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A spatial analysis of the Italian Second Republic,  
Second Version

Massimiliano Landi & Riccardo Pelizzo

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**A spatial analysis of the Italian Second Republic,**

**Second Version<sup>1</sup>**

**Massimiliano Landi**

School of Economics

Singapore Management University

**Riccardo Pelizzo**

World Bank Institute Consultant for Legislative Affairs

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## **Abstract**

We apply the Optimal Classification method to a newly created dataset to provide a spatial map of the Italian Second Republic (1996-2008). We find a bi-dimensional political space in the XIII Legislature and virtually a one dimensional political space in the XIV and XV Legislatures. In addition, the main dimension is explained along the dimension government opposition rather than on the traditional left and right dimension. During the Second Republic, Italy experienced changes in electoral system and in the format of the parties. We use our data to discuss the implications of either change on the dimensionality space. We find that the format of the party system was a more important determinant of the dimensionality of the political space than changes in the electoral system.

## 1 Introduction

This paper uses a newly generated dataset to provide a spatial map of the Italian political space as it unfolds from the final votes cast by the members of the House (the lower chamber of the Italian Parliament) in the course of the so called Second Republic that spans the XIII-XV Legislatures (1996-2008). We use the OC methodology developed and applied to the U.S. Congress by Poole and Rosenthal (1997) (PR henceforth) to estimate the political coordinates of each party<sup>i</sup> and we then address three basic questions: 1) what is the dimensionality of the Italian party system? 2) What do these dimensions mean? 3) Could the change in the electoral system that took place during the time span under investigation explain some of the results?

We find that the Italian political space changes from two dimensional (XIII Legislature) to one dimensional (XIV and XV Legislatures). In addition, and probably in consequence of that, the meaning of the first dimension changes from government-opposition to left-right. We also find that the second dimension in the XIII Legislature is best understood by the European Union. Last, the format of the party system was a more important determinant of the dimensionality of the political space than changes in the electoral system.

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 using expert surveys data (Warwick, 2005), mass survey data (Sani and Sartori, 1978; Corbetta et al., 1988), ecological data (Ricolfi, 1999), and party manifesto data (Budge et al., 2001; Campus, 2001; Pelizzo, 2003).

Little agreement has been achieved about the number and the nature of the dimensions of the political space under investigation. Some scholars have in fact suggested that the Italian political space is or can be properly represented as one-dimensional, with parties ordered along the

(ideological) left-right dimension. This is the interpretation given by Sani and Sartori (1978) for the mid-seventies, by Corbetta et al. (1988) for the 1966-1983 period, by Campus (2001) for the 1996 elections, and by Pelizzo (2003) for the 1948-1996 period. Others have argued that the Italian political space is multi-dimensional. This is the evidence found by Ricolfi (1999) and Ricolfi (2004) for the periods 1953-1992 and 1994-1996, and by Loera and Testa (2004) 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 its structuring dimensions. For several decades it was believed that the first dimension of the Italian political space was the ideological left-right ordering and that the second dimension divided pro- and anti-system parties (Sani, 1973).

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, 1999: page 31).

Our paper differs from the existing literature in terms of methodology adopted and time span under investigation.

The remainder of the paper is organized as follows: Section 2 reports a brief description of the institutional factors, Section 3 reports the estimated spatial map, the dimensionality of the political space and its interpretation, Section 4 provides a discussion of our findings, and Section 5 concludes and suggests some possible venues for future research. The material that is not relevant to the main flow of the presentation is relegated in the Appendix.

## **2 Institutional backgrounds**

While all the elections in the Italian First Republic (1948-1992) had been held under proportionality formulas with open list, those in 1994, 1996, 2001 and 2006 were held under different electoral systems. In particular, the first three elections of the Second Republic (1994, 1996 and 2001) were held under a mixed electoral system set up in the electoral law n. 277/93, which is known as *Mattarellum*.<sup>ii</sup> The last election, instead, was held under a new electoral law n. 270/05, known as *Porcellum*, which reintroduced pure proportional representation but with some twists compared to the early one.

The *Mattarellum* was intended to produce a variety of positive outcomes: a more direct relationship between the electors and the elected, weaker parties, and, last but not least, more stable and more effective governments. The adoption of this new law failed to produce all of the expected outcomes, but it did reshape the Italian political/party system in a major way. While the Italian party system had been a prototypical case of polarized pluralism (Sartori, 1976) because of the nature of the patterns of interparty competition (presence of a party occupying the center-position in the party system, presence of bilateral opposition, presence of irresponsible opposition, presence of anti-system parties, the prevalence of centrifugal drives over centripetal ones, polarization, ideological patterning), after the adoption of the *Mattarellum*, the Italian party system became, however imperfectly, characterized by a bipolar competition between two coalitions of parties. The imperfection was not so much due to the fact that the coalitions were made by a fairly high number of parties, but was rather due to the fact that both in the 1994 and in the 1996 elections there had been a third, smaller, but by no means negligible pole. In the 1994 elections the center-left and center-right coalitions were also competing against the *Patto per l'Italia*, while in the 1996 elections they were challenged, in the North at least, by the Northern League (LN). In the 1996 elections the center-left coalition, known as the Olive Tree

(Ulivo henceforth) clearly defeated the center-right coalition known as the Freedom Polo (Polo henceforth) and the Northern League. The XIII Legislature (which represents the first data points for our work) was the first legislature elected with the *Mattarellum* that lasted for its whole constitutional term, five years, from 1996 to 2001. This legislature presented both similarities with and differences from previous Italian parliaments. Like all the parliaments of the Italian Republic, the parliament in the XIII Legislature was not able to support the same government for the whole length of the legislature. In the course of the XIII Legislature, the Ulivo-dominated parliament appointed and dismissed four cabinets (Prodi, D'Alema 1, D'Alema 2, Amato 2). But the parliament elected in 1996 differed from its predecessors in two major respects: first, it was characterized by an uncommonly high rate of party switching, as documented by Heller and Mershon (2005). Second, it was forced to support fiscally austere measures to allow Italy to respect the convergence criteria set by the Maastricht Treaty and to join the forthcoming European Monetary Union (EMU).

The XIV Legislature was the second and last to be elected under the *Mattarellum*. The center-right coalition led by Forza Italia supported a government that lasted the entire five years, with minor changes in the cabinet. Under this government the so called *Porcellum* was passed, which introduces back proportional representation but with closed list and a majority bonus. Therefore, unlike the PR formulas of the First Republic, this new electoral system does not allow voters to indicate their preference for individual candidates, whose election mainly lies in the party leaders' hands, who have the power to select who and in which order appears in the ballot. One can therefore expect that, caring for being reelected, legislators will stick to the party line more closely.<sup>iii</sup>

The second important novelty introduced by the electoral reform is represented by the majority bonus. The party or coalition that wins the highest number of votes is entitled to 340 parliamentary seats, which enables the executive to have a large majority to push its agenda through parliament.

Finally, the *Porcellum* establishes that only parties and lists running by themselves must reach a 2% threshold in each constituency to be entitled to win seats, while they must reach a 4% threshold to be allocated any seats when running along with other parties/lists. The purpose of this rule was to reduce party fragmentation, and while this did not occur in the XV Legislature, it occurred in the following one, which is still ongoing and outside the scope of our analysis.

While it is not clear how the second and the third element of the new electoral system could affect the legislative behavior of MPs, their voting patterns, legislative parties' cohesion and ultimately the dimensionality of the political space, the introduction of closed lists should be expected to lead to higher intra-party and intra-coalitional cohesion and, in so far as the dimensionality of the political space is inversely related to the intra-party cohesion, to lower dimensionality.

These were the institutional and the political scenario in which the Second Republic. We turn now our attention to the analysis of the voting patterns. Before we do, we will discuss how the data that we analyze were collected.

### **3 Spatial analyses**



This work is based on a unique and newly created data set that gathers all the final voting sessions at the House during the XIII, XIV and XV Legislatures.<sup>iv</sup> For any bill we know whether each MP was absent, on a justified absence, present and voted *Yea*, *Nay* or abstained. We just coded votes *Yea* and *Nay* while treated all the other cases as missing.<sup>v</sup> The dataset so created has been used to estimate MP's policy positions according to the OC methodology. The choice of this scaling technique is driven by the nature of our data. As the average number of *Nay* is quite small, and overall dominated by the number of *Yea* and absences, and given that we decided to be agnostic on the meaning of these absences, the OC method offers a robust method of estimating legislators' bliss points.<sup>vi</sup> This makes it preferable to the other well established NOMINATE method.<sup>vii</sup>

Table 1 shows the summary statistics of our estimations.

**[Table 1 about here.]**

The first row reports the number of bills that are in the dataset, while the second from the bottom indicates the cutoff criterion used for rejecting the bills. Thus roll calls with a majority of more than 99.95% were not considered in the estimation. This is a traditional cutoff rule in the OC method. As a result, for each legislature in the sample 248, 253 and 43 roll calls were rejected (second row) and 382, 326 and 62 were accepted (third row).

Similar figures (fourth and fifth rows of table 1) are reported for the number of MPs that were available (651, 643 and 643) and those which were rejected (4, 16 and 42).<sup>viii</sup> The cutoff criterion of 10 (which is still standard) means that only MPs for which there is a record of voting in at least 10 roll calls are considered. Thus we estimated coordinates for, respectively, 647, 627 and 601 MPs (sixth row).

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, three or four dimensions.<sup>ix</sup> As we can see from the PCC, the models fits very well the voting records of Italian legislators. Looking at the changes in APRE is a good way to understand the dimensionality of the political space. Hence, the last the last three rows report the improvement in APRE if we increase by one the dimensionality of the model.

Table 1 shows that an increase from one to two dimensions improves APRE by 6.5 percentage points in the XIII legislature. On the other hand, this change is almost negligible in the XIV and XV Legislatures. Moving further to higher dimensions does not change the APRE by much in all Legislatures. We can therefore conclude that the estimated space is for the XIII Legislature, most likely two-dimensional, even though one dimension alone explains most of the voting pattern, and one-dimensional for the remaining Legislatures.

Another way to understand the dimensionality of the political space is by locating the *elbow* in the plot of the normalized eigenvalues of the double centered agreement score matrix (see Figure 1).

**[Figure 1 about here.]**

Also because of the elbows in the plot in Figure 1 we can claim that the political space in the Italian Second Republic is virtually one-dimensional, with the exception of the XIII Legislature, when the second dimension had a far from insignificant effect.

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 estimated bills according to the official classification of the House, named Teseo.<sup>x</sup>

We then computed the Herfindahl concentration index (H), and then we normalized it (NH) 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).<sup>xi</sup> Table 2 reports our indexes.

**[Table 2 about here.]**

As can be seen better from the normalized index, the spread of bills and the number of categories are sufficiently high in all the Legislatures so that a low dimensionality cannot be attributed to the dynamics involved in the legislative process. To visualize the dimensionality of the political space we plot the coordinates for individual legislators as well as for party means and medians. Figures 2, 3 and 4 report the individual coordinates.

**[Figure 2 about here.]**

**[Figure 3 about here.]**

**[Figure 4 about here.]**

Also the plots of individual coordinates seem to corroborate the claim of a virtually one-dimensional political space in the XIV and XV Legislatures, where legislators are mostly clustered about one axis.

In addition, we can see that MPs are clustered by parliamentary groups.<sup>xii</sup> This is not surprising, as the high homogeneity of voting patterns within groups is well known in the Italian case. To confirm this fact, we present in table 3 three measures of cohesion, namely the Rice Index (RI), the Agreement Index (AI) proposed by Hix et al. (2005), 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.<sup>xiii</sup>

**[Table 3 about here.]**

Table 3 shows us that there is a high homogeneity of voting patterns within each party but once we account for absence, some differences arise. We also have a positive and high correlation between RI and AI in all the legislatures (with correlation coefficients of 0.862, 0.666, and 0.896), whereas MAI is significantly correlated with RI only in the XIV Legislature (with coefficient 0.474) and with AI in the XV Legislature (with coefficient 0.591) but with much lower values. We interpret this as suggestive evidence that the role of absence from voting sessions is important and needs to be further investigated, as part of the absence might hide some dissent within party positions on issues. It still worth remarking that the OC is a quite robust method for estimating coordinates and therefore absences and abstentions from voting sessions should not alter the picture significantly if there are enough data points on individual's voting behavior as in our case.

Figures 5, 6 and 7 report the mean and the median party coordinates within each legislature.<sup>xiv</sup>

**[Figure 5 about here.]**

**[Figure 6 about here.]**

**[Figure 7 about here.]**

Differences between mean and median coordinates are almost imperceptible for the XIV and the XV Legislatures. In the XIII Legislature, instead, we can see that median coordinates are slightly more clustered to the center of the political space.

Visual inspection of the spatial maps reveals that, in the XIII Legislature from left to right, the parties that are more loyal to the (center-left) government are clustered around the left-end of the spectrum; the LN is located at the right-end of the spectrum, while the parties belonging to the center-right coalition are placed in between. This party ordering could be interpreted in the following way: on the left we have the responsible government-parties, which vote together to make the government work. We have then an opposition that, while opposing the government on partisan issues and votes, does not perform its role in a completely irresponsible manner and supports the government whenever it is necessary to do so. And finally we have an extremist, ideologically alienated party that opposes both the government and the responsible opposition. A similar interpretation has been suggested for the two party case in the U.S. Congress (see Poole and Rosenthal, 1997). We tested this hypothesis by making use of cutting line analysis of party-line votes. 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 8 reports the distribution of the bills by cutting line angles.

**[Figure 8 about here.]**

As we can see, the distribution has two peaks, one where the cutting lines are almost vertical, and one where they are almost flat. The majority of bills are concentrated around the vertical cutting

lines, which confirms the prominent role played by the first dimension in explaining the voting pattern.

We then define party-line votes whenever at least 90% of the Ulivo coalition voted against at least 90% of the Polo coalition.<sup>xv</sup> Figure 9 shows the distribution of the bills with party-line votes by cutting line angles.

**[Figure 9 about here.]**

As we can see, cutting line angles are closer to vertical when party-line votes are present. Our hypothesis is tested by looking at the change in APRE if we move from one to two dimensions in the subset of all the bills where party line vote was present. The change in APRE is only about 1.7%, which we consider small enough to confirm that the first dimension is mainly explained along the government-opposition line.

Note also that this party ordering is not terribly consistent with the left right party ordering that are generated with other methodologies: the PRC emerged as a splint, leftist group from the old PCI when the PCI was in its transition to becoming the PDS (turned DS in the XIII Legislature) and hence should be located to the left of the PDS. The Democrats and the RI should also be located to the right of the PRC. Looking at the right side of the political spectrum, one wonders whether on a proper left-right ordering the LN should be placed to the right of the AN. However, under our interpretation of the first dimension, it is not surprising that the neo-communist Party of the Communist Refoundation (PRC) 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 after their vote of no confidence that forced Prodi to resign from Prime Minister, on October 9, 1998. At the same time, the PRC also faced a scission of the more pro Ulivo MPs,

who then formed a neo-communist 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.

Some of these *anomalies* disappear when we perform the OC analysis of the remaining legislatures. The PRC is located to the left of the PdCI, Green and DS (PD). AN lies to the right of FI but still to the left of LN. On the other hand, in the XIV and XV Legislatures, when the second dimension became insignificant and the Italian political space became one-dimensional, the main dimension seems to be the left-right continuum.<sup>xvi</sup> To corroborate this statement we perform some correlation analyses. Specifically, we correlate party positions so estimated in the XIII, XIV and XV Legislatures with party positions estimated on the basis of mass survey data and party manifesto data (PMD), and we find that the first dimension is strongly, positively and significantly related to parties left-right positions estimated with survey data or PMD for the XIV and the XV Legislatures, but not for the XIII Legislature. Results are presented in Table 4.

**[Table 4 about here.]**

As we can see, the correlation between party positions estimated with the PMD (based on the 1996 manifestoes) and OC-based estimates of party positions, yields a statistically insignificant  $r = .404$ . The correlation between OC-estimates and mass survey-based party positions yields an  $r = .789$ . This coefficient, which is statistically significant, does not appear to be particularly strong when compared with the other correlation coefficients. For example, the correlation coefficient between party positions measured with OC and PMD in the XIV Legislature is a statistically significant  $.943$ , the correlation coefficient between party positions estimated with OC in the XIV Legislature and mass survey-based estimates is  $r = .960$ . Party positions estimated

with OC methodology in the XV Legislature correlate very highly not only to party positions estimated with the 2006 mass survey data ( $r = .909$ ), but also with the 2001 mass survey data ( $r = .871$ ) and with the PMD-estimates for the 2001 elections ( $r = .856$ ). This evidence thus sustains the claim that the first dimension in both the XIV and XV legislature is the left-right dimension, while it is not in the XIII legislature - when the first dimension was government-opposition. In fact, at the extreme left-end of the spectrum we have the parties that were most loyally supporting the government, then the left-wing parties that were less consistently supporting the government, then the center and right to center parties that were voting along the government forces on some measures, and finally at the extreme right end of the spectrum, we find the Northern League that consistently voted in opposition to both the government majority even when the other right-to-center parties supported the government measures.

As for the second dimension of the XIII Legislature, our analysis reveals that the European Union provides the best explanation for the change in the dimensionality of the political space in the Italian parliament. In fact, to test this hypothesis we once again looked at the changes in APRE if we move from one to two dimensions in each bill's categories as given from the Teseo classification. In particular, we consider only those categories with at least 10 roll calls and 20% change in APRE. We find that the European Affairs (number 15) generated the highest change in APRE (0.328) (see Table 9 in the Appendix). In addition, we repeat the same analysis with two classifications used in the literature the Peltzman and the Clausen (see Table 10 in the Appendix). In that case we have that the foreign policy variable is the one that passes the test (or is the closest to pass it). Nevertheless, the most striking results are obtained with the TESEO classification, which considers explicitly the European Affairs category. The importance of the pro-Europe/anti-Europe dimension in influencing the voting behavior of the Members of the



European Parliament (MEP) has been highlighted by Hix et al. (2006). It is therefore interesting to find that EU-related issues affect the legislative behavior of parliamentarians not only in a supranational legislature such as the European Parliament, but also in national bodies such Italian Parliament. To some extent, this result is also intuitive in light of the fact that during the XIII Legislature many measures had to be taken in order to guarantee entry into the Euro zone which was about to begin. Note finally that a similar interpretation of the second dimension has been proposed, for the Czech Republic, by Noury and Mielcova (2005).

#### **4. Discussion**

The results presented in the previous section show that with the exception of the XIII Legislature, when the political space is two-dimensional and government-opposition is the main structuring dimension, the Italian political space is one-dimensional and the left-right dimension is the main structuring dimension.

In the course of this section we provide a discussion for why the Italian political space undergoes two changes –one in the number of dimensions and the other pertaining the meaning of the dimensions.

Our basic point in both respects is that the changes in the number and meaning of structuring dimensions is the result of the institutionalization of parties' legislative behaviour and of the patterns of inter-party competition in the legislative arena.

It is well known that the Italian party system, that had been a basket case of polarized pluralism (Sartori, 1976) from the end of the Second World War to the *Mani pulite* scandal, underwent

major changes in the course of what scholars have defined as the Italian transition (Pasquino, 2000). Several of the traditional Italian parties disappeared, other changed and new parties emerged (Morlino, 1996).

While scholars have at times argued that party change does not necessarily amount to party system change (Mair, 1997), there is no question that changes in the number and identity of Italian parties, coupled with the 1993 electoral reform (Fusaro, 1995; Katz, 1995; Katz, 2001), led to a new pattern of inter-party competition and to a new party system (Bartolini and D'Alimonte, 1995; D'Alimonte and Bartolini, 1997; D'Alimonte and Bartolini, 2002). Polarized pluralism was replaced by a pattern of imperfect bipolar competition.

The imperfections of these bipolar competition were due to two reasons: first, in the first two elections held with the new electoral system, the two main coalitions were challenged by a small third group; second, as the high levels of inter-party switching and the low levels of intra-party cohesion recorded by MAI indicate, Italian parties and coalitions in the post-reform party system were poorly institutionalized (Huntington, 1968; Panebianco, 1983); and, third, the patterns of inter-party competition were unstable and poorly structured. However, as party identities became more clearly defined, as parties became more institutionalized, as the patterns of inter-party relations became more stable and structured, the dimensionality of the Italian political space decreased. This is consistent with what Peli and Bruggeman (2006) had suggested in their work. In fact, according to them changes in dimensionality may lead to an increase in cohesion as the actors, in our case parties and parliamentarians, “are concentrated in a lower dimensional hyper volume, with less unitary cells so to speak.” This is precisely what we find once we measure party cohesion on the basis of MAI, which accounts not only for the way MPs belonging to various parties vote, but also to whether they are present or not and to whether they abstain. In

fact, while the average level of intra-party cohesion was 60.1 in the XIII legislature, it grew to 67 in the XIV Legislature and to 73.3 in the XV Legislature. In other words, the data at our disposal not only sustain the claim that dimensionality and party cohesion are related to one another but also that in the Italian case MAI represents a better tool for estimating intra-party cohesion.

The evidence from the XIII, XIV and XV Legislatures shows that the dimensionality of the political space is more a function of the level of party institutionalization and of the structuring/stability of the party system than of the electoral formula, district magnitude and the number of parties. In fact, while the literature had suggested that the greater the magnitude of the electoral district, the larger the dimensionality of the political space (Taagepera, 1999) and that dimensionality increases as the number of parties increases (Taagepera and Grofman, 1985; Taagepera, 1999), the Italian case shows otherwise. The XIV Legislature was elected with the same electoral system that was used in the XIII Legislature and yet had a lower dimensionality, while the XV Legislature was elected with an electoral system that had larger district magnitude and had the largest number of parliamentary party groups (19, while there were only 18 in the XIII Legislature and 17 in the XIV Legislature) and yet it had a lower dimensionality than the political space had had in XIII and had the same dimensionality of the XIV.

While the evidence from these three Italian legislatures is by itself insufficient to prove, conclusively, that the magnitude of an electoral system or the number of parties have no impact on the dimensionality of the political space, it does nonetheless suggest that the relationship between electoral formulas and number of parties on the one hand and dimensionality on the other hand may be conditional. The Italian case makes it clear that when parties are not properly institutionalized and the party system is fluid, the institutionalization of parties and the

structuring of the party system have a greater impact than electoral formulas or number of parties on the dimensionality of the party system.

## **5 Conclusions**

In this paper we have applied the OC methodology to the final votes cast in the Italian House of Representatives in the XIII, XIV and XV Legislatures (1996-2008) to show how the number and the meaning of the dimensions structuring the Italian political space have changed over time. Our paper is of interest for Italian legislative studies specialists for it represents the first attempt to employ the OC methodology to analyse the Italian parliament. It is also of interest to spatial analysts in general for two reasons. First, this paper represents the first attempt to study diachronically the dimensionality of the Italian Parliament. The data presented in this paper show that dimensionality of the political space decreases over time. This finding is consistent with the findings previously discussed in the literature. Hix et al. (2006), for example, show that the importance of the second dimension in structuring the political space and, henceforth, the dimensionality of the political space, have declined over time both in the US Congress and in the European Parliament.<sup>xvii</sup> In this paper we suggest that the relationship between time, the passing thereof, and the lowering dimensionality is or can be explained by the fact that over time parties become more institutionalized and cohesive and party systems become more stable and structured. While Italianists have generally been concerned with the exceptionality of the Italian case, we believe instead that there is nothing exception in what we find. In fact, Hix and Noury (2011) made it very clear that the dimensionality of the political space is lower in long-established, consolidated democratic regimes with structured party systems (UK, US) than it is in

more recently established democratic regimes where the party system (Czech Republic or Poland) are less structured and less stable. The dimensionality of the political space is negatively related to the structuring of the party system, the structuring of the party system is a function of time and therefore the dimensionality of the political space declines with the passing of time in Italy as well as in any other place.

Second, and more importantly, the analyses performed in this paper allow us to shed some light on the relationship between the dimensionality of the political space on the one hand and the number of parties, the electoral system, and party cohesion on the other hand. The evidence presented in the paper sustains the claim that the dimensionality of the Italian political space is primarily a function of party institutionalization and of the structuring of the party system. Specifically we suggest that as times goes by the dimensionality of the Italian political space decreases and the main structuring dimension goes back to being what it had been for most of the First Republic: the Left Right dimension. We treat the higher dimensionality and the different meaning of the main structuring dimension in the XIII as a consequence of the party and party system change that induced many analysts to speak of the end of the First Republic, of the Italian transition and of a Second Republic.

Third, while the results of our analyses show that higher levels of intra-party cohesion are related to lower dimensionality as Peli and Bruggemann (2006) had hypothesized, we show that this relationship is particularly evident once we estimate intra-party cohesion on the basis of the MAI index that we have devised. This finding is of some importance not only for spatial analysts who seek to develop a better understanding of the determinants of dimensionality, but it has also some relevance for legislative behaviour scholars as it shows that in some settings, such as the Italian one, absences and abstentions might have a clear strategic meaning and that by neglecting them

one would greatly misunderstand the behaviour of legislators. This is definitely a topic worth further investigation in future research.

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## **Appendix: Tables and charts**

In this section we report tables and charts of our analysis. Table 5 reports the TESEO. The code number in the second column indicates how we aggregated those bills into 16 categories.

**[Table 5 about here.]**

Lastly, Tables 6 and 7 report the analysis of the changes in the APRE by bills according to the Teseo, the Peltzman and the Clausen classifications, which are used to interpret the explanatory variable of the second dimension.

**[Table 6 about here.]**

**[Table 7 about here.]**

**Figures and tables**

**Figure 1 Normalized eigenvalues of the double centered agreement score matrix as indicators of dimensionality of the political space.**

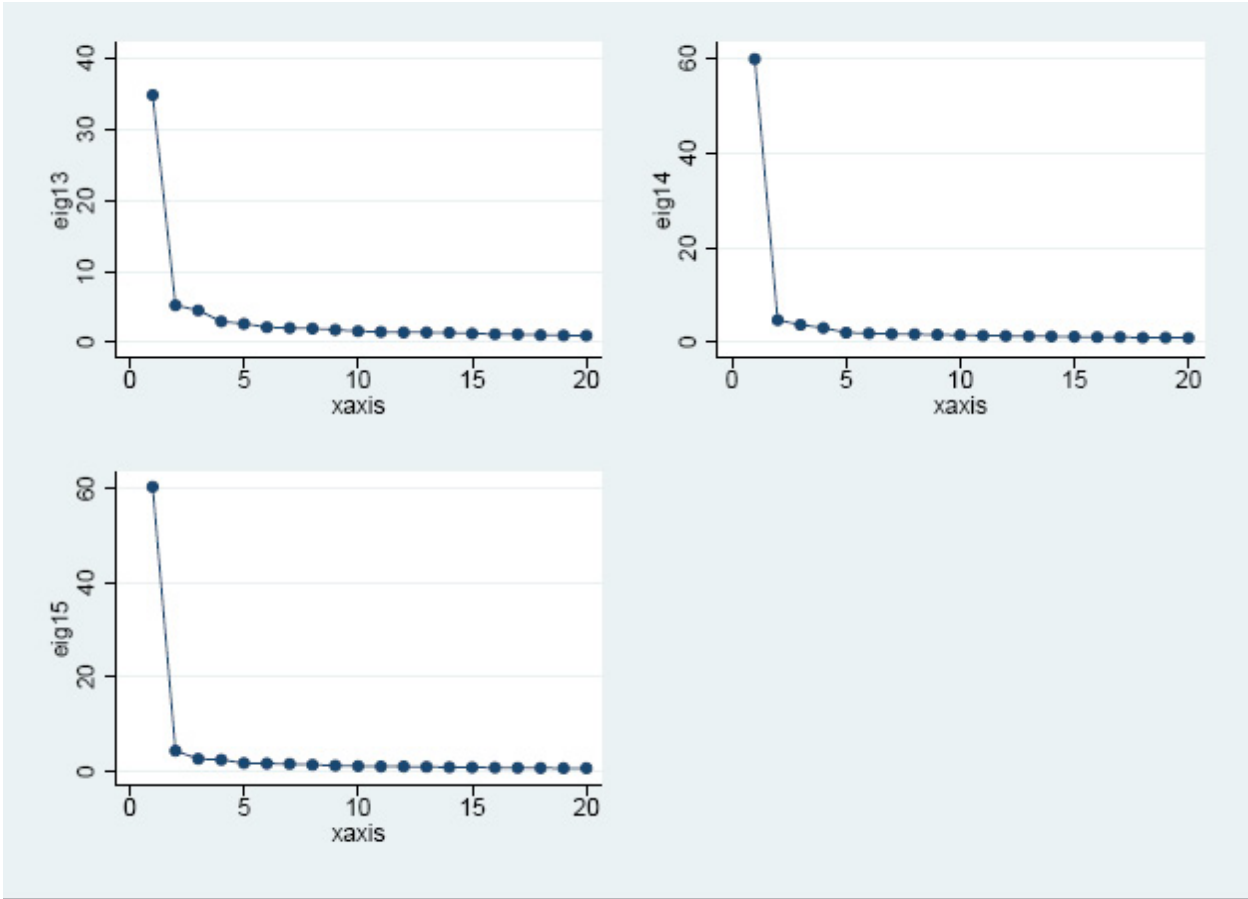
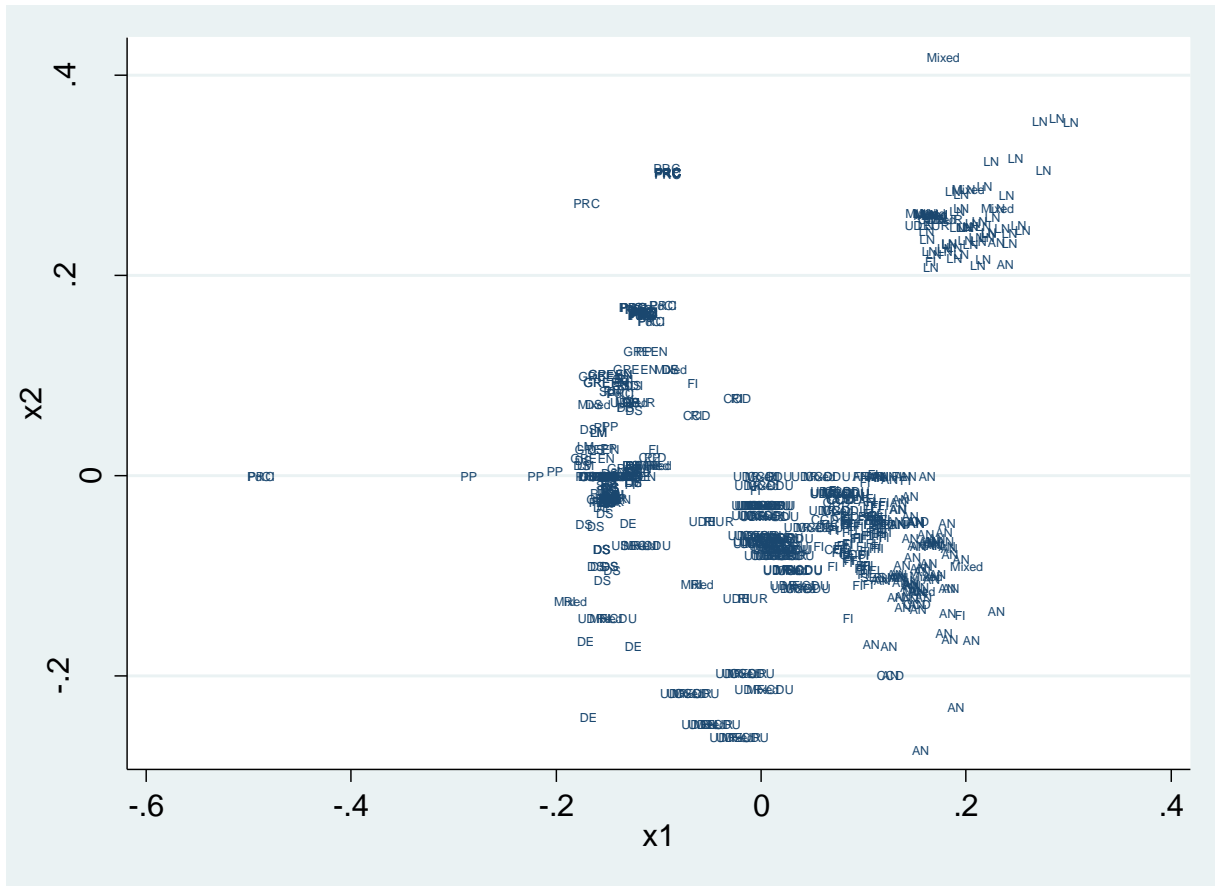
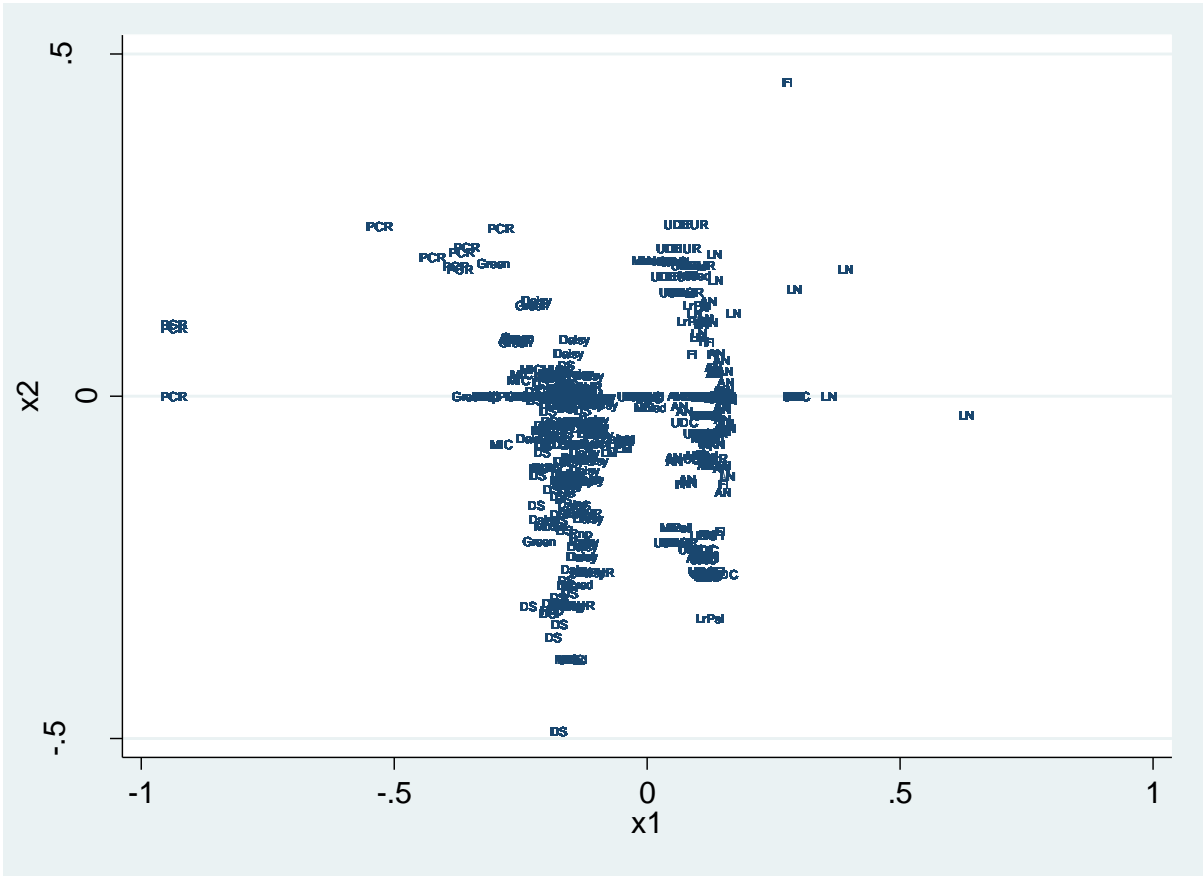


Figure 2 Individual MPs coordinates for the XIII Legislature.



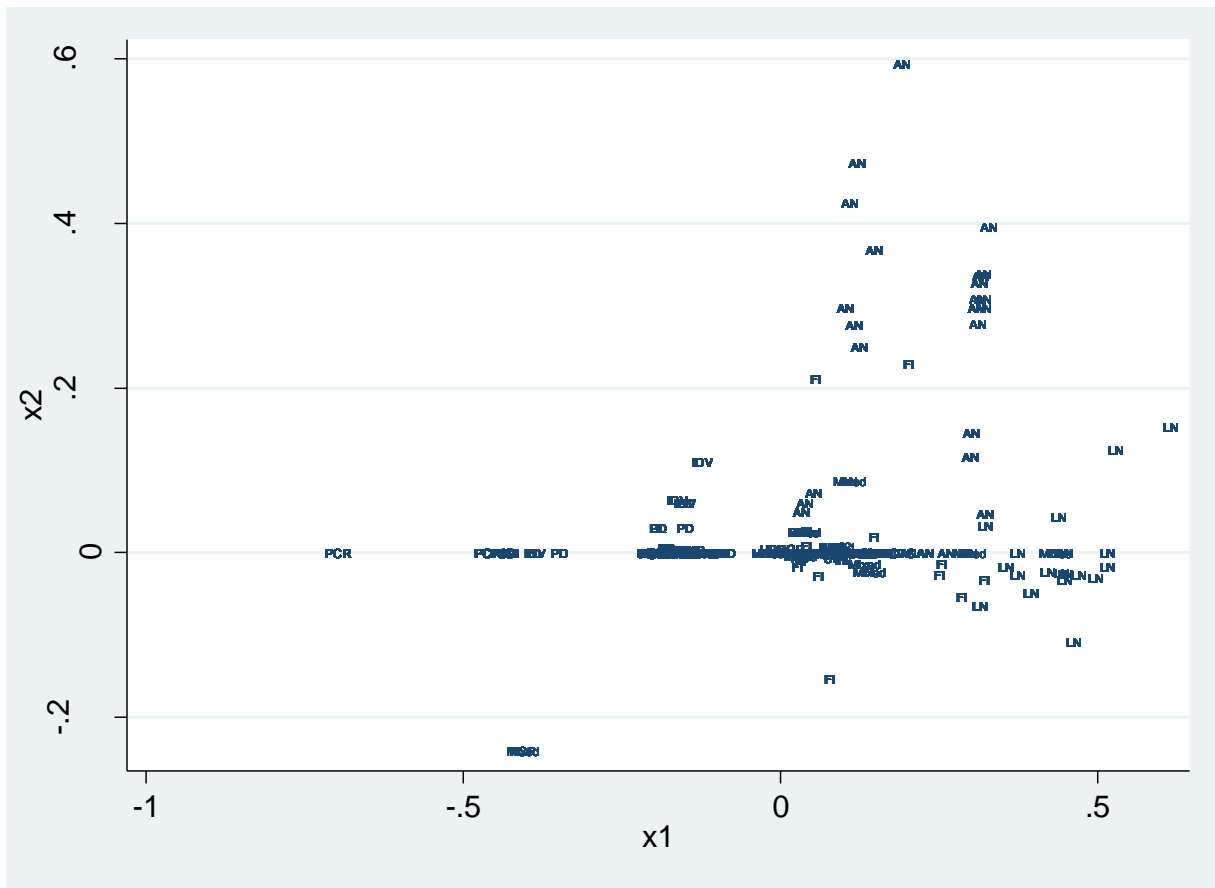
FI = LET'S GO ITALY; LN = NORTHERN LEAGUE; DS = DEMOCRATS OF THE LEFT; DE = DEMOCRATS; PP = POPULAR PARTY; UDEUR = UNION OF THE DEMOCRATS FOR EUROPE; SDI = MIXED ITALIAN SOCIALIST DEMOCRATS; CCD = MIXED CHRISTIAN DEMOCRATIC CENTER; RI = MIXED ITALIAN RENEWAL; PRC = MIXED PARTY OF THE COMMUNIST REFORMATION; SEGI = MIXED SEGI PACT; GREEN = MIXED GREEN; LM = MIXED LINGUISTIC MINORITIES; FLDR = MIXED FEDERATION OF LIBERALS, DEMOCRATIC AND REPUBLICANS; PdCI = PARTY OF THE ITALIAN COMMUNISTS; AN = NATIONAL ALLIANCE; UDR-CDU = CHRISTINA DEMOCRATIC UNITED

Figure 3 Individual MPs coordinates for the XIV Legislature.



AN = NATIONAL ALLIANCE; DS = DEMOCRATS OF THE LEFT; FI = LET'S GO ITALY; LN = NORTHERN LEAGUE; MIC = MIXED ITALIAN COMMUNISTS; LrPsi = MIXED LIBERAL DEMOCRATS REPUBLICANS AND NEW PSI; LM = MIXED LINGUISTIC MINORITIES; UDEUR = MIXED UNITED DEMOCRATS FOR EUROPE; Rnp = MIXED ROSE IN THE FIST; Green = MIXED GREEN; PCR = PARTY OF THE COMMUNIST REFORMATION; UDC = CHRISTIAN DEMOCRATIC UNITED

Figure 4 Individual MPs coordinates for the XV Legislature.



AN= NATIONAL ALLIANCE; FI = LET'S GO ITALY; LN = NORTHERN LEAGUE; PdCI = PARTY OF THE ITALIAN COMMUNISTS; LM = MIXED LINGUISTIC MINORITIES; UDEUR = MIXED UNITED DEMOCRATS FOR EUROPE; PCR = PARTY OF THE COMMUNIST REFORMATION; UDC = CHRISTINA DEMOCRATIC UNITED; IDV = ITALY OF VALUES; PD = DEMOCRATIC PARTY – OLIVE TREE; DL = DEMOCRATIC LEFT; RnPsi = ROSE IN THE FIST AND NEW SOCIALISTS

Figure 5 Party average and median coordinates in the XIII Legislature.

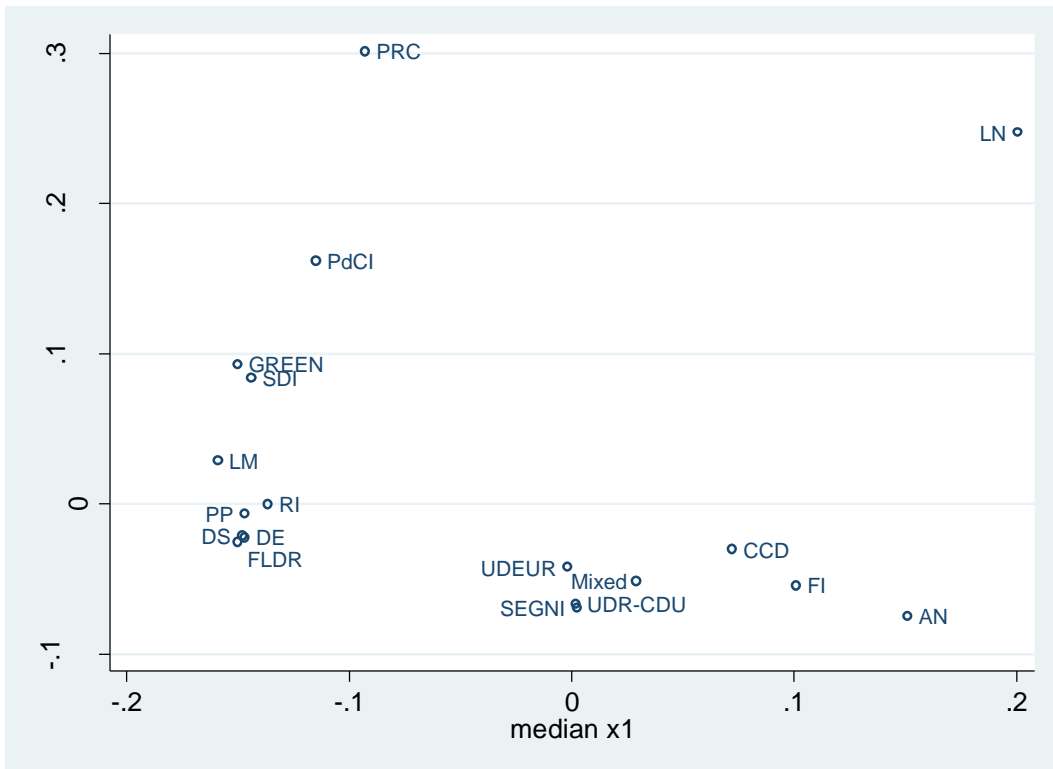
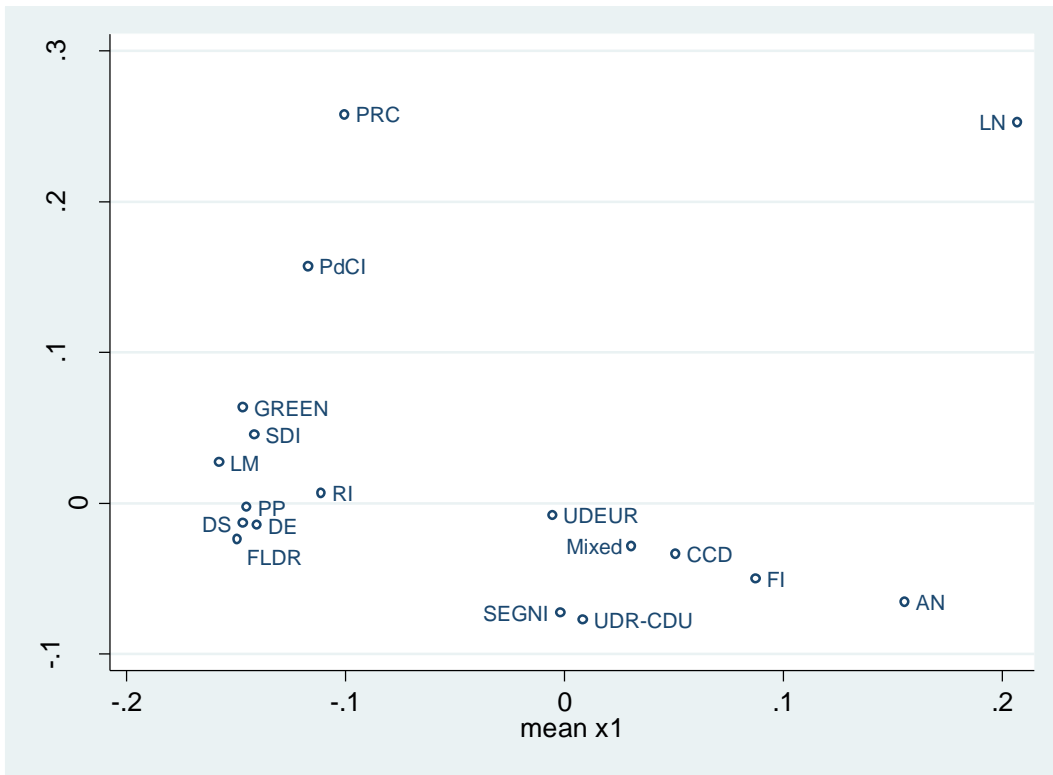


Figure 6 Party average and median coordinates in the XIV Legislature.

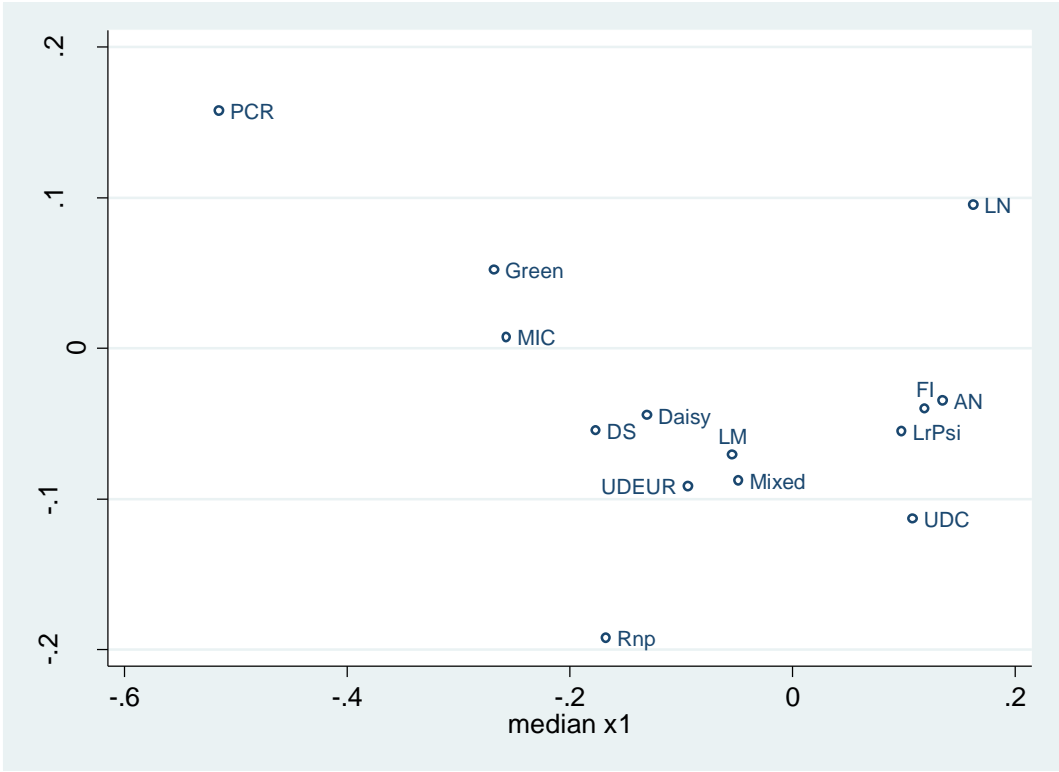
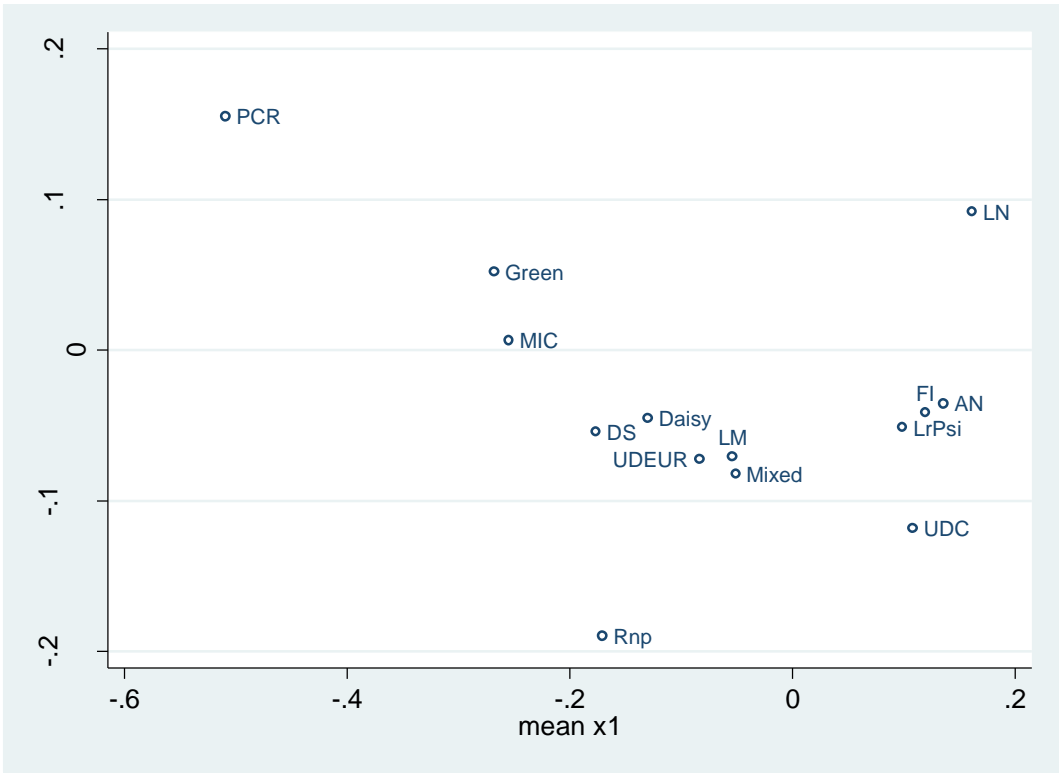


Figure 7 Party average and median coordinates in the XV Legislature.

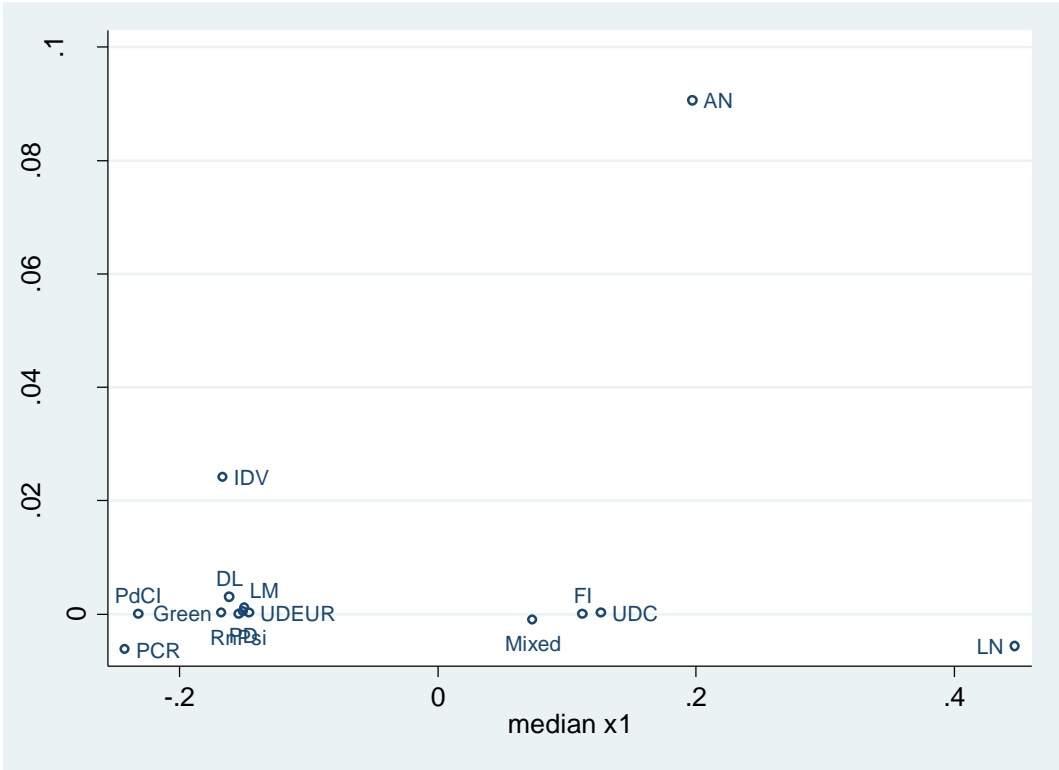
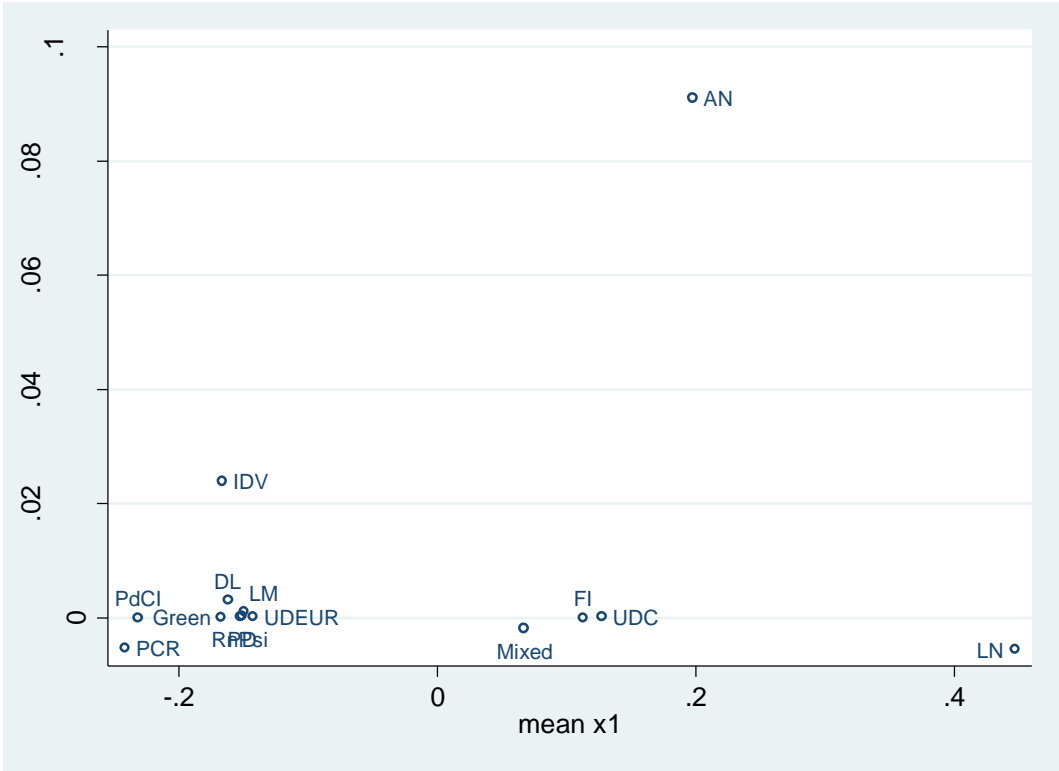




Figure 8 Distribution of bills by cutting line angles

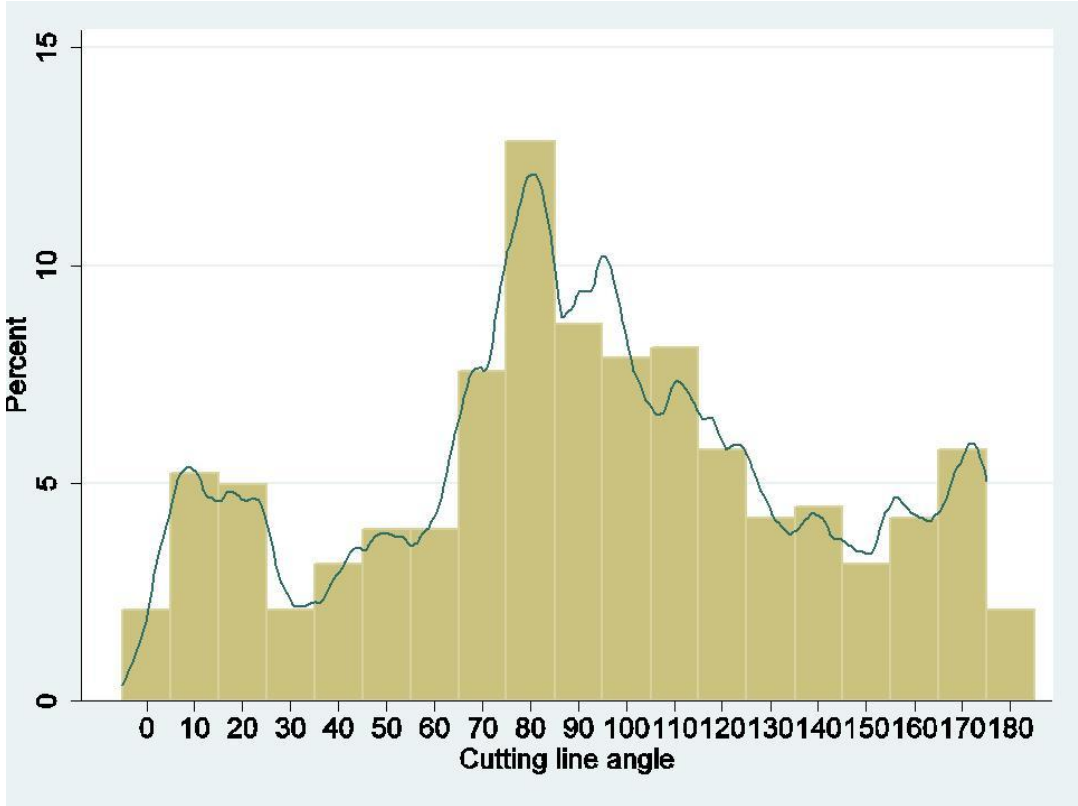
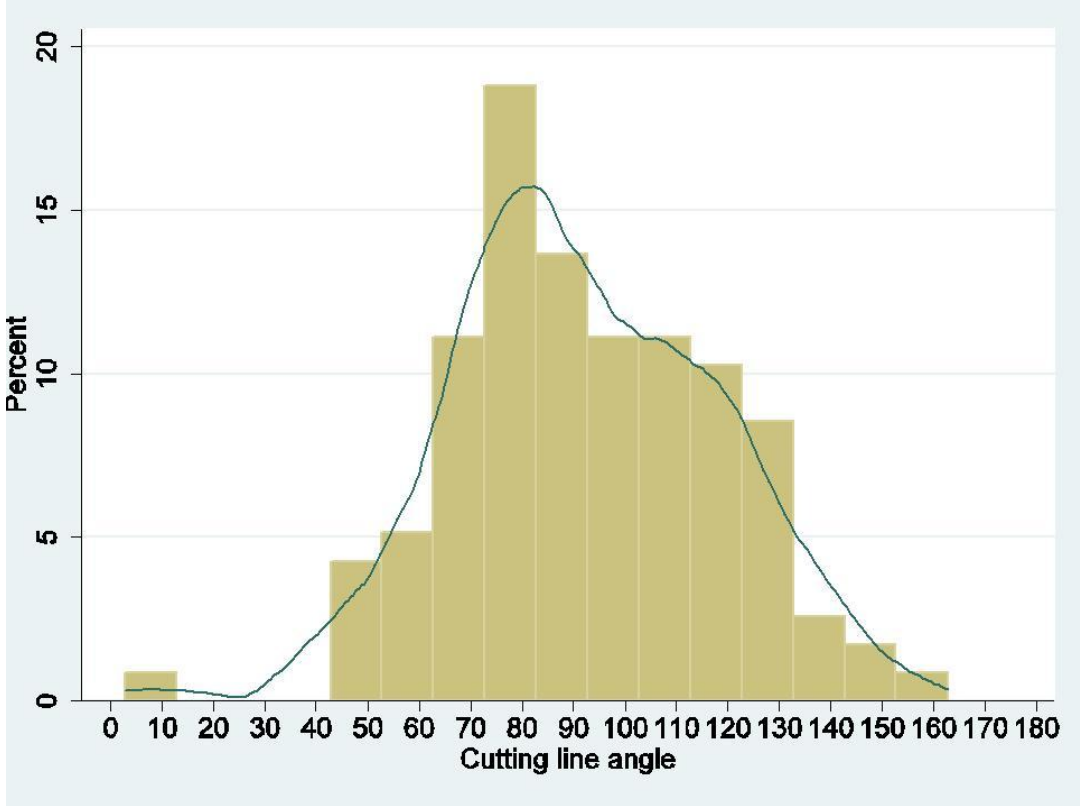


Figure 9 Distribution of bills with party-line vote by cutting line angles.



**Table 1 Summary Statistics**

SUMMARY STATISTICS			
	XIII LEX	XIV LEX	Xv LEX
ROLL-CALLS READ	630	579	105
NUMBER REJECTED	248	253	43
NUMBER ACCEPTED	382	326	62
LEGISLATORS READ	651	643	643
NUMBER REJECTED	4	16	42
NUMBER ACCEPTED	647	627	601
$PCC_1$	97.914	99.176	99.328
$PCC_2$	98.861	99.347	99.653
$PCC_3$	99.082	99.477	99.784
$PCC_4$	99.197	99.535	99.853
$APRE_1$	0.857	0.960	0.971
$APRE_2$	0.922	0.969	0.985
$APRE_3$	0.937	0.975	0.991
$APRE_4$	0.945	0.977	0.994
$PCC_2$	0.947	0.171	0.325
$PCC_3$	0.222	0.13	0.131
$PCC_4$	0.115	0.058	0.069
$APRE_2$	0.065	0.008	0.014
$APRE_3$	0.015	0.006	0.006

$APRE_4$	0.008	0.003	0.003
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Cutoff for bills: 0.005; Cutoff for MPs: 10.

**Table 2 Dispersion indexes for estimated bills grouped according to the Teseo classification. H is Herfindahl index. Max spread is the minimum value for H. NH is the normalized Herfindahl index.**

LEGISLATURE	CATEGORIES	H	MAXSPREAD	NH
XIII	16	0.107	0.063	0.048
XIV	16	0.104	0.063	0.044
XV	14	0.071	0.114	0.046

**Table 3 Rice Index (RI), Agreement Index (AI), and Modified Agreement Index (MAI).**

	LEX XIII			LEX XIV			LEX XV		
GROUP	RI	AI	MAI	RI	AI	MAI	RI	AI	MAI
1	0.919	0.932	0.504	0.987	0.980	0.635	0.947	0.962	0.646
2	0.955	0.925	0.537	0.933	0.965	0.649	.	.	.
3	0.993	0.989	0.747	0.991	0.987	0.791	0.956	0.972	0.723
4	0.982	0.969	0.543	0.984	0.969	0.753	0.967	0.962	0.766
5	0.991	0.987	0.615	0.964	0.967	0.571	.	.	.
6	0.996	0.986	0.568	0.917	0.872	0.603	0.877	0.835	0.558
7	0.876	0.823	0.555	0.964	0.940	0.564	1.000	0.998	0.837
8	0.989	0.988	0.604	1.000	1.000	0.826	.	.	.
9	0.98	0.957	0.55	0.980	0.979	0.610	.	.	.
10	0.989	0.984	0.57	0.987	0.953	0.797	0.986	0.989	0.786
11	0.991	0.988	0.572	1.000	0.925	0.804	.	.	.
12	0.995	0.914	0.743	0.979	0.971	0.612	0.990	0.985	0.697
13	0.978	0.945	0.603	1.000	0.993	0.747	.	.	.
14	0.998	0.991	0.78	0.990	0.987	0.631	1.000	0.990	0.643
15	0.998	0.989	0.779	0.972	0.922	0.600	0.995	0.989	0.817
16	0.992	0.988	0.499	0.997	0.988	0.596	0.993	0.988	0.791
17	0.951	0.938	0.529	0.991	0.989	0.603	0.990	0.983	0.645
18	.	.	.	.	.	.	0.978	0.935	0.600
19	.	.	.	.	.	.	0.998	0.992	0.777
20	.	.	.	.	.	.	0.857	0.900	0.707

21	.	.	.	.	.	.	0.992	0.979	0.641
22	.	.	.	.	.	.	0.998	0.997	0.849
23	.	.	.	.	.	.	0.990	0.984	0.831
24	.	.	.	.	.	.	0.998	0.998	0.948
25	.	.	.	.	.	.	1.000	0.988	0.682
97	0.970	0.936	0.523	.	.	.			

**Table 4 Correlation Analysis between estimated party positions based on OC, survey data and party manifesto data.**

OC's Party positions			
	XIII LEX	XIV LEX	XV LEX
Mass survey data 1996	.789 (.007)		
PMD 1996	.404 (.193)		
Mass Survey Data 2001		.960 (.000)	
PMD 2001	.943 (.000)		
Mass Survey Data 2006			.909 (.001)



**Table 5 TESEO classification of bills.**

TESEO CLASSIFICATION	CODE
CONSTITUTIONAL MATTERS	1
CIVIL LIBERTIES AND CIVIL RIGHTS	1
FOREIGN AFFAIRS	2
FOREIGN TRADE	2
AGRICULTURE	3
HEALTH SECTOR	4
BANKS, CREDIT AND MONEY	5
BUDGET	5
STOCK EXCHANGE AND FINANCIAL ACTIVITIES	5
PUBLIC FINANCE AND TAXES	5
PUBLIC ECONOMY AND PRIVATIZATIONS	5
NATIONAL DEFENSE AND ARMY	6
FAMILY AND CHILDHOOD	7
SOUTHERN ITALY AND DEPRESSED AREAS	7
ENVIRONMENT	8
SOCIAL SECURITY AND WELFARE	9
LABOR AND EMPLOYMENT	9
PUBLIC SECTOR	9
UNIONS AND WORKERS RIGHTS	9
LOCAL AND REGIONAL PUBLIC FINANCE	10

REGIONS AND LOCAL AUTONOMIES	10
CONSUMERS PROTECTION	11
COMMERCIAL AND CORPORATE LAW	11
ENERGY	11
INDUSTRY AND CRAFTMANSHIP	11
CULTURE, ENTERTAINMENT, SPORT AND TOURISM	12
EDUCATION AND RESEARCH	12
INFORMATION AND COMMUNICATION	13
TRANSPORTATIONS	13
PUBLIC WORKS AND HOUSING	14
EUROPEAN AFFAIRS	15
LAW AND JUSTICE	16
PUBLIC ORDER AND POLICE FORCES	16

**Table 6 Changes in APRE in TESEO classification.**

TESEO	APRE(2) - APRE(1)	APRE(3) - APRE(2)	SIZE
2	-0.098	0.04	49
5	0.2	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	0.16	0.003	20
1	0.317	0.039	18
4	0.214	0.075	15
11	0.238	0.082	12
14	0.19	0.008	12
3	0.187	0.098	11
15	-0.235	-0.09	10
8	-0.151	0.185	7
10	0.297	0.042	6
7	-0.042	0.009	4

**Table 7 Changes in APRE in Peltzman and in Clausen classifications.**

PELTZMAN	APRE(2) - APRE(1)	APRE(3) - APRE(2)	SIZE
1	0.11	-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	0.13	0	58
9	0	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	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	0.05	41
2	0.098	0.033	36
3	0.001	0.089	12
4	0.023	0.036	10

## ENDNOTES

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<sup>i</sup> In this paper our use of the word party refers to both Parliamentary group and political party. However there is a difference between the two, since a political party is a political organization, rooted in the territory, through a more or less extensive membership base, local and central offices and elected officials. A parliamentary group instead is a group formed by elected politicians in the Parliament. Usually parliamentary groups correspond to parties in the sense that MPs belonging to the same party join the same parliamentary group, unless they belong to a party that did not get enough seats to form a parliamentary group. In that case the MPs join the Mixed group. In addition, and this happened quite frequently during the time period under investigation, some MPs can create parliamentary groups that at the time of the election did not have a parallel political party. Hence even if there is not a one to one correspondence between parliamentary groups and political parties, the relation between the two is quite tight.

<sup>ii</sup> After a referendum held on April 18, 1993, the Italian Parliament was forced *ob torto collo* to rewrite the law for the election of the Senate and, for the sake of homogeneity, of the House of Deputies. For the latter, the agreement was reached on a mixed system, where 475 Deputies (henceforth MPs) ought to be elected in single member districts under first past the post, while the remaining 155 ought to be allocated among the various parties on the basis of a proportional representation formula, provided that parties reached a 4% electoral threshold nationwide.

<sup>iii</sup> Ferrara (2004) exploits the mixed system provided by the Mattarellum to test whether legislators elected in the proportional system were more aligned to party line than those elected under the majoritarian system. Analyses of the effect of voting systems on legislators' behavior have also been done, among the others, for countries with a mixed electoral system such as Germany (Baur;2002), Russia (Haspel et al.;1998), Ukraine (Herron; 2002), and for a cross section of 19 countries (Carey; 2007), and the European Parliament (Hix; 2004).

<sup>iv</sup> The source is the House itself, through its web-site: <http://www.camera.it/>

<sup>v</sup> Incidentally, according to the standing rules of the House, a bill is approved when at least half of the MPs are present and the number of *Yea* exceeds then number of *Nay*. An MP who is on an justified absence is considered as present in the computation of the quorum. An MP who is present but abstains, participates in the determination of the quorum only. Abstention is treated differently in the Senate, as it is considered like a *Nay*.

<sup>vi</sup> We take Keith Poole for pointing this out to us.

<sup>vii</sup> The main difference between NOMINATE and OC is that the former uses a specific parameterization of the utility function of the legislators. A detailed explanation of these two techniques is in Poole (2005).

<sup>viii</sup> The House hosts 630 MPs. However as some members resigned before the end of the legislature, and were replaced by others, we have a larger sample of MPs whose ideal points can be estimated.

<sup>ix</sup> PCC is just the percentage of the correct predictions that are generated by the estimated model. Instead, APRE explains how the model can be improved with respect to the trivial prediction all MPs vote according to the majority. It is computed as

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

and it is equal to 0 when the model does not improve on the benchmark case, it is equal to 1 when the model achieves perfect classification, and it is negative whenever the model generates more errors than the benchmark.

<sup>x</sup> This procedure is taken again from Poole and Rosenthal (1997). In the appendix we report a description of Teseo classification.

<sup>xi</sup> Specifically, if we let  $p_i$  denote the percentage of bills within category  $i = 1, \dots, n$ , 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 just one category we have that  $H = 1$ . Our normalization generates  $NH = (nH - 1)/(n - 1)$ , which ranges between 0 (maximum spread) and 1 (maximum concentration).

<sup>xiii</sup> 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  $i = 1, \dots, m$ . The Rice index for group  $j$  is  $R_j = \frac{1}{m} \sum_{i=1}^m \frac{|s_{ij} - n_{ij}|}{s_{ij} + n_{ij}}$ . 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

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

<sup>xiv</sup> Specifically, we followed a 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. Then we computed the group average (median) across all bills.

<sup>xv</sup> The analysis summarized by figure 9 was done by including LN in the Polo coalition. This does not affect the results and allows for more bills to be considered.

<sup>xvi</sup> It is remarkable that LN appears as the farthest party on the right. The repositioning of the AN to the left of LN can be interpreted as an attempt of the former to establish as a governing and therefore less extreme party. On the other hand, LN has still maintained to some degree positions of anti system party, and this might be reflected in its extreme to the right position.

<sup>xvii</sup> The American case provides an interesting example in this respect. McCarty, Poole and Rosenthal (2006) have noted that in the US political system divisions or cleavages that were once cross-cutting have become over time mutually reinforcing. This means that issues that were once orthogonal to, and were therefore unexplained by, the main dimension of the political space (conservative-liberal), are now explained by the main dimension.