), \sigma^2),$$

[1] The source is the House itself, through its web-site: http://www.camera.it

[2] A detailed explanation of the PR methodology is in Poole [9].

and the probability that legislator i votes for *Yea* in roll call j is given by

$$P_{ijy} = \Phi(\frac{u(i,j,y) - u(i,j,n)}{\sigma}).$$

It is possible to estimate MPs' bliss points as well as each roll call coordinate (one for the *Yea* and one for the *Nay* outcome). The procedure is called NOMINATE and is based on a three steps algorithm: first, given some reasonable initial values of the MPs' bliss points, the roll call parameters are estimated; second, given those estimation of the roll call parameters, a new estimation for the MPs' bliss points is obtained. Last, given both MPs' bliss points and roll call points, the utility function parameters are estimated. [3] The next section reports our findings and the spatial map of the Italian Parliament.

4 Spatial analysis

Table 1 shows the summary statistics of our estimations. The first row reports the number of bills that are in the dataset, the second indicates the cutoff criterium used for rejecting the bills; thus roll calls with a majority of at least 97.5% were not considered in the estimation. This is a traditional cutoff rule. We also tried several less stringent cutoff rules, to decrease the number of roll calls that were discharged, but the results, in terms of goodness of fit, do not improve. As a result, 388 roll calls were rejected (line three) and 242 were accepted (line four).

Similar numbers (rows five and seven) are reported for the number of MPs that were available (650) and those who were rejected (9). The cutoff criterium of 20 (which is still standard) means that only MPs for which there is a record of voting in at least 20 roll calls are considered (line six). Thus we could get coordinates for 642 MPs.

The remaining rows in table 1 show the goodness of fit statistics (percentage of correct classified - PCC, and aggregate proportional reduction in error - APRE) if we estimate a model with one, two or three dimensions. [4]

[3] A more general version, (DW-)NOMINATE, allows for more sophisticated estimations of MPs bliss points, as it takes into account their voting patterns across legislatures. As data about the Italian Parliament have just started to unfold, at present we can only confine ourselves to the static version of this procedure.

[4] PCC is just the percentage of the correct predictions that are generated by the estimated model. APRE instead is explaining how the model can improved with respect to the trivial prediction *all MPs vote according to the majority*. It is computed in the

Roll-calls read	630
Cutoff for bills	0.025
Number rejected	388
Number accepted	242
Legislators read	651
Cutoff for MPs	20
Number rejected	9
Number accepted	642
PCC(1)	96.192
APRE(1)	0.827
PCC(2)	97.694
APRE(2)	0.895
PCC(3)	97.940
APRE(3)	0.906
APRE(2) - APRE(1)	6.8%
APRE(3) - APRE(2)	1.1%

Table 1: Summary statistics.

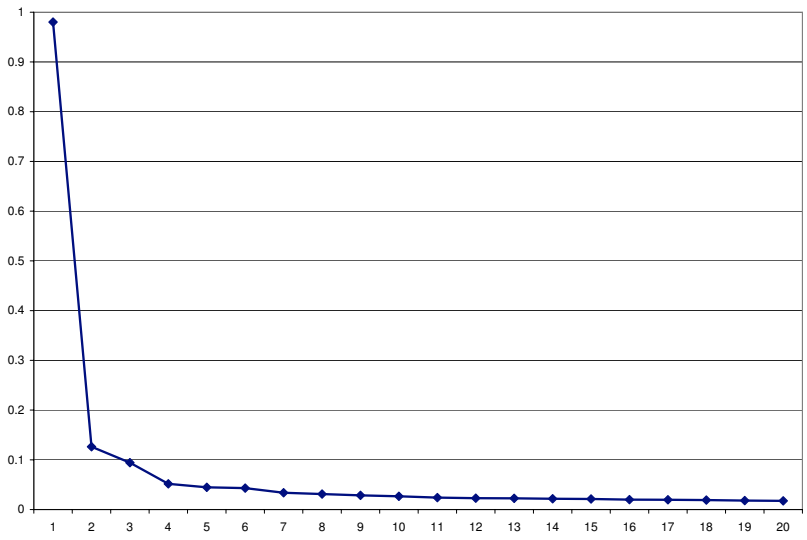

Figure 1: Normalized eigenvalues of the double centered agreement score matrix. The *elbow* is a good indicator of the dimensionality of the space.

Finally, the last three rows report the improvement in APRE if we increase by one the dimensionality of the model.

The first question of interest is about the dimensionality of the political space. How many dimensions do we have? Figure 1 reports the plot of the normalized eigenvalues of the double centered agreement score matrix. A good way to understand the dimensionality of the political space, in fact, consists in locating the *elbow* in such a plot. As can been seen, it is very

following way:

$$APRE = \frac{\sum_j \{\text{minority vote - classification error}\}_j}{\sum_j \{\text{minority vote}\}_j},$$

and it is equal to 0 when the model does not improve on the benchmark case, and 1 when the model achieves perfect classification. Note that APRE can also be negative, whenever the model generates more errors than the simple benchmark.

Classification	H	Max spread	NH
TESEO	0.088	0.0625	0.027
OURS	0.097	0.0625	0.037
Clausen	0.23	0.167	0.08
Peltzman	0.13	0.083	0.05

Table 2: Dispersion indexes for bills. H is Herfindahl index. Max spread is the minimum value for H. NH is the normalized Herfindahl index.

likely that the dimension is either two or three. In order to have a better understanding of the dimensionality, we look at the improvements in APRE when we increase by one the dimension. Table 1 shows that an increase from one to two dimensions improves APRE by 6.8 percentage points. Moving further to three dimensions only improves APRE by 1.1 percentage points. Thus we focus our analysis on a two-dimensional space.

Since the type of bills that are proposed and passed is, to a very large extent, endogenous to the legislative process, while we treat them as exogenous in our estimations, we decided to make sure that the low dimensionality is not just an artifact of this issue. To this end we coded the bills according to three main classification (Clausen, Peltzman, and TESEO) and one other classification we made on our own (OURS). TESEO is the classification of bills that is provided by the House itself. [5] We then computed the Herfindahl concentration index for any of the above mentioned classifications, and then we normalized it in such a way that it ranges between 0 (maximum spread, that is even distribution, of the bills) and 1 (maximum concentration of bills in one category). [6] Table 2 reports our findings for any classification of the bills we adopted. The worst possible case is if we look at the Clausen classification, which has the smallest number of categories. Even so, we have that NH is at 8%, so that the variety of bills passed is just 8% far away from an even distribution. Therefore the low dimensionality in the Italian Parliament is not a mere artifact of the legislative process, and we can now move onto understanding the meaning of these two dimensions.

[5] In the appendix we report both TESEO and OURS classifications. Clausen and Peltzman can be found, for example, in Poole and Rosenthal [10].

[6] Specifically, if we let p_i denote the percentage of bills within category $i = 1, \cdots, n$, the Herfindahl index is computed as $H = \sum_i p_i^2$. Whenever the bills are evenly split, $H = 1/n$. Whenever bills are concentrated on one category only, $H = 1$. Our normalization generates $NH = (nH - 1)/(n - 1)$, which ranges between 0 and 1.

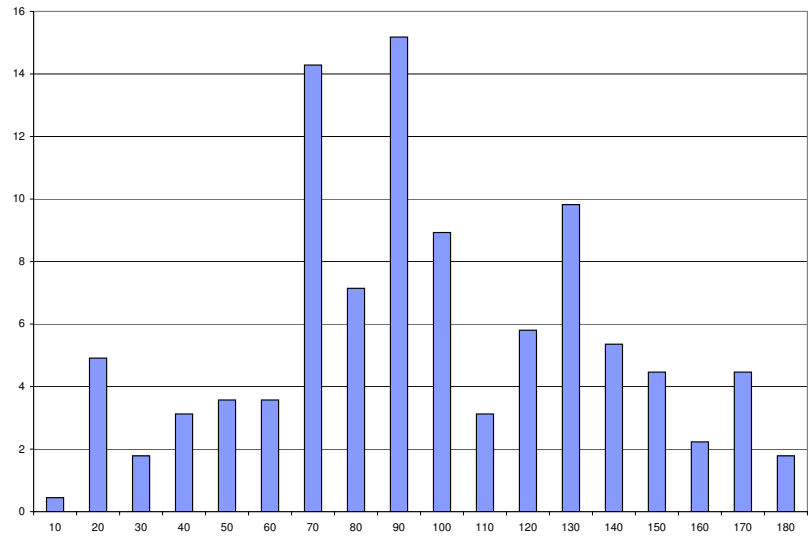

Figure 2: Distribution of unconstrained bills by cutting line angles

Cutting line angles provide a useful way to understand which dimension is playing an important role in each roll call. In particular, any time the cutting line is (close to) vertical, we know that voting goes according to the first dimension. Similarly, when the cutting line is (close to) horizontal, we know that voting is mainly determined by the second dimension. Figure 2 reports the distribution of the unconstrained bills by cutting line angles. Unconstrained estimations are those where the cutting line angle is not forced to be on one of the edges of the space. As we can see, the mode of the distribution is represented by bills with vertical cutting lines. Despite the fact that the Italian political arena is characterized by a multiparty system, the XIII Legislatures offers us the possibility to compare the voting patterns within two main coalitions: Ulivo and Polo. Thus we define party-line votes whenever at least 90% of the Ulivo coalition voted against at least 90% of the Polo coalition. Figure 3 shows the distribution of the unconstrained bills with party-line votes by cutting line angles. As we can see, cutting line

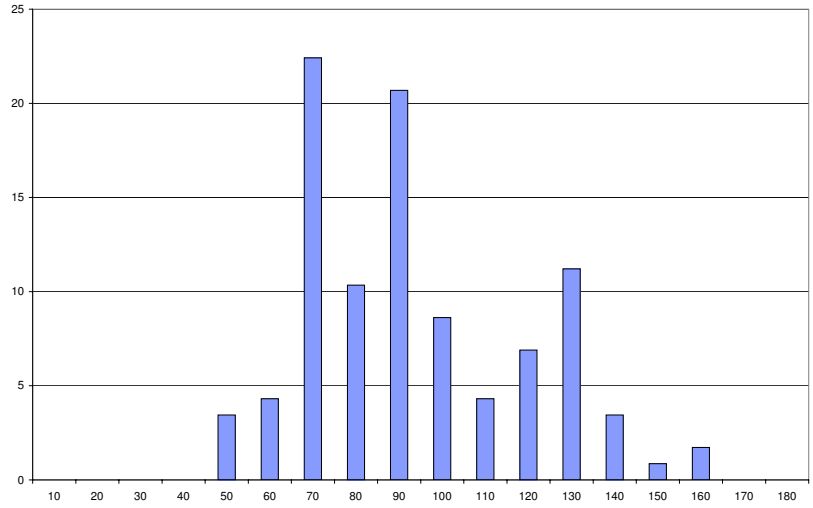

Figure 3: Distribution of unconstrained bills with party-line vote by cutting line angles

angles are closer to vertical when party-line votes are present.

So, what do these dimensions mean? Figures 4 and 5 report the spatial maps obtained by, respectively, taking the mean and the median of each party member's coordinates. [7] Like in the case for the U.S. Congress (see Poole and Rosenthal [10]) the first dimension is an expression of loyalty to the coalition the group belongs to. From left to right, we have groups more loyal to Ulivo, groups less loyal to either Ulivo or Polo, and groups loyal to the Polo. [8] We tested this hypotheses by analyzing all the bills where party line vote was present. In particular, we computed the change in APRE if we move from one to two dimensions and we found that it is about 3.7%, which confirms us that party line is the main determinant of the first dimension.

Under this perspective, it is not surprising that the Party of the Communist Reformation (PRC), a neo-communist party, is not at the far left of the first dimension. Their support for the Ulivo coalition has been pretty weak in the first years of the legislature, and has formally stopped when Prodi resigned from Prime Minister after losing a vote of no confidence from PRC themselves on October 9, 1998. In that period PRC also faced the departure of some of its members, who were more pro-Ulivo and decided to form a new neo-communist party, Party of the Italian Communists (PdCI). Their position in the first dimension is consistently to the left of PRC because, unlike the latter, they offered a support to the center left government that followed. Another interesting aspect of PRC comes by comparing the mean and the median position. In fact, the median member is more loyal to the Ulivo coalition than its average member, who nevertheless was more representative of the party stated position.

At the other extreme of the first dimension we have LN. A member of the center-right coalition during the XIII Legislature, LN caused the crisis of Mr Berlusconi's government which eventually led to early elections in which the this party ran alone against Roma-ladrona (Rome big thief) of both Roma-Polo and Roma-Ulivo. Thus in the XIII Legislature, LN represents the case of opposition to both coalitions, and its location to the right indicates its proximity to Polo more than Ulivo. In fact, during the current (XIV) Legislature, the LN belongs to the Polo which constitutes the majority coalition.

As for the second dimension, the first hypothesis that comes to mind

[7] Specifically, we followed this two steps process: first, we computed the average (median) of MP's coordinates by group in each bill, considering only those MPs that actually voted on that bill. Our score is the group average across all bills.

[8] At the extreme right-end of the spectrum, we have a noticeable exception, the Northern League (LN). In the following paragraphs we will comment about this party's position.

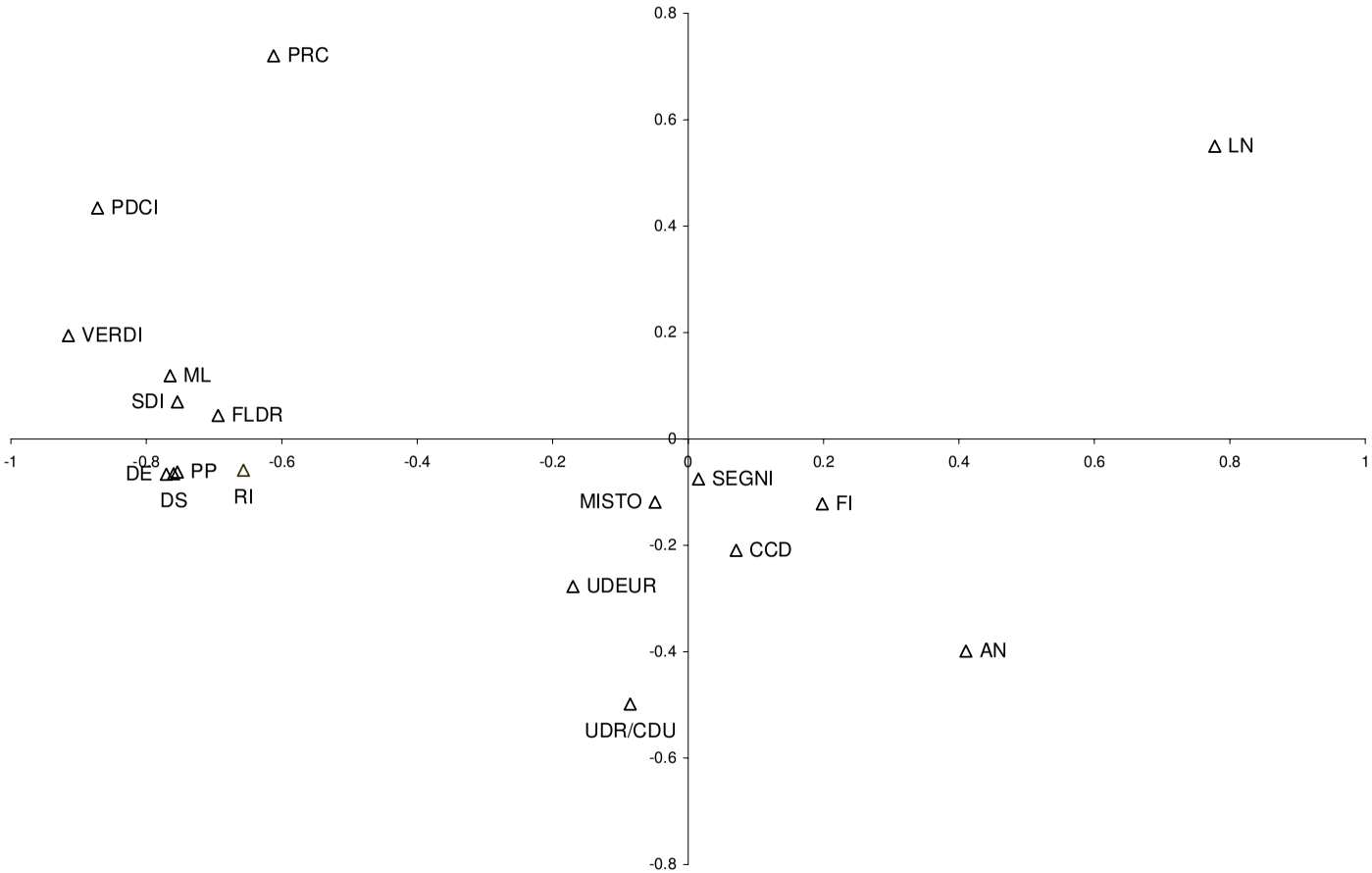

Figure 4: Average coordinates by groups

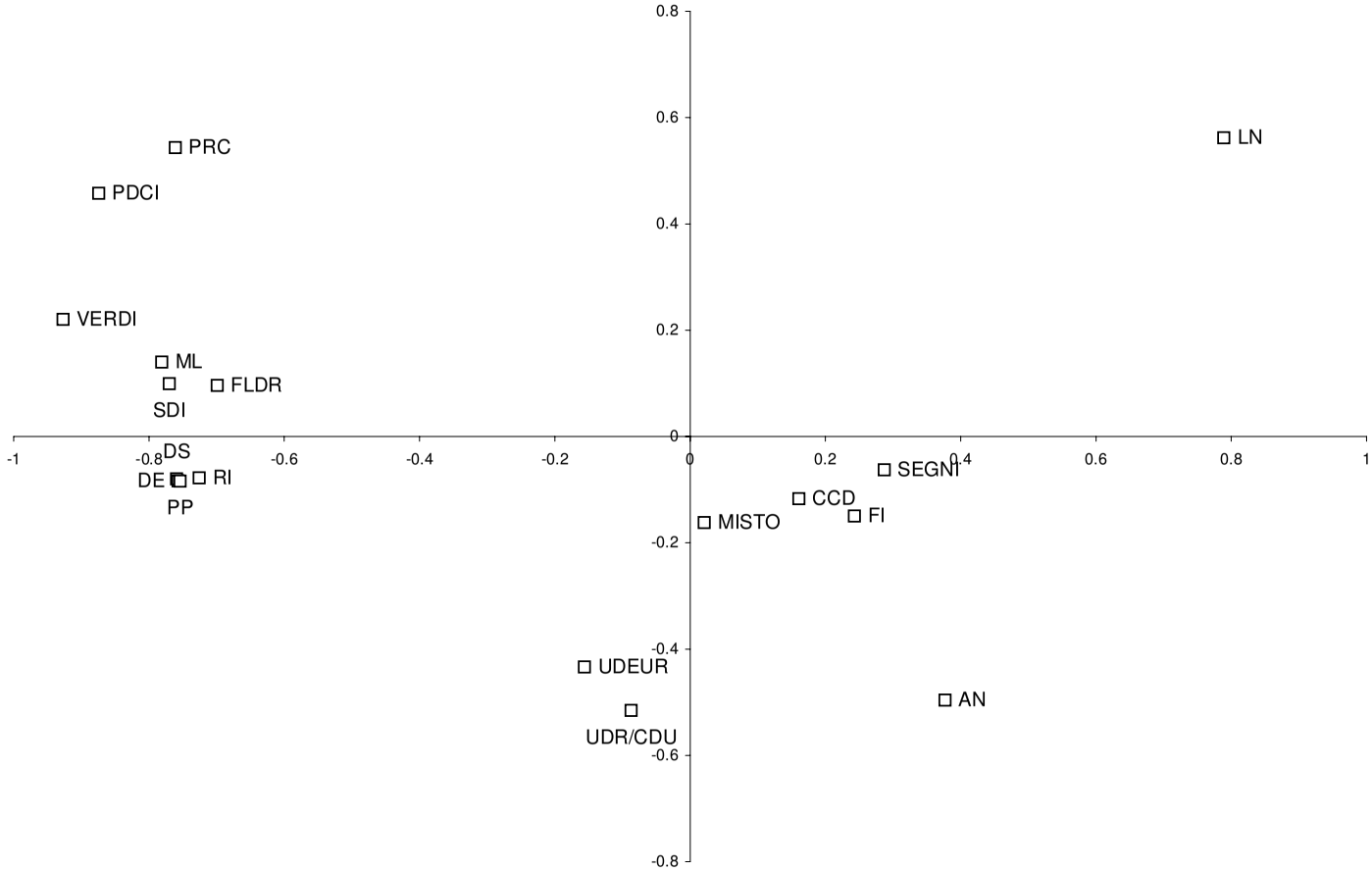

Figure 5: Median coordinates by groups

by looking at the scatter plot is that it represents the North - South spectrum. Parties whose electoral support was greater in the North than in the other parts of the peninsula are located near the upper end of the second dimension. Parties whose success was mostly due to the Southern votes are located near the lower end of the second dimension, while the parties which had the best electoral performance in Center Italy, are located in between the other two clusters of parties (Cartocci [2][page 195]). We computed the correlation of each party's percentage total vote at Northern Italian regions with the party's second dimension, and we found that sign is positive (r =. 402). Similarly, we computed the correlation of each party's percentage total vote at the Southern Italian regions with the party's second dimension and we found almost identical results but with the (expected) opposite sign (r = -.395). Such a territorial component could emerge from bills focused on Southern areas (which belong to category 7 of TESEO). Unfortunately there are not enough observations to look at changes in APRE from one to two dimensions because of regional factors. On the other hand, the territorial factor could as well emerged from bills related to constitutional matters. In fact, the territorial cleavage was a heated issue for most of the XIII Legislature not only because LN was advocating a secession of the Northern regions, had created a Parliament for Padania and had held mock elections for the Padanian parliament, but also because the reform of the form of state was one of the main issues of the reformist agenda of the Bicameral Committee for the constitutional reforms presided over by D'Alema. The debates as to how to reform the Italian form of state opposed the parties in favor of preserving the unitary form of state and were generally stronger in central and southern Italy to the parties advocating a reform of the form of state and were stronger in the Northern Regions. The fact that the Bicameral Commission basically ended up as a big failure, since no agreement was found, led us think as the possible correlation between territorial and constitutional interests. Our analysis reveal actually that constitutionalism provides the best explanation for the change in the dimensionality of the political space in the Italian parliament and, indirectly, for our interpretation of the second dimension as territorial. In fact, to test this hypothesis we once again looked at the change in APRE if we move from one to two dimensions by restring our attention to bills within the same category in each of the bills classifications. In particular, we restricted our attention to only those categories with at least 10 roll calls and changes in APRE above 20%. Not surprisingly we find that neither the Clausen nor the Peltzman categories fit well the Italian case. With the TESEO classification, we find that the most significative changes in APRE are related to the following

categories: 1 (Constitutional matters) , 4 (Health), 9 (Labor), and 11 (Productive activities). With OURS classification, we have that only category 1 (Constitutional matters) is relevant. (Tables 8 through 10 in the appendix show our findings.)

Similarly, we looked at the changes in APRE by moving to a two dimensional model in the cases were cutting line angles were close to either 0 (namely less than 20) or 180 (namely greater than 160) degrees. Those cases are rolls calls were the second dimension plays a major role. In fact the changes in APRE are huge. We then looked at the distribution of categories of bills in this set. We found that Constitutional matters is one of them, but not the only one. In OURS, all the bills who represent ratifications, delegations, extensions of deadline are even more numerous. Figures 11 and 12 in the appendix report the distributions of bills according to TESEO and OURS classification whose cutting line angle is almost flat.

5 Party cohesion within the House.

A second measure of interest we can obtain from individual MPs' coordinates is the groups' standard deviations, which we take as a measure of group's cohesion. We think this is an interesting alternative measure of party cohesion because it comes directly from a structural model of congressional voting. In fact, as Desposato [5] points out, standard cohesion scores do not always provide accurate estimates of parties cohesion, just because they lack an underlying model of congressional voting. As an example, he shows that in a random utility model of legislative behavior, those standard scores tend to overestimate the cohesion of small parties. Another reason of interest of our measure of cohesion lies in the fact that dispersion scores account for the dimensionality of politics and political behavior. Hence they do not only allow the analyst to measure parties' cohesion, but they also allow the analyst to assess party cohesion on each of the dimensions of a given political space and, therefore, to investigate whether and to what extent cohesion is affected by the nature of the political issues that are relevant on each dimension.

By performing our analysis of party's cohesion, we found that the Italian parties differed from each other not only because they occupy different positions in the political space (average of the positions occupied by the various MPs belonging to a party) but also because they display different levels of concentration/dispersion (standard deviation). While some parties like the

	$\Delta X1$	$\Delta X2$	Size
$\Delta X1$	1.000		
$\Delta X2$	0.635*	1.000	
	(0.005)		
Size	-0.196	-0.121	1.000
	(0.437)	(0.633)	

Table 3: Correlations between dispersions on each dimension and size. Asterisk indicates value that is significant at 0.05 level or better. Values in brackets are the significance levels.

Democrats of the Left (DS) or PdCI display low levels of dispersion, others like the Segni Pact or the Union of the Democrats for Europe (UDEUR) display much higher levels. So parties have different degrees of homogeneity. The first factor affecting parties' homogeneity is represented by the nature of political issues or the nature of the political dimension. Let's go Italy (FI),UDEUR, Mixed Group, Italian renewal (RI) and the Segni Pact are more homogeneous on the first dimension, while the all the other parties are more homogeneous on the second dimension. In general we find that dispersion along the first dimension is positively correlated with dispersion along the second dimension, but that dispersion along either dimension is not significantly correlated with the size of the party. (See table 3) We can push the analysis a step further and ask: what factors are related to parties' dispersion on the two dimensions? In order to answer this question, we correlate the estimates concerning parties' dispersion on each axis with three measures of cohesion, namely the Rice index, the Agreement Index (AI) proposed by Hix, Noury and Roland [6], and the Modified Agreement Index (MAI), proposed by us. The basic difference between these three measures of cohesion concerns the number of voting options that are available to MPs. There are two voting options (yes, no) considered by the Rice index, there are three voting options (yes, no, abstain) considered by AI, and there are four voting options (yes, no, abstain, absence) considered by MAI. [9] The

[9]Specifically, let s_{ij}, n_{ij}, a_{ij} and h_{ij} be, respectively, the number of MPs for group j that vote yes, no, abstain or stay home for roll call $i = 1, \ldots m$. The Rice index for group j is

$$R_j = \frac{1}{m} \sum_{i=1}^{m} \frac{|s_{ij} - n_{ij}|}{s_{ij} + n_{ij}};$$

measures of party cohesion and on parties' dispersion on both axes are presented in table 4. The need to develop this new index of cohesion resulted from the fact that the number of MPs abstaining if fairly small, the number of MPs being absent is fairly high. This form of legislative behavior cannot be simply explained by the fact that individual MPs have something else or more important to do. The analysis of the votes on the final bills in the Italian chamber of deputies reveals that for some bills the MPs of all the major opposition parties (LN, FI, and National Alliance, AN) either stayed home or abstained from voting, thus lowering the quorum needed to approve the bills. One may therefore ask oneself whether this form of behavior is an explicit support from the opposition members to a divided, undisciplined government coalition, to pass some crucial bills in the Legislature. Other hypothesis may be of interest as well. Mass absence can, for example, be a sign of protest against the bill being voted on, or even a (failed) attempt to avoid meeting the quorum. Given the possible strategic significance of absence and abstention, these two phenomena should be considered as one of the voting options, and should hence be taken into consideration to properly measure parties' cohesion. Having measured parties' cohesion on the basis of these there indexes, we correlate them with parties' dispersion on each dimension.

By performing these two sets of analysis, we find that the correlation coefficients are all properly signed and suggest that parties' cohesion declines when parties become more dispersed. Furthermore, we find that the correlation between dispersion on each dimension is not significantly (from a statistical point of view) related to two measures of cohesion. Dispersion on the first dimension relates significantly only to the Index of Agreement, while the dispersion on the second dimension relates significantly only to the MAI index. This finding is relevant for three reasons. First because it shows that the party dispersion on the two axes relates to different factors. On the first dimension, which basically captures the government-opposition conflict, parties' dispersion relates to how MPs vote when they are present. On the

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The Agreement index is:

$$AI_j = \frac{1}{m}\sum_{i=1}^{m}\frac{\max\{s_{ij}, n_{ij}, a_{ij}\} - 1/2(s_{ij} + n_{ij} + a_ij - \max\{s_{ij}, n_{ij}, a_{ij}\})}{s_{ij} + n_{ij} + a_ij};$$

The Modified Agreement index is:

$$MAI_j = \frac{1}{m}\sum_{i=1}^{m}\frac{\max\{s_{ij}, n_{ij}, a_{ij,h_{ij}}\} - 1/3(s_{ij} + n_{ij} + a_ij + h_{ij} - \max\{s_{ij}, n_{ij}, a_{ij}, h_{ij}\})}{s_{ij} + n_{ij} + a_ij + h_{ij}}.$$

Table 4: Agreement indexes for each party and dispersions along each dimension. FI = Let's go Italy; LN = Northern League; DS = Democrats of the Left; DE = Democrats; PP = Popular Party; UDEUR = Union of the Democrats for Europe; MISTO = mixed; SDI = Italian Socialist Democrats; CCD = Christian Democratic Center; RI = Italian Renewal; PRC = Party of the Communist Reformation; SEGNI = Segni Pact; ML = Linguistic Minorities; VERDI = Greens; FLDR = Federation of Liberals, Democratic and Republicans; PDCI = Party of the Italian Communists; AN = National Alliance; UDR/CDU = Christian Democratic United.

PARTY	RICE	AGREEMENT	MAI	DISPERSION ON X1	DISPERSION ON X2
FI	0.919	0.932	0.504	0.248	0.161
LN	0.955	0.925	0.537	0.077	0.101
DS	0.993	0.989	0.747	0.024	0.078
DE	0.982	0.969	0.543	0.077	0.150
PP	0.991	0.987	0.615	0.030	0.105
UDEUR	0.996	0.986	0.568	0.415	0.381
MISTO	0.876	0.823	0.555	0.451	0.345
SDI	0.989	0.988	0.604	0.040	0.099
CCD	0.980	0.957	0.550	0.162	0.260
RI	0.989	0.984	0.570	0.189	0.176
PRC	0.991	0.988	0.572	0.183	0.229
SEGNI	0.995	0.914	0.743	0.440	0.102
VERDI	0.978	0.945	0.603	0.062	0.165
ML	0.998	0.991	0.780	0.033	0.062
FLDR	0.998	0.989	0.779	0.044	0.083
PDCI	0.992	0.988	0.499	0.038	0.095
AN	0.951	0.938	0.529	0.126	0.290
UDR/CDU	0.970	0.936	0.523	0.122	0.235

	Rice	Agreement	MAI
$\Delta X1$	-.432	-.606	-.128
	(.073)	(.008)	(.612)
$\Delta X2$	-.453	-.422	-.519
	(.059)	(.081)	(.027)

Table 5: Correlations between dispersion of coordinates and agreement indexes.

second dimension instead, which captures the Constitutional conflict, parties' dispersion relates to a metric that accounts not only for how MPs vote when they're present but also for whether MPs are actually present. Second this finding is relevant because it further corroborates, however indirectly, our understanding of the second dimension as a constitutional dimension. In fact, the extent to which parties are concentrated or dispersed is affected also by parties' absence rate, which provides a good indication of the importance parties attach to the work of parliament and, more broadly, to the functioning of the existing political institutions and constitutional order. Finally, this finding is important because it highlights the importance of absence as a mode of legislative behavior, a topic that probably deserves more attention than what has received so far.

6 Conclusion

This paper offers a spatial of the Italian House during the XIII legislature. We found that the Italian political space is virtually two-dimensional. The first dimension is related to the loyalty to either coalition, with Ulivo to the left of Polo. Thus, this dimension looses its typical ideological connotation it may have had in the first XII Legislatures, (where the electoral system was purely proportional), and it becomes more a measure of the degree with which the dialectic between government and opposition operates. Government parties would be located the extreme left of this dimension (as Ulivo was in power). The opposition parties would be to the right of the Ulivo's parties. The further away, the harsher the opposition to the government. Thus the position of LN reflects the least compromising one within the opposing parties.

The second dimension order parties according to the Constitutional is-

sues. From top to bottom we have parties whose position towards a more centralized form of government is increasingly stronger. In addition, we find that the distribution of parties along the second dimension is correlated with the geographic nature of parties: from top to bottom we have parties whose support is mainly in Northern Italy, in the Red Belt and in Southern Italy.

Last, the overall eccentric position of LN is consistent with the anti-system role played by this party during the whole legislature.

We also found that intra-party homogeneity varies from party to party and that this variance is due to different factors. Interestingly enough, party cohesion may not be positively correlated with size. If it is true that, ceteris paribus, it is easier to enforce party discipline in smaller parties, it is also true that the benefit from doing that is bigger in larger parties. In other words, MPs in smaller parties may be a better bargaining in the process of votes acquisition, and this may result in higher heterogeneity for smaller parties. Further research might show the extent to which our findings are related to the groups' compositions and the House procedural rules. Yet we believe that intra-party homogeneity is worth studying and may shed some additional light on the life of parliamentary parties.

Finally, the results of our analysis underline the importance, at least in the Italian context, of the absence from voting sessions as mode of legislative behavior. During the XIII Legislatures, absences are not only caused by opportunity cost considerations. Absence is strategic. Some of the bills passed because or despite all the members of the opposition parties stayed home or abstained. So the questions become: are we facing a sort of agreement between the two main forces (Polo and Ulivo) so that the opposition stays home to lower the quorum over a divided government? Are we facing a harsh opposition between the two main forces, so that one stays home to take as much distance as possible (and hopefully avoiding the quorum to be met) towards some bills? And in the first case, how should this cross-coalitional courtesy be understood? Is it a sign or responsibility or collusion? And even assuming that it is a sign of responsibility, how much should the responsible party government framework be modified to account for this type of party politics? This paper cannot provide an adequate answer for all these questions, but it provides a strong suggestion for where future research should be going.

A Tables and charts

In this section we report tables and charts of our findings. Table 6 report the classification in TESEO. The code number in the second column indicates how we aggregate those bills into 16 categories. Table 7 reports OURS classification.

Tables 8 through 10 report the change in APRE from one to two and from two to three dimensions by bill according to the four classifications we have analyzed. Last, tables 11 and 12 report the distribution of bills whose cutting line angle is almost horizontal.

B Codebook and estimated coordinates

Tables 13 through 6 report individual MPs coordinates.

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Table 6: TESEO classification of bills.

TESEO classification	Code
Constitutional matters	1
Foreign affairs	2
European affairs	15
Agriculture	3
Environment	8
Social security and welfare	9
Banks, credit and money	5
Budget	5
Stock exchange and financial activities	5
Foreign trade	2
Consumers protection	11
Culture, entertainment, sport and tourism	12
National defense and army	6
Civil liberties and civil rights	1
Commercial and corporate law	11
Law and justice	16
Energy	11
Family and childhood	7
Local and regional public finance	10
Public finance and taxes	5
Industry and craftsmanship	11
Information and communication	13
Public works and housing	14
Southern Italy and depressed areas	7
Labor and employment	9
Public order and police forces	16
Public economy and privatizations	5
Public sector	9
Regions and local autonomies	10
Health sector	4
Education and research	12
Transportations	13
Unions and workers rights	9

Table 7: OURS Bill classifications.

OURS	Code
Constitutional matters	1
Law and justice	2
Foreign affairs	3
National defense and army	4
Budget, public finance and taxes	5
Public expenditure	6
Education and research	7
Environment	8
Transportation	9
Health	10
Labor	11
Welfare ans social policy	12
Agricolture	13
Delegation, ratification, extension of terms	14
Information and communication	15
Internal affairs	16
Others	0

Table 8: Changes in APRE in OUR classification.

TESEO	APRE(2) - APRE(1)	APRE(3) - APRE(2)	SIZE
2	-0.098	0.040	49
5	0.200	0.018	40
9	0.286	0.033	37
16	0.019	0.048	30
12	0.198	0.021	29
6	0.199	-0.436	20
13	0.160	0.003	20
1	0.317	0.039	18
4	0.214	0.075	15
11	0.238	0.082	12
14	0.190	0.008	12
3	0.187	0.098	11
15	-0.235	-0.090	10
8	-0.151	0.185	7
10	0.297	0.042	6
7	-0.042	0.009	4

Table 9: Changes in APRE in TESEO classification.

MASSI	APRE(2) - APRE(1)	APRE(3) - APRE(2)	SIZE
14	0.165	0.067	45
5	0.070	0.024	33
1	0.284	0.041	20
3	0.189	0.042	20
2	0.014	0.019	15
16	0.026	0.011	15
7	0.056	0.016	12
9	0.087	0.036	9
10	-0.005	0.126	9
12	0.010	0.039	9
13	0.041	0.000	9
6	0.059	0.016	8
4	0.190	-1.383	7
11	0.295	0.110	7
15	0.354	-0.193	5
8	0.097	0.050	4

Table 10: Changes in APRE in Peltzman and in Clausen classifications.

PELTZMAN	APRE(2) - APRE(1)	APRE(3) - APRE(2)	SIZE
1	0.110	-0.017	25
2	0.103	0.018	32
3	0.184	0.039	32
4	0.162	0.042	25
5	0.085	0.006	15
8	0.130	0.000	58
9	0.000	0.357	1
10	-0.035	-0.028	1
61	0.246	0.026	3
62	0.152	0.029	13
71	0.018	-0.221	9
72	0.099	0.000	35

CLAUSEN	APRE(2) - APRE(1)	APRE(3) - APRE(2)	SIZE
1	0.103	0.022	85
5	0.154	-0.174	58
6	0.162	0.050	41
2	0.098	0.033	36
3	0.001	0.089	12
4	0.023	0.036	10

Table 11: Distribution of bills according to TESEO for bills whose cutting line angle is almost flat.

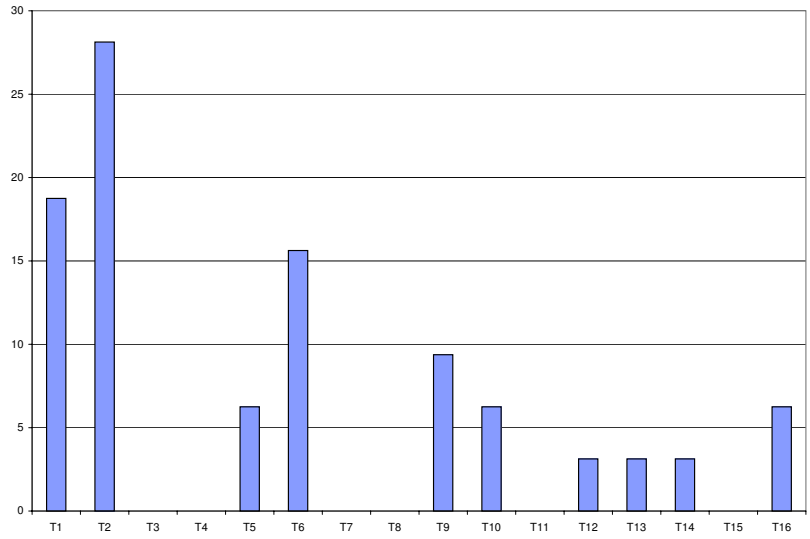

Table 12: Distribution of bills according to OURS whose cutting line angle is almost flat.

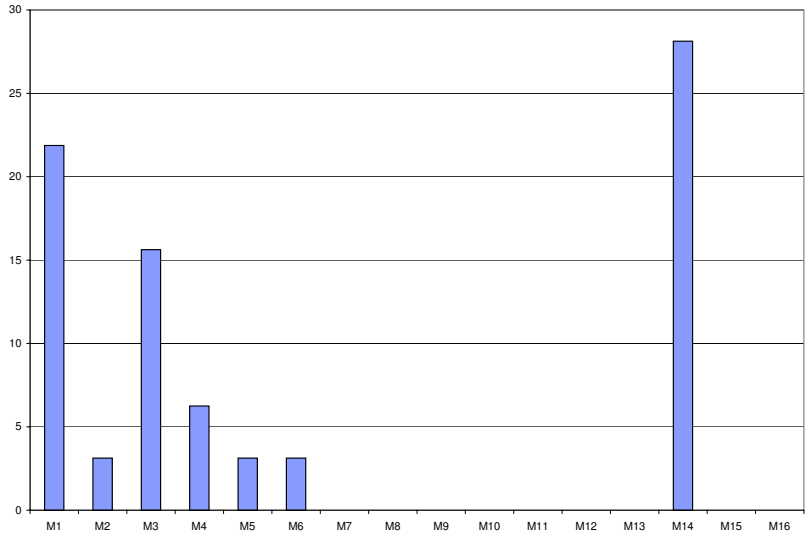

Table 13: Individual MPs coordinates.

Fullname	Code	X1	X2	Fullname	Code	X1	X2
ABATERUSSO ERNESTO	1	-0.758	-0.085	BERLINGUER LUIGI	51	-0.776	-0.102
ABBATE MICHELE	2	-0.794	-0.041	BERRUTI MASSIMO	53	0.193	-0.107
ABBONDANZIERI MARISA	3	-0.779	-0.321	BERSELLI FILIPPO	54	0.3	-0.329
ACCIARINI MARIACHIARA	4	-0.786	-0.079	BERTINOTTI FAUSTO	55	-0.569	0.822
ACIERNO ALBERTO	5	-0.087	-0.648	BERTUCCI MAURIZIO	56	0.218	-0.161
ACQUARONE LORENZO	6	-0.741	-0.12	BIANCHI GIOVANNA	57	0.788	0.616
AGOSTINI MAURO	7	-0.757	-0.048	BIANCHI GIOVANNI	58	-0.748	-0.091
ALBANESE VALERIA	8	-0.798	-0.085	BIANCHI VINCENZO	59	0.226	-0.202
ALBERTINI GIUSEPPE	9	-0.809	-0.194	BIASCO SALVATORE	60	-0.74	-0.052
ALBONI ROBERTO	10	0.344	-0.585	BICOCCHI GIUSEPPE	61	-0.557	-0.063
ALBORGHETTI DIEGO	11	0.857	0.516	BIELLI VALTER	62	-0.752	-0.073
ALEFFI GIUSEPPE	12	0.248	-0.044	BINDI ROSY	63	-0.821	-0.199
ALEMANNO GIOVANNI	13	0.303	-0.34	BIONDI ALFREDO	64	0.234	-0.239
ALOI FORTUNATO	14	0.316	-0.532	BIRICOTTI ANNAMARIA	65	-0.782	-0.077
ALOISIO FRANCESCO	15	-0.767	-0.069	BOATO MARCO	67	-0.898	0.223
ALTEA ANGELO	16	-0.747	-0.219	BOCCHINO ITALO	68	0.303	-0.405
ALVETI GIUSEPPE	17	-0.756	-0.085	BOCCIA ANTONIO	69	-0.685	-0.09
AMATO GIUSEPPE	18	0.278	-0.236	BOGHETTA UGO	70	-0.468	0.884
AMORUSO FRANCESCO	19	0.227	-0.739	BOGI GIORGIO	71	-0.751	0.122
ANDREATTA BENIAMINO	20	-0.81	-0.227	BOLOGNESI MARIDA	72	-0.765	-0.095
ANEDDA GIANFRANCO	21	0.345	-0.323	BONAIUTI PAOLO	73	0.223	-0.113
ANGELICI VITTORIO	22	-0.769	0.086	BONATO FRANCESCO	74	-0.524	0.852
ANGELINI GIORDANO	23	-0.715	-0.097	BONITO FRANCESCO	75	-0.71	-0.116
ANGELONI BERARDINO	24	0.11	-0.866	BONO NICOLA	76	0.3	-0.52
ANGHINONI UBER	25	0.843	0.538	BORDON WILLER	77	-0.785	-0.212
APOLLONI DANIELE	26	0.509	0.352	BORGHEZIO MARIO	78	0.814	0.568
APREA VALENTINA	27	0.212	-0.205	BORROMETI ANTONIO	79	-0.741	-0.084
ARACU SABATINO	28	0.155	-0.178	BOSCO RINALDO	80	0.711	0.703
ARMANI PIETRO	29	0.382	-0.43	BOSELLI ENRICO	81	-0.791	-0.023
ARMAROLI PAOLO	30	0.35	-0.606	BOVA DOMENICO	83	-0.768	-0.097
ARMOSINO MARIATERESA	31	0.268	-0.2	BRACCO FELICE	84	-0.769	-0.063
ASCIERTO FILIPPO	32	0.307	-0.362	BRANCATI ALDO	85	-0.761	-0.084
ATTILI ANTONIO	33	-0.759	-0.084	BRESSA GIANCLAUDIO	86	-0.762	-0.098
BACCINI MARIO	34	0.175	-0.195	BRUGGER SIEGFRIED	87	-0.8	0.166
BAGLIANI LUCA	35	0.625	0.439	BRUNALE GIOVANNI	88	-0.782	-0.085
BAIAMONTE GIACOMO	36	0.193	-0.112	BRUNETTI MARIO	89	-0.859	0.511
BALLAMAN EDOUARD	37	0.773	0.635	BRUNO DONATO	90	0.235	-0.18
BALOCCHI MAURIZIO	38	0.831	0.557	BRUNO EDUARDO	91	-0.905	0.426
BAMPO PAOLO	39	0.758	0.537	BUFFO GLORIA	92	-0.76	-0.067
BANDOLI FULVIA	40	-0.817	-0.081	BUGLIO SALVATORE	93	-0.743	0.008
BARBIERI ROBERTO	41	-0.794	-0.031	BUONTEMPO TEODORO	94	0.529	-0.391
BARRAL LUCIO	42	0.676	0.493	BURANI MARIA	95	0.222	-0.19
BARTOLICH ADRIA	43	-0.771	-0.051	BURLANDO CLAUDIO	96	-0.823	-0.154
BASSO MARCELLO	44	-0.773	-0.081	BUTTI ALESSIO	97	0.444	-0.584
BASTIANONI STEFANO	45	-0.495	-0.286	BUTTIGLIONE ROCCO	98	-0.172	-0.246
BATTAGLIA AUGUSTO	46	-0.776	-0.082	CACCAVARI ROCCO	99	-0.795	-0.066
BECCHETTI PAOLO	47	0.236	-0.161	CALDERISI GIUSEPPE	100	0.287	0.076
BENEDETTI DOMENICO	48	0.445	-0.468	CALDEROLI ROBERTO	101	0.86	0.511
BENVENUTO GIORGIO	49	-0.759	-0.088	CALZAVARA FABIO	102	0.737	0.407
BERGAMO ALESSANDRO	50	0.228	-0.194	CALZOLAIO VALERIO	103	-0.811	-0.168

Table 14: Individual MPs coordinates - Continued.

Fullname	Code	X1	X2	Fullname	Code	X1	X2
CAMBURSANO RENATO	104	-0.763	0.08	COLOMBO FURIO	154	-0.767	0.026
CAMOIRANO MAURA	105	-0.768	-0.097	COLOMBO PAOLO	155	0.853	0.464
CAMPATELLI VASSILI	106	-0.755	0.027	COLOSIMO ELIO	157	0.317	-0.471
CANANZI RAFFAELE	107	-0.747	-0.048	COLUCCI GAETANO	158	0.332	-0.496
CANGEMI LUCA	108	-0.493	0.87	COMINO DOMENICO	159	0.531	0.848
CAPARINI DAVIDE	109	0.825	0.438	CONTE GIANFRANCO	160	0.279	-0.19
CAPITELLI PIERA	110	-0.735	-0.033	CONTENTO MANLIO	161	0.39	-0.541
CAPPELLA MICHELE	111	-0.747	-0.093	CONTI GIULIO	162	0.391	-0.54
CARAZZI MARIA	112	-0.854	0.456	COPERCINI PIERLUIGI	163	0.842	0.54
CARBONI FRANCESCO	113	-0.782	0.075	CORDONI ELENA	164	-0.75	0.07
CARDIELLO FRANCO	114	0.367	-0.391	CORLEONE FRANCO	165	-0.789	-0.046
CARDINALE SALVATORE	115	-0.189	-0.451	CORSINI PAOLO	166	-0.809	-0.001
CARLESI NICOLA	116	0.395	-0.582	CORVINO MICHELE	167	-0.762	-0.269
CARLI CARLO	117	-0.788	-0.067	COSENTINO NICOLA	168	0.289	-0.113
CAROTTI PIETRO	118	-0.76	-0.075	COSSUTTA ARMANDO	169	-0.78	0.615
CARRARA CARMELO	119	0.174	-0.307	COSSUTTA MAURA	170	-0.895	0.447
CARRARA NUCCIO	120	0.237	-0.187	COSTA RAFFAELE	171	0.353	0.074
CARTA CLEMENTE	121	-0.848	-0.529	COVRE GIUSEPPE	172	0.873	0.387
CARUANO GIOVANNI	122	-0.743	-0.127	CREMA GIOVANNI	173	-0.792	0.099
CARUSO ENZO	123	0.426	-0.405	CRIMI ROCCO	174	0.22	-0.1
CASCIO FRANCESCO	124	0.271	-0.205	CRUCIANELLI FAMIANO	175	-0.773	-0.082
CASILLI COSIMO	125	-0.754	-0.388	CUCCU PAOLO	176	0.228	-0.11
CASINELLI CESIDIO	126	-0.758	-0.083	CUSCUNA' ANTONIO	177	0.282	-0.547
CASINI PIERFERDINANDO	127	0.192	-0.01	CUTRUFO MAURO	178	-0.65	0.226
CASTELLANI GIOVANNI	128	-0.757	-0.074	D'ALEMA MASSIMO	179	-0.803	-0.181
CAVALIERE ENRICO	129	0.829	0.559	D'ALIA SALVATORE	180	0.153	-0.129
CAVANNA MARIELLA	130	-0.156	-0.73	DALLACHIESA NANDO	181	-0.909	0.133
CAVERI LUCIANO	131	-0.749	0.1	DALLAROSA FIORENZO	182	0.787	0.617
CE' ALESSANDRO	132	0.784	0.621	DAMERI SILVANA	183	-0.741	-0.101
CENNAMO ALDO	133	-0.756	-0.083	D'AMICO NATALE	184	-0.767	0.145
CENTO PIER PAOLO	134	-0.901	0.434	DANESE LUCA	185	-0.014	-0.713
CEREMIGNA ENZO	135	-0.708	0.118	DANIELI FRANCO	186	-0.93	0.074
CERULLI VINCENZO	136	-0.77	-0.07	DEBENETTI LINO	187	-0.921	0.233
CESARO LUIGI	137	0.202	-0.184	DECESARIS WALTER	188	-0.501	0.865
CESETTI FABRIZIO	138	-0.743	-0.089	DEFRANCISCIS FERDINANDO	189	-0.039	-0.43
CHERCHI SALVATORE	139	-0.787	-0.07	DEGHISLANZONI GIACOMO	190	0.239	-0.107
CHIAMPARINO SERGIO	140	-0.758	-0.061	DELUCA ANNAMARIA	191	0.253	-0.19
CHIAPPORI GIACOMO	141	0.844	0.469	DEMITA CIRIACO	192	-0.757	0.319
CHIAVACCI FRANCESCA	142	-0.765	-0.035	DEMURTAS GIOVANNI	193	-0.885	0.465
CHINCARINI UMBERTO	143	0.817	0.569	DEPICCOLI CESARE	194	-0.758	-0.078
CHIUSOLI FRANCO	144	-0.756	-0.05	DESIMONE ALBERTA	195	-0.771	-0.052
CIANI FABIO	145	-0.753	-0.082	DEBIASIO LUISA	196	-0.758	-0.083
CIAPUSCI ELENA	146	0.819	0.453	DEDONI ANTONINA	197	-0.758	-0.09
CICU SALVATORE	147	0.23	-0.134	DELBARONE GIUSEPPE	198	0.168	-0.353
CIMADORO GABRIELE	148	-0.079	-0.997	DELBONO EMILIO	199	-0.735	-0.117
CITO GIANCARLO	149	0.471	-0.249	DELFINO LEONE	200	-0.623	0.16
COLA SERGIO	150	0.367	-0.558	DELFINO TERESIO	201	0.094	-0.117
COLLAVINI MANLIO	151	0.233	-0.09	DELL'ELCE GIOVANNI	202	0.204	-0.205
COLLETTI LUCIO	152	0.317	0.019	DELL'UTRI MARCELLO	203	0.261	-0.261
COLOMBINI EDRO	153	0.229	-0.186	DELMASTRO SANDRO	204	0.475	-0.644

Table 15: Individual MPs coordinates - Continued.

Fullname	Code	X1	X2	Fullname	Code	X1	X2
DEODATO GIOVANNI	205	0.187	-0.127	FRIGERIO CARLO	256	0.756	0.46
DETOMAS GIUSEPPE	206	-0.706	0.002	FRONZUTI GIUSEPPE	257	-0.117	-0.487
DIBISCEGLIE ANTONIO	207	-0.757	-0.084	FROSIO LUCIANA	258	0.732	0.463
DICAPUA FABIO	208	-0.746	0.108	FUMAGALLI MARCO	259	-0.768	-0.079
DICOMITE FRANCESCO	209	0.169	-0.14	FUMAGALLI SERGIO	260	-0.716	0.089
DIFONZO GIOVANNI	210	-0.684	0.145	GAETANI ROCCO	261	-0.816	-0.069
DILUCA ALBERTO	211	0.281	-0.149	GAGLIARDI ALBERTO	262	0.318	-0.286
DINARDO ANIELLO	212	-0.098	-0.727	GALATI GIUSEPPE	263	0.216	-0.049
DIROSA ROBERTO	213	-0.767	-0.06	GALDELLI PRIMO	264	-0.833	0.486
DISTASI GIOVANNI	214	-0.767	-0.064	GALEAZZI ALESSANDRO	265	0.338	-0.402
DILIBERTO OLIVIERO	215	-0.836	0.549	GALLETTI PAOLO	266	-0.976	0.217
D'IPPOLITO IDA	217	0.243	-0.12	GALLI DARIO	267	0.737	0.676
DIVELLA GIOVANNI	218	0.245	-0.185	GAMBALE GIUSEPPE	268	-0.922	-0.081
DOMENICI LEONARDO	219	-0.762	-0.027	GAMBATO FRANCA	269	0.66	0.524
DONNER LUCIANO	220	0.892	0.373	GARDIOL GIORGIO	270	-0.95	0.312
DOZZO GIANPAOLO	221	0.818	0.464	GARRA GIACOMO	271	0.237	-0.175
DUCA EUGENIO	222	-0.797	-0.092	GASPARRI MAURIZIO	272	0.331	-0.345
DUILIO LINO	223	-0.729	0.155	GASPERONI PIETRO	273	-0.758	-0.085
DUSSIN GUIDO	224	0.811	0.585	GASTALDI LUIGI	274	0.241	-0.171
DUSSIN LUCIANO	225	0.831	0.556	GATTO MARIO	275	-0.738	-0.17
ERRIGO DEMETRIO	226	-0.171	-0.231	GAZZARA ANTONINO	276	0.177	-0.076
EVANGELISTI FABIO	227	-0.803	-0.058	GAZZILLI MARIO	277	0.212	-0.101
FABRIS MAURO	228	0.014	-0.498	GERARDINI FRANCO	278	-0.769	-0.08
FAGGIANO COSIMO	229	-0.77	-0.083	GIACALONE SALVATORE	279	-0.745	-0.081
FANTOZZI AUGUSTO	230	-0.777	-0.185	GIACCO LUIGI	280	-0.721	-0.159
FASSINO PIERO	231	-0.753	-0.147	GIANNATTASIO PIETRO	281	0.239	-0.22
FAUSTINELLI ROBERTO	232	0.776	0.429	GIANNOTTI VASCO	282	-0.741	-0.031
FEI SANDRA	233	0.371	-0.442	GIARDIELLO MICHELE	283	-0.729	-0.111
FERRARI FRANCESCO	234	-0.766	-0.085	GIORDANO FRANCESCO	284	-0.467	0.884
FILOCAMO GIOVANNI	235	0.351	-0.317	GIORGETTI ALBERTO	285	0.361	-0.542
FINI GIANFRANCO	236	0.273	-0.269	GIORGETTI GIANCARLO	286	0.798	0.589
FINO FRANCESCO	237	0.343	-0.453	GIOVANARDI CARLO	287	0.18	-0.113
FINOCCHIARO ANNA	238	-0.734	-0.202	GIOVINE UMBERTO	288	0.235	0.022
FIORI PUBLIO	239	0.408	-0.604	GISSI ANDREA	289	0.291	-0.288
FIORONI GIUSEPPE	240	-0.759	-0.089	GIUDICE GASPARE	290	0.19	-0.09
FLORESTA ILARIO	241	0.27	-0.148	GIULIANO PASQUALE	291	0.162	0.048
FOLENA PIETRO	242	-0.765	-0.071	GIULIETTI GIUSEPPE	292	-0.716	-0.087
FOLLINI MARCO	243	0.187	-0.084	GNAGA SIMONE	293	0.782	0.552
FONGARO CARLO	244	0.803	0.596	GRAMAZIO DOMENICO	294	0.476	-0.334
FONTAN ROLANDO	245	0.761	0.649	GRIGNAFFINI GIOVANNA	295	-0.769	-0.097
FONTANINI PIETRO	246	0.725	0.469	GRILLO MASSIMO	296	0.082	-0.098
FORMENTI FRANCESCO	247	0.721	0.693	GRIMALDI TULLIO	297	-0.869	0.495
FOTI TOMMASO	248	0.462	-0.493	GRUGNETTI ROBERTO	298	0.789	0.614
FRAGALA' VINCENZO	249	0.333	-0.27	GUARINO ANDREA	299	-0.703	-0.1
FRANZ DANIELE	250	0.442	-0.546	GUERRA MAURO	300	-0.766	-0.098
FRATTA PIERALFONSO	251	0.139	-0.185	GUERZONI ROBERTO	301	-0.767	-0.085
FRATTINI FRANCO	252	0.26	-0.071	GUIDI ANTONIO	302	0.156	-0.081
FRAU AVENTINO	253	0.249	0.121	IACOBELLIS ERMANNO	303	-0.065	-0.548
FREDDA ANGELO	254	-0.722	0.11	INNOCENTI RENZO	304	-0.779	-0.083
FRIGATO GABRIELE	255	-0.746	-0.087	IOTTI LEONILDE	305	-0.814	-0.019

Table 16: Individual MPs coordinates - Continued.

Fullname	Code	X1	X2	Fullname	Code	X1	X2
IZZO DOMENICO	306	-0.812	0.269	MANZIONE ROBERTO	357	-0.143	-0.524
IZZO FRANCESCA	307	-0.724	-0.181	MANZONI VALENTINO	358	0.445	-0.564
JANNELLI EUGENIO	308	-0.748	-0.073	MARENGO LUCIO	359	0.354	-0.531
JERVOLINO ROSA	309	-0.78	-0.056	MARIANI PAOLA	360	-0.759	-0.085
LAMALFA GIORGIO	310	-0.758	-0.616	MARINACCI NICANDRO	361	0.081	-0.208
LARUSSA IGNAZIO	311	0.338	-0.135	MARINI FRANCO	362	-0.787	-0.198
LABATE GRAZIA	312	-0.74	-0.154	MARINO GIOVANNI	363	0.321	-0.448
LADU SALVATORE	313	-0.741	-0.093	MARONGIU GIANNI	364	-0.722	0.101
LAMACCHIA BONAVENTURA	314	-0.78	-0.102	MARONI ROBERTO	365	0.814	0.581
LANDI GIAMPAOLO	315	0.49	-0.376	MAROTTA RAFFAELE	366	0.175	-0.154
LANDOLFI MARIO	316	0.398	-0.45	MARRAS GIOVANNI	367	0.276	-0.1
LAVAGNINI ROBERTO	317	0.203	-0.139	MARTINELLI PIERGIORGIO	369	0.814	0.58
LECCESE VITO	318	-0.943	0.145	MARTINI LUIGI	370	0.33	-0.428
LEMBO ALBERTO	319	0.754	0.352	MARTINO ANTONIO	371	0.361	-0.626
LENTI MARIA	320	-0.488	0.873	MARTUSCIELLO ANTONIO	372	0.251	-0.158
LENTO GUGLIELMO	321	-0.761	0.077	MARZANO ANTONIO	373	0.357	-0.302
LEONE ANTONIO	322	0.321	-0.185	MASELLI DOMENICO	374	-0.795	-0.077
LEONI CARLO	323	-0.753	-0.1	MASI DIEGO	375	-0.537	0.178
LICALZI MARIANNA	324	-0.412	-0.23	MASIERO MARIO	376	0.34	-0.339
LIOTTA SILVIO	325	-0.143	0.226	MASSA LUIGI	377	-0.759	-0.081
LOJUCCO DOMENICO	326	0.23	-0.146	MASSIDDA PIERGIORGIO	378	0.257	-0.097
LOPORTO GUIDO	327	0.352	-0.294	MASTELLA CLEMENTE	379	-0.372	-0.482
LOPRESTI ANTONINO	328	0.316	-0.55	MASTROLUCA FRANCESCO	380	-0.759	-0.085
LODDO ANTONIO	329	-0.651	-0.053	MATACENA AMEDEO	381	0.274	-0.255
LOMBARDI GIANCARLO	330	-0.752	0.056	MATRANGA CRISTINA	382	0.129	-0.095
LORENZETTI MARIARITA	331	-0.762	-0.056	MATTARELLA SERGIO	383	-0.78	-0.025
LORUSSO ANTONIO	332	0.287	-0.209	MATTEOLI ALTERO	384	0.268	-0.425
LOSURDO STEFANO	333	0.278	-0.45	MATTIOLI FRANCESCO	385	-0.773	-0.056
LUCA' MIMMO	334	-0.764	-0.092	MAURO MASSIMO	386	-0.824	-0.1
LUCCHESE PAOLO	335	0.163	-0.044	MAZZOCCHI ANTONIO	387	0.381	-0.62
LUCIDI MARCELLA	336	-0.769	-0.094	MAZZOCCHIN GIANANTONIO	388	-0.747	-0.084
LUMIA GIUSEPPE	337	-0.769	-0.066	MELANDRI GIOVANNA	389	-0.775	-0.032
LUONGO ANTONIO	338	-0.807	-0.422	MELOGRANI PIERO	390	0.248	-0.123
MACCANICO ANTONIO	339	-0.752	-0.074	MELONI GIOVANNI	391	-0.889	0.459
MAGGI ROCCO	340	-0.777	-0.06	MENIA ROBERTO	392	0.405	-0.531
MAIOLO TIZIANA	341	0.334	-0.039	MERLO GIORGIO	393	-0.757	-0.085
MAIONE FRANCESCO	342	0.328	-0.578	MERLONI FRANCESCO	394	-0.709	-0.053
MALAGNINO UGO	343	-0.756	0.086	MESSA VITTORIO	395	0.447	-0.427
MALAVENDA MARA	344	0.744	0.668	MICCICHE' GIANFRANCO	396	0.23	-0.108
MALENTACCHI GIORGIO	345	-0.47	0.883	MICHELANGELI MARIO	397	-0.866	0.422
MALGIERI GENNARO	346	0.346	-0.67	MICHELINI ALBERTO	398	0.145	0.009
MAMMOLA PAOLO	347	0.19	-0.19	MICHIELON MAURO	400	0.787	0.474
MANCA PAOLO	348	-0.671	0.111	MIGLIAVACCA MAURIZIO	401	-0.756	-0.081
MANCINA CLAUDIA	349	-0.778	0.003	MIGLIORI RICCARDO	402	0.297	-0.54
MANCUSO FILIPPO	350	0.481	0.148	MIRAGLIA NICOLA	403	-0.053	-0.581
MANGIACAVALLO ANTONINO	351	-0.81	-0.004	MISURACA FILIPPO	404	0.281	-0.242
MANTOVANI RAMON	353	-0.467	0.884	MITOLO PIETRO	405	0.414	-0.332
MANTOVANO ALFREDO	354	0.395	-0.316	MOLGORA DANIELE	406	0.773	0.635
MANZATO SERGIO	355	-0.759	-0.083	MOLINARI GIUSEPPE	407	-0.736	-0.097
MANZINI PAOLA	356	-0.743	0.023	MONACO FRANCESCO	408	-0.747	-0.155

Table 17: Individual MPs coordinates - Continued.

Fullname	Code	X1	X2	Fullname	Code	X1	X2
MONTECCHI ELENA	409	-0.804	-0.125	PECORAROSCANIO ALFONSO	459	-0.913	-0.408
MORGANDO GIANFRANCO	410	-0.759	-0.007	PECORELLA GAETANO	460	0.266	-0.178
MORONI ROSANNA	411	-0.874	0.487	PENNA RENZO	461	-0.758	-0.078
MORSELLI STEFANO	412	0.371	-0.597	PENNACCHI LAURA	462	-0.795	-0.141
MUSSI FABIO	413	-0.788	-0.091	PEPE ANTONIO	463	0.316	-0.58
MUSSOLINI ALESSANDRA	414	0.334	-0.598	PEPE MARIO	464	-0.763	0.003
MUZIO ANGELO	415	-0.846	0.521	PERETTI ETTORE	465	0.169	-0.055
NAN ENRICO	416	0.289	-0.289	PERUZZA PAOLO	466	-0.768	0.092
NANIA DOMENICO	417	0.309	-0.632	PETRELLA GIUSEPPE	467	-0.758	-0.082
NAPOLI ANGELA	418	0.426	-0.402	PETRINI PIERLUIGI	468	-0.877	0.13
NAPPI GIANFRANCO	419	-0.767	-0.097	PEZZOLI MARIO	469	0.392	-0.017
NARDINI MARIACELESTE	420	-0.481	0.877	PEZZONI MARCO	470	-0.752	-0.089
NARDONE CARMINE	421	-0.778	0.041	PICCOLO SALVATORE	471	-0.782	-0.095
NEGRI LUIGI	422	-0.394	-0.222	PILO GIOVANNI	472	0.318	-0.285
NERI SEBASTIANO	423	0.224	-0.518	PINZA ROBERTO	473	-0.754	-0.144
NESI NERIO	424	-0.903	0.43	PIROVANO ETTORE	474	0.697	0.717
NICCOLINI GUALBERTO	425	0.302	-0.153	PISANU BEPPE	475	0.293	-0.323
NIEDDA GIUSEPPE	426	-0.765	-0.081	PISAPIA GIULIANO	476	-0.491	0.871
NOCERA LUIGI	427	-0.189	-0.507	PISCITELLO RINO	477	-0.673	0.164
NOVELLI DIEGO	428	-0.832	0.145	PISTELLI LAPO	478	-0.751	-0.09
OCCHETTO ACHILLE	429	-0.721	-0.076	PISTONE GABRIELLA	479	-0.922	0.386
OCCHIONERO LUIGI	430	-0.679	-0.308	PITTELLA GIOVANNI	480	-0.74	-0.167
OLIVERIO GERARDO	431	-0.766	-0.042	PITTINO DOMENICO	481	0.762	0.609
OLIVIERI LUIGI	432	-0.761	-0.058	PIVA ANTONIO	482	0.257	0.04
OLIVO ROSARIO	433	-0.741	-0.157	PIVETTI IRENE	483	-0.326	-0.48
ORLANDO FEDERICO	434	-0.736	-0.057	POLENTA PAOLO	484	-0.741	-0.088
ORTOLANO DARIO	435	-0.861	0.466	POLIBORTONE ADRIANA	485	0.47	-0.572
OSTILLIO MASSIMO	436	-0.117	-0.559	POLIZZI ROSARIO	486	0.326	-0.261
OZZA EUGENIO	437	0.334	-0.412	POMPILI MASSIMO	487	-0.76	0.007
PACE CARLO	438	0.414	-0.523	PORCU CARMELO	488	0.411	-0.532
PACE GIOVANNI	439	0.362	-0.51	POSSA GUIDO	489	0.322	-0.251
PAGANO SANTINO	440	-0.209	-0.811	POZZA ELISA	490	-0.667	-0.242
PAGLIARINI GIANCARLO	441	0.821	0.563	PRESTAMBURGO MARIO	491	-0.741	-0.174
PAGLIUCA NICOLA	442	0.208	-0.201	PRESTIGIACOMO STEFANIA	492	0.242	-0.075
PAGLIUZZI GABRIELE	443	0.452	-0.415	PREVITI CESARE	493	0.208	-0.437
PAISSAN MAURO	444	-0.933	0.163	PROCACCI ANNAMARIA	494	-0.987	0.16
PALMA PAOLO	445	-0.807	-0.098	PRODI ROMANO	495	-0.743	-0.129
PALMIZIO MASSIMO	446	0.227	-0.174	PROIETTI LIVIO	496	0.394	-0.665
PALUMBO GIUSEPPE	447	0.245	-0.102	RABBITO GAETANO	497	-0.768	-0.084
PAMPO FEDELE	448	0.38	-0.555	RADICE ROBERTO	498	0.295	-0.158
PANATTONI GIORGIO	449	-0.779	-0.018	RAFFAELLI PAOLO	499	-0.782	-0.019
PANETTA GIOVANNI	450	0.076	-0.081	RAFFALDINI FRANCO	500	-0.759	-0.086
PAOLONE BENITO	451	0.304	-0.398	RALLO MICHELE	501	0.413	-0.401
PARENTI TIZIANA	452	-0.18	-0.355	RANIERI UMBERTO	502	-0.78	-0.09
PARISI ARTURO	453	-0.869	-0.496	RASI GAETANO	503	0.381	-0.463
PAROLI ADRIANO	454	0.251	-0.131	RAVA LINO	504	-0.758	-0.085
PAROLO UGO	455	0.806	0.536	REBECCHI ALDO	505	-0.799	-0.376
PARRELLI ENNIO	456	-0.787	-0.085	REBUFFA GIORGIO	506	0.021	-0.149
PASETTO GIORGIO	457	-0.763	-0.062	REPETTO ALESSANDRO	507	-0.752	-0.074
PASETTO NICOLA	458	0.478	-0.592	RICCI MICHELE	508	-0.757	0.176

Table 18: Individual MPs coordinates - Continued.

Fullname	Code	X1	X2	Fullname	Code	X1	X2
RICCIO EUGENIO	509	0.476	-0.675	SCHMID SANDRO	560	-0.774	-0.088
RICCIOTTI PAOLO	510	-0.557	0.199	SCIACCA ROBERTO	561	-0.771	-0.091
RISARI GIANNI	511	-0.701	-0.253	SCOCA MARETTA	562	-0.166	-0.434
RIVA LAMBERTO	512	-0.736	-0.243	SCOZZARI GIUSEPPE	563	-0.708	0.064
RIVELLI NICOLA	513	0.286	0.071	SCRIVANI OSVALDO	564	-0.768	-0.08
RIVERA GIOVANNI	514	-0.781	-0.139	SEDIOLI SAURO	565	-0.759	-0.083
RIVOLTA DARIO	515	0.28	-0.126	SELVA GUSTAVO	566	0.358	-0.532
RIZZA ANTONIETTA	516	-0.715	-0.112	SERAFINI ANNAMARIA	567	-0.75	-0.066
RIZZI CESARE	517	0.74	0.562	SERRA ACHILLE	568	0.145	-0.047
RIZZO ANTONIO	518	0.377	-0.588	SERVODIO GIUSEPPINA	569	-0.816	-0.1
RIZZO MARCO	519	-0.843	0.538	SESTINI GRAZIA	570	0.261	0.078
RODEGHIERO FLAVIO	520	0.806	0.437	SETTIMI GINO	571	-0.757	-0.193
ROGNA SERGIO	521	-0.755	-0.16	SGARBI VITTORIO	572	0.071	0.03
ROMANI PAOLO	522	0.262	-0.109	SICA VINCENZO	573	-0.79	-0.086
ROMANO DOMENICO	523	-0.729	-0.014	SIGNORINI STEFANO	574	0.609	0.572
ROSCIA DANIELE	524	0.576	0.806	SIGNORINO ELSA	575	-0.728	-0.072
ROSSETTO GIUSEPPE	525	0.276	-0.15	SIMEONE ALBERTO	576	0.33	-0.395
ROSSI EDO	526	-0.481	0.877	SINISCALCHI VINCENZO	577	-0.729	0.254
ROSSI GUIDO	527	0.799	0.004	SINISI GIANNICOLA	578	-0.706	-0.157
ROSSI ORESTE	528	0.645	0.76	SIOLA UBERTO	579	-0.751	-0.201
ROSSIELLO GIUSEPPE	529	-0.757	-0.082	SOAVE SERGIO	580	-0.752	0.101
ROSSO ROBERTO	530	0.349	-0.028	SODA ANTONIO	581	-0.745	-0.044
ROTUNDO ANTONIO	531	-0.745	-0.001	SOLAROLI BRUNO	582	-0.759	-0.044
RUBERTI ANTONIO	532	-0.757	0.017	SORIERO GIUSEPPE	583	-0.736	-0.195
RUBINO ALESSANDRO	533	0.313	-0.146	SORO ANTONELLO	584	-0.735	-0.095
RUBINO PAOLO	534	-0.781	0.12	SOSPIRI NINO	585	0.369	-0.47
RUFFINO ELVIO	535	-0.762	-0.074	SPINI VALDO	586	-0.743	-0.07
RUGGERI RUGGERO	536	-0.764	-0.247	STAGNO FRANCESCO	587	0.284	-0.2
RUSSO PAOLO	537	0.25	-0.165	STAJANO ERNESTO	588	-0.623	0.125
RUZZANTE PIERO	538	-0.761	-0.09	STANISCI ROSA	589	-0.759	-0.082
SABATTINI SERGIO	539	-0.742	-0.069	STEFANI STEFANO	590	0.756	0.427
SAIA ANTONIO	540	-0.888	0.46	STELLUTI CARLO	591	-0.76	-0.079
SALES ISAIA	541	-0.701	-0.097	STORACE FRANCESCO	592	0.39	-0.56
SALVATI MICHELE	542	-0.699	0.051	STRADELLA FRANCESCO	593	0.34	-0.09
SANTANDREA DANIELA	543	0.774	0.633	STRAMBI ALFREDO	594	-0.915	0.404
SANTORI ANGELO	545	0.222	-0.143	STUCCHI GIACOMO	595	0.823	0.569
SANZA ANGELO	546	-0.115	-0.356	SUSINI MARCO	596	-0.76	-0.073
SAONARA GIOVANNI	547	-0.692	0.094	TABORELLI ALBERTO	597	0.265	-0.155
SAPONARA MICHELE	548	0.209	-0.203	TARADASH MARCO	598	0.393	-0.185
SARACA GIANFRANCO	549	-0.211	-0.351	TARDITI VITTORIO	599	0.25	-0.19
SARACENI LUIGI	550	-0.858	0.132	TARGETTI FERDINANDO	600	-0.751	-0.03
SAVARESE ENZO	551	0.304	-0.5	TASSONE MARIO	601	0.038	-0.055
SAVELLI GIULIO	552	-0.081	-0.322	TATARELLA GIUSEPPE	602	0.342	-0.383
SBARBATI LUCIANA	553	-0.651	0.096	TATARELLA SALVATORE	603	0.414	-0.486
SCAJOLA CLAUDIO	554	0.096	-0.153	TATTARINI FLAVIO	604	-0.734	-0.042
SCALIA MASSIMO	555	-0.919	0.281	TERZI SILVESTRO	605	0.822	0.57
SCALTRITTI GIANLUIGI	556	0.237	-0.177	TESTA LUCIO	606	-0.723	-0.327
SCANTAMBURLO DINO	557	-0.813	0.087	TORTOLI ROBERTO	607	0.247	-0.15
SCARPA PAOLO	558	0.291	-0.145	TOSOLINI RENZO	608	0.417	-0.522
SCHIETROMA GIANFRANCO	559	-0.793	0.185	TRABATTONI SERGIO	609	-0.766	0.032

Figure 6: Individual MPs coordinates - Continued.

Fullname	Code	X1	X2
TRANTINO ENZO	610	0.345	-0.478
TREMAGLIA MIRKO	611	0.428	-0.345
TREMONTI GIULIO	612	0.394	0
TREU TIZIANO	613	-0.786	-0.176
TRINGALI PAOLO	614	0.415	-0.62
TUCCILLO DOMENICO	615	-0.768	-0.112
TURCI LANFRANCO	616	-0.723	-0.196
TURCO LIVIA	617	-0.83	-0.107
TURRONI SAURO	618	-0.788	0.434
URBANI GIULIANO	619	0.206	-0.104
URSO ADOLFO	620	0.404	-0.52
VALDUCCI MARIO	621	0.251	-0.119
VALENSISE RAFFAELE	622	0.354	-0.511
VALETTO MARIAPIA	623	-0.778	-0.06
VALPIANA TIZIANA	624	-0.443	0.897
VANNONI MAURO	625	-0.764	-0.068
VASCON LUIGINO	626	0.784	0.582
VELTRI ELIO	627	-0.699	0.157
VELTRONI VALTER	628	-0.848	-0.29
VENDOLA NICHI	629	-0.505	0.863
VENETO ARMANDO	630	-0.753	-0.187
VENETO GAETANO	631	-0.77	-0.132
VENTURA MICHELE	632	-0.758	-0.335
VIALE EUGENIO	633	0.389	-0.146
VIGNALI ADRIANO	634	-0.756	-0.074
VIGNERI ADRIANA	635	-0.769	-0.247
VIGNI FABRIZIO	636	-0.762	-0.067
VILLETTI ROBERTO	637	-0.77	0.123
VISCO VINCENZO	638	-0.771	-0.216
VITA VINCENZO	639	-0.729	-0.094
VITALI LUIGI	640	0.239	-0.112
VITO ELIO	641	0.202	-0.165
VOGLINO VITTORIO	642	-0.794	-0.09
VOLONTE' LUCA	643	-0.045	-0.256
VOLPINI DOMENICO	644	-0.754	-0.101
VOZZA SALVATORE	645	-0.774	-0.075
WIDMANN JOHANNGEORG	646	-0.785	0.171
ZACCHEO VINCENZO	647	0.364	-0.612
ZACCHERA MARCO	648	0.297	-0.362
ZAGATTI ALFREDO	649	-0.742	-0.093
ZANI MAURO	650	-0.759	-0.07
ZELLER KARL	651	-0.781	0.14

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