Bargaining over the Distribution of Seats in French Regional Elections

Dunz, Karl

American University of Paris

July 2011

Bargaining over the Distribution of Seats in French Regional Elections *

Karl Dunz †

July 2011

*This paper was presented at the 69th Annual MPSA Conference. The author wishes to thank Petia Kostidinova and Rory Costello for their comments. Of course, any errors in the paper are the sole fault of the author.

†Associate Professor of Economics, The American University of Paris, 147 rue de Grenelle, 75007 Paris, France. email: kdunz@aup.fr

ABSTRACT

This paper examines the bargaining over how to combine lists of candidates between rounds of the 2004 and 2010 French regional elections. Regressions support the hypothesis that a party's fraction of a coalition's total seats won will be equal to that party's fraction of the total first-round vote of all parties represented in the combined list. However, there is a slight tendency for small parties to get less than implied by this hypothesis. This is the opposite of what is commonly found in studies of coalition formation in parliamentary systems. The paper provides some support for the hypothesis that this is due to the electoral rules determining when a party is allowed to maintain their list in the second round. Finally, this paper examines properties of the function describing how a combined list divides any number of seats won.

There is a large literature examining the distribution of the payoffs to parties involved in bargaining over the formation of a government. Although the vast majority of the empirical part of this literature has focused on coalition formation at the national level in parliamentary systems,[1] there are other situations in which parties bargain with each other. This paper examines one such situation. In proportional representative systems in which votes are cast for lists of candidates those lists can consist of members of more than one party. Therefore, positions in a list determine how the parties have agreed to divide any given number of seats won. The combined lists that resulted from bargaining between rounds of the 2004 and 2010 French regional elections are examined in this paper. As far as I know, there is no published work that examines lists of candidates in this manner.

Brown and Franklin (1973) is the seminal work in the empirical literature on coalition formation. They find strong support for the hypothesis that the fraction of government ministries a party receives is equal to the fraction of the parliamentary seats of the governmental coalition held by that party. The view that such a "proportionality norm" is the likely outcome of coalitional bargaining is due to Gamson (1961). Brown and Franklin actually find some slight deviation from such a norm. Rather than $Y = X$, where Y is the Gamson prediction, i.e. the percentage of a coalition's total seats won by a given party, and X is the the actual percentage of ministry portfolios obtained by that party, they find

$$Y = -0.01 + 1.07X \tag{1}$$

[1]There are exceptions such as Laver, Rallings, and Thrasher ((1987) and (1998)) which examine local government coalitional payoffs in Britain. Also, there has been increasing interest in pre-election election bargaining. Examples of such work are Golder (2006), who examines the decision parties must make before an election of whether to run independently or whether to combine with another party, and Blais and Indridason (2007), who examine agreements between the Socialists and Greens in the 2002 French legislative elections.

with an $R^2 = 0.855$. This implies that small parties (those with less than approximately 1/7 of a coalition's total seats, get a slightly larger fraction of ministerial positions than their share of the coalition's seats.

There is a substantial literature that refines this basic observation.[2] Warwick and Druckman (2001) find support for the results of Brown and Franklin when different ministerial portfolios are given different weights based on their desirability. Schofield and Laver (1985) replicate the results of Brown and Franklin as well as examine the bargaining set as an alternative solution concept. Their work shows that in some European countries the bargaining set is a better predictor of coalitional payoffs than Gamson's proportionality norm, while in other countries the opposite is true. They suggest that Gamson's prediction works better in countries with fewer effective parties and more stable governments.

The main part of this paper examines how well a Gamson proportionality norm explains the outcomes of the bargaining between rounds of French regional elections. The next section describes the basic election rules and data available for the French regional elections of 2004 and 2010. Then results for these elections that are analogous to the Brown and Franklin results involving Gamson's proportionality norm are presented. These results are then further analyzed to try to understand the effect that the election rules, which determine the bargaining power of the parties, have on the outcome. I also present an estimate of a disagreement point[3] Finally, the properties of the implicitly defined functions giving how any given number of seats won is divided between the parties combining are examined for each region.

[2]See Laver and Schofield (1990) for a review.

[3]A disagreement point, which represents the outcome if no agreement is reached, is one of the features of a Nash bargaining problem. See Nash (1950) for details.

Bargaining Situation and Data

The results of the French regional elections of 2004 and 2010, along with the lists of candidates submitted by the parties in each round, are available on the French Ministère de l'Intérieur website, http://www.interieur.gouv.fr/sections/a_votre_service/elections/resultats.[4] The details of the procedures for the 2010 regional elections are given in the "Dossier de Presse" for these elections.[5]

Rather than submitting one list for a region, the election procedure involves a party (or group of parties) submitting a different list for each department within a region. If a party's lists receive at least 10% of the total votes cast in a region it is entitled (but not required) to maintain its lists for the second round. If a party's lists receive between 5% and 10% of the vote in the first round then it is called "fusionnable", which means it is allowed to combine with another party that has received at least 10% of the vote. For this to occur, the parties must reach an agreement on how to combine their lists. Party lists receiving less than 5% of the vote in the first round are eliminated. In the second round, the party receiving the most votes in a region receives a "prime" (or bonus) of 25% (rounded up to the next integer) of the total seats in the regional assembly with the remaining seats allocated

[4]This website was changed sometime after 2007 and now contains less detailed information about the candidates on the parties' lists. However, all the information needed to produce the results in this paper are still available. The Tuesday (after the Sunday voting) edition of *Le Monde* also gives the election results as well as more details about which political parties are represented in a particular list.

[5]This is available at http://www.interieur.gouv.fr/sections/a_votre_service/elections/actualites/regionales-2010. A similar document was available for the 2004 elections; however, there is no longer a link to that document on the Ministere de l'Interieur website. The election rules were the same for the 2004 and 2010 elections. The regional elections prior to 2004 had only one round with seats allocated proportionally.

proportionally[6] to all lists obtaining more than 5% of the total vote.[7] If a list receives a majority of the votes cast in the first round, which did not happen in any region, then the seats are allocated as described above with no second round.

When discussing first-round lists, I will typically use the word "party" to refer to such lists even if a first-round list consists of members of more than one political party. In addition, I will usually label such first-round lists based on their largest party. The term "list" used alone will refer to a second-round list, which is combined from various first-round party lists. This convention will be followed even though first-round lists sometimes contain members of parties that are also running their own first-round list. For example, there are several instances in 2004 of UMP first-round lists containing people listed as belonging to UDF even though UDF had its own first-round list. This will generally be ignored. Although I talk about bargaining between parties, what is really being done is looking at bargaining between first-round lists. This paper examines how a combined list divides a given number of seats between the members of the first-round lists that have combined. The party affiliation of individuals on a list is not considered. Only which first-round list that person belonged to is used.[8]

[6]Seats that remain to be allocated after the initial use of vote percentages are assigned by the "méthode de la plus forte moyenne", which gives the next seat to the party with the highest value of votes received divided by one more than the number of seats already assigned to that party.

[7]The rules for the region of Corse are different. The "prime" is smaller (3 of the 51 available seats). Any list with at least 5% of the first round vote can run in the second round. Also, any list can combine with a list entitled to run in the second round. For this reason, I did not consider the elections in Corse. The elections in the "outre mer" regions of Guadeloupe, Guyane, La Reunion, and Martinique were also not analysed.

[8]Actually, this is all that I can do since I only have limited party affiliation information for the 2004 elections. The party affiliation of individuals on first-round lists is not given for the 2010 election on the Ministere de l'Interieur website. This information for the 2004

Technically, any eligible party can combine lists with any other eligible party. Therefore, the situation is really a coalition formation problem along with a bargaining problem that determines how the seats won by a given coalition are allocated to the members. In fact, there are really two points in time when coalitions can form. First, before the first round all parties have the opportunity to submit combined lists with other parties.[9] This paper does not consider such pre-election bargaining and instead only examines the bargaining that takes place between eligible party lists between the rounds of voting.[10]

Although there were many parties that obtained the 5% minimum necessary to be able to combine, all of the combined lists that occurred in these elections consisted of combinations of the major parties of the right or left. Table 1[11] summarizes the number of regions in which various parties obtained the votes necessary to be able to combine and the combinations that occurred.

In 2004 there were combined lists on both the left and right of the political spectrum. On the right, the two mainstream parties, Union pour un mou-

elections is also no longer available on the website, although I still have a copy of the file with this information.

[9]Bargaining before the first round is actually an important factor in determining what the first round lists look like. Even among the major national parties, this bargaining occurs at the regional level. For example in 2004, in some regions the Socialists, Communists and Greens had a combined first round list and in others one, or even all three, had separate first round lists. Pre-election agreements in different parliamentary systems are the focus of Golder (2006). However, she does not examine the composition of any combined lists.

[10]There are also repeated game aspects to the bargaining that are ignored. The parties involved compete and cooperate in periodic elections. So, one thing that might affect the bargaining in one election is how it affects the relationship between parties in future elections. This issue is ignored in this paper.

[11]All of the tables referenced in the paper appear in the online supporting information.

vement populaire (UMP) and Union pour la démocratie française (UDF), ran separate lists in most regions in the first round and then combined in the second round.[12] Lists on the right combined in 11 regions, including one involving 3 parties.

On the left in 2004, all combined lists involved various combinations of the Socialist (SOC), Communist (COM), and Green (VEC) parties.[13] In most regions, at least two of these parties submitted joint first-round lists. There were two instances of all three of these parties running separate first-round lists and then combining for the second round.[14] Two parties on the left combined in 6 other regions.

All of the other parties that obtained enough first round votes to be eligible to combine, Chasse pêche nature et traditions (CPNT), Front national (FN), Mouvement écologiste indépendant (MEI) and combined Ligue communiste révolutionnaire and Lutte ouvrière (LCR-LO) lists, never combined with one of the largest parties.[15] In total in 2004 there were 19 instances of parties combining for the second round involving a total of 41 first-round lists.

[12]In Lorraine, these parties combined with another miscellaneous right-wing party. Also, in Bourgogne, the parties did not combine and the UDF list did not run in the second round even though it had received more than 10% of the vote.

[13]Actually, some of these lists also included members of smaller left-wing parties, such as the Parti Radical de Gauche. However, all first-round lists that combined in 2004 are labeled with one of the three major parties on the left: SOC, COM, or VEC.

[14]This occurred in Nord-Pas-de-Calais and Auvergne.

[15]For the most part these are either extreme right (FN) or extreme left (LCR-LO) parties that are not viewed as appropriate coalition partners. Although the CPNT did take part in some first round lists with the UMP and other parties, their president, Jean Saint-Josse, announced that they would not combine with any other lists for the second round. MEI was an independent ecologist party lead by Antoine Waechter, who was the Green's presidential candidate in 1988 and later left that party. Near the end of 2009, the MEI merged with Europe Ecologie.

In 2010, the structure of the political parties on the left and right was different. After the 2007 Presidential election the UDF split into two parts. One became the Mouvement démocrate (MoDem), lead by Françciose Bayrou who sought to capitalize on his performance in the 2007 Presidential elections. The other was the Nouveau Centre, which remained closely aligned with the ruling UMP. The former ran its own lists in the 2010 regional elections and in one region[16] was able to maintain its list in the second round. On the other hand, the Nouveau Centre did not run its own list in any region and allied itself with the UMP. As a result of these changes, there was no combining of lists of the right between rounds of the 2010 elections.

On the left there were also several changes. The most significant change was the creation of Europe Ecologie, which was a collection of Greens and various other leftists. This new group did very well in the 2009 European Parliamentary elections and ran lists in every region of continental France, except Corse. Such lists are also denoted by VEC.[17] Also part of the extreme left of the Socialist party split and ran lists with the Communists as the Front de gauche in most regions. Such lists are denoted by COP. First-round lists consisting of both SOC members and either (or both) of COP and VEC members are denoted by UG (union gauche). In 11 regions these two new groups along with the Socialists were all eligible to combine[18]. In 9 of those regions all three of those parties combined for the second round. In 10 other regions, two parties on the left combined for the second round. Therefore, in 2010 there were also 19 instances, which involved a total of 47 different first-round lists, of parties combining for the second round.

[16]This was Bayrou's home region of Aquitaine.

[17]This means that for 2004 VEC indicates a Green party list and in 2010 it indicates a Europe Ecologie list. In November 2010, Europe Ecologie and the Green party merged.

[18]In Picardie, there were actually 4 lists on the left with more the 5% of the vote: Socialists, Europe Ecologie, Front de gauche and a dissident group of Communists. In that region only the Socialists and Europe Ecologie combined for the second round.

Seat Allocation Functions

How the combined lists will be analyzed is now explained. If there was just one list per party per region then by examining the order of individuals on the combined list it would be possible to determine how the parties have agreed to divide any given number of seats that they could win in the second round. However, since the actual election involves lists for each department in a region, finding how parties have decided to divide a given number of seats requires assumptions about the distribution of votes received across departments. The number of seats won coming from a particular departmental list is equal to the proportion of that party's total regional vote obtained in that department.[19] Therefore, exactly which candidates are elected and thus how the parties have divided a given number of seats between themselves depends on the percentage of votes the combined lists obtain from each department in the second round. This is unknown at the time the composition of the lists must be made. So some assumption about this distribution of votes must be made.[20]

When estimating the number of seats a combined list gives to each party, it will be assumed that the distribution of votes across departments is the same as the distribution of the sum of the votes obtained in the first round by the parties forming the combined list. This vote distribution is used to divide a given number of seats among the different departmental lists. Then I can count how those lists allocate the given number of seats among the parties. How a list allocates the seats to its constituent parties will be called a seat allocation function.

[19] Any unallocated seats are again assigned using the "méthode de la plus forte moyenne".

[20] Actually, this is also unknown to the parties involved. So they really face some uncertainty in terms of how the composition of lists determines how a given number of seats are allocated between the parties.

However, this assumption does not necessarily make it possible to determine how any number of seats won is divided. The reason is that the first-round distribution of votes obtained by the parties of a combined list might not correspond to the distribution of registered voters. Therefore, if a list were to win a very large fraction of the total number of seats then its distribution of votes would have to be close to the distribution of voters among the departments in a region and this might be very different from the distribution of first-round votes. In such a case it is possible that using the first-round distribution would require obtaining more seats from a department than individuals on that department's list.[21] For this reason, only estimates of how parties have divided less than 80% of the total number of regional seats are used. This cutoff is arbitrary; however, in none of the regions did one list win more than 80% of the available seats. To win this fraction of seats would require a list to win at least 11/15 or 73% of the total second round vote. The largest win in our sample was the list combining 3 lists of parties of the left in Midi-Pyrenees in 2010, which obtained 67.77% of the second round vote and won 69 of the 91 seats.

In order to check the hypothesis that the departmental distribution of votes of a list is the same as that of the distribution of the sum of votes received by the parties involved in a combined list, Table 2 gives the actual seat allocation among the parties of a combined list and the seat distribution given by the estimated seat allocation function for the same total number of seats. These are exactly the same in 30 of the 38 combined lists and in only case (2010 Ile de France) was more than one seat misallocated. So, this crude test, suggests that our assumption about the second round vote distribution can be used to estimate seat allocation functions that will give distributions

[21] In fact, the election rules require each departmental list to contain 2 more names than the number of seats currently coming from that department. It is possible that the number of a department's members of the regional assembly changes as a result of the election.

of seats between parties that is not too far from the actual distributions.

There is another issue related to seat allocation functions. This is that only certain numbers of seats are possible for a list to win. This is because of the the 25% bonus for receiving the most votes in the second round.

For example, with 2 lists competing in the second round, it is not possible for a list to end up with 60% of a region's seats. The winning list will get 25% of the seats for winning plus its vote share, which must be at least 50%, of the remaining 75% of the seats. This means that with 2 lists in the second round, a winning list will receive at least 62.5% of the seats. On the other hand, a losing list can receive at most 50% of the 75% of seats that are allocated proportionally or at most 37.5% of the seats. Therefore, if there are two lists running in the second round then no list will end up receiving between 37.5% and 62.5% of the seats.

If there are 3 lists competing in the second round then the possibilities are somewhat different. With 3 lists it is possible for a list to win with only slightly more than one-third of the vote. Such a winning list receives 25% plus (1/3) times 75% or 50% of the seats. This is the minimum that a winning list can receive since it is not possible to win with less than 1/3 of the vote when there are 3 candidates. On the other hand, a losing list could receive as much as 50% of the vote and thus receive 37.5% of the seats. Therefore, if there are three lists running in the second round then no list will end up receiving between 37.5% and 50% of the seats.

When the seat allocation functions defining how seats are divided in particular regions are examined, the data representing numbers of seats that fall in the above ranges is excluded. The rationale is that since such numbers of seats are not possible for a list to win the parties have no reason to worry about how to divide that number of seats. This assumption is however somewhat arbitrary since not all possible number of seats are equally likely to be obtained. This is particularly true when 3 lists are on the ballot in the second

round. In order for a losing party to receive close to 37.5% of the seats it must receive close to 50% of the vote in the second round. This would mean that the third list obtains very few votes even though it received more than 10% of the first round vote. Similarly, a winning list obtaining just over 50% of the seats would have had to win a contest where all 3 lists received close to 1/3 of the vote, even though the first round vote shares might have been very different.

Even though our assumptions are somewhat arbitrary, it is unclear what better ones would be. This paper can also be viewed as a simple first pass at analyzing the this situation. The graphs of seat allocation functions are given in Table 4. When these individual seat allocation functions are analyzed the data in these graphs are what will be used.

Bargaining Disagreement Points

One would expect the outcome of bargaining to depend in part on the bargaining power of the parties involved. The election rules imply that different parties have different degrees of bargaining power depending on how many votes the party receives in the first round and, therefore, whether or not the party can maintain its list in the second round. Parties obtaining more than 10% of the regional vote can maintain their list in the second round, while parties obtaining between 5% and 10% cannot. Therefore, one might expect that such latter parties have less bargaining power than those parties that have the right to present themselves in the second round. I attempt to test this proposition in a later section.

No formal bargaining model will be presented. However, the idea of a disagreement point of a Nash bargaining problem will be used. A disagreement point is meant to describe the outcome if no bargaining agreement is reached. This clearly depends on whether a party can maintain itself in the

second round or not. In addition, what happens if parties fail to agree on a combined list for the second round also depends on what effect this failure has on voting in the second round. This is something that is unknown. The assumptions that I will make, along with some alternatives are described next.

If a party receives between 5% and 10% of the first round vote it is eligible to combine with another list; however, if it does not do so then it cannot submit a second round list on its own. Therefore, if there is no agreement on a combined list such parties will receive no seats. So their disagreement point number of seats will be assumed to be zero.

On the other hand, if a party receives more than 10% of the first round vote it is eligible to submit its own list for the second round. Therefore, even if it does not reach an agreement to combine with another party, it has the chance to win seats in the second round. Its disagreement point should represent the number of seats it can be expected to win if it competes in the second round on its own. This clearly depends on what agreements the other parties reach and what choices are actually available to the voters in the second round. There is also the issue of whether a party can crediably threaten to withhold support in the second round in order to get its candidates better positions on a combined list. Most of such issues are ignored, as it is unclear how to deal with them. So, it will be assumed that a party submitting a list on its own in the second round expects to receive the same percentage of the total vote as it received in the first round. It is also assumed that such a party will not win in the second round and it will obtain its proportional share of the seats remaining after the bonus is given to the winning list. Therefore its disagreement point number of seats is equal to 75% of its first-round percentage of the total vote times the total number of regional seats.[22]

[22]In effect, it can be thought that I am assuming a second round list expects no support

An alternative to the previous assumption for parties that receive more than 10% of the first round vote is that they assume that they will get the support of parties close to it in the political spectrum. Exactly which parties this involves is not always clear. Also, it would be reasonable to expect less support the farther apart the parties are. This would imply that there would be little reason to combine with a party receiving less than 10% of the vote and whose position is closer to your party than to your main rival since that party could not run in the second round and its voters would vote for your party rather than your rival in the second round. However, there is little empirical support for such an assumption since parties that have close relationships, e.g. Socialists and Greens, often combine even if the Greens cannot maitain their list in the second round.[23] For this reason, I ignore this issue and estimate disagreement points using the two earlier assumptions. Table 3 gives the estimated disagreement points along with the distribution of seats given by the seat allocation function for the same number of seats.

Testing Gamson's Prediction

A Gamson proportionality norm suggests that a natural hypothesis for the bargaining problem considered here is that parties divide the seats won in proportion to their relative vote shares in the first round of voting. This is the analogue of Browne and Franklin's hypothesis that the fraction of ministries received by a party equals the fraction of the ruling coalition's parliamentary seats that party holds. Testing this hypothesis for the combined second round

from the supporters of parties that are not included on the list. This is clearly not rational since voters of small parties generally vote for some list in the second round.

[23]However, the logic of this assumption could provide part of the explanation for why parties tend not to combine with extreme parties such as the Front Nationale or the 2004 combined Lutte Ouvrière/Ligue Communiste Révolutionnaire (Trotskyist parties). Doing so would make the combined list more extreme and therefore alienate voters in the center.

lists of the 2004 and 2010 French regional elections is the first thing that is done in this section.

A regression analogous to the one of Browne and Franklin (1973) would regress a party's fraction of the total (regional) first round vote of all parties that are part of the second round combined list on that party's fraction of the total seats won by the combined list. This gives the regression:

$$Vote\% = .046 + 0.89Seat\% \tag{2}$$

where $Vote\%$ is a party's share of the total first round vote of the combining parties, which would be Gamson's prediction for fraction of seats won by that party, and $Seat\%$ is the actual fraction of seats obtained by that party. The R^2 of this regression is 0.967. There are a total of 88 observations, one for each first-round party list that combines in some region.

Below it will make more sense to think of the percentage of a coalition's seats given to a given party as a function of that parties share of the coalition's first round vote. This results in the regression

$$Seat\% = -0.036 + 1.082Vote\%, \tag{3}$$

which is shown in Figure 1 below along with the data points.

In contrast to the regression of Brown and Franklin, equation (2) above, these regressions mean that small parties (i.e. those with less than approximately 42 percent of the total first round vote of the parties combining) receive less than the fraction of seats predicted by the Gamson hypothesis. This is opposite of the result found by Browne and Franklin that smaller parties receive more ministerial positions than their proportional share of the ruling coalition's total seats.

One possible reason for this difference is that smaller parties are more likely to fall below the 10% threshold for being able to mantain their list in the second round. Such parties have less bargaining power since if no

agreement is reached on a combined list then they will not be able to submit a list for the second round and therefore get no seats. Parties with over 10% of the first round vote can mantain their list in the second round and therefore are likely to win some seats if they cannot agree on a combined list. Therefore, a reasonable hypothesis would be that if a party received between 5% and 10% of the total first round vote, and thus cannot run in the second round unless they combine with a party that received more than 10% of the vote, then such a party would receive fewer seats in a coalition than predicted by the Gamson hypothesis.

To test this hypothesis, one can add a binary variable, called $CanRun$, that is 1 if a party receives more than 10% of the first round vote and 0 otherwise. Adding this binary variable along with the interaction term, $CanRun * Vote\%$, to the regression gives

$$\begin{array}{lllll} Seat\% = & 0.024 & -0.046 CanRun & +0.723 Vote\% & +0.341 CanRun * Vote\%, \\ & (0.034) & (0.038) & (0.172) & (0.175) \end{array} \tag{4}$$

with an $R^2 = 0.969$ and the usual OLS standard errors given below each coefficient. The standard errors imply that only the coefficient of $Vote\%$ is significant at the 0.01 level and the interaction term is significant at slightly over the 0.05 level (its p-value is 0.054).[24] This suggests that only the slope differs between parties that can run in the second round and those that cannot run. So there is some evidence that obtaining more that 10% of the first round vote and thus being able to run in the second round increases a parties share of a coalition's seats since the coefficient of $Vote\%$ is statistically

[24]If White heteroskedasticity-consistent standard errors and covariances are used then $CanRun$ is also significant at the 0.10 level (p = 0.079) and the interaction term at the 0.02 level (p = 0.016). The coefficient of $Vote\%$ remains highly significant. These standard errors allow for the possibility that the distribution of the error term is not independent of the percentage of the vote received. This suggests that both the intercept and slope vary depending on whether or not a party can maintain its list in the second round.

higher at least at the 0.10 level.

This regression implies that for parties that can run on their own in the second round the relationship between seats and vote share is

$$Seat\% = -0.022 + 1.064 Vote\%, \tag{5}$$

while for parties that cannot run on their own in the second round the relationship is

$$Seat\% = 0.024 + 0.723 Vote\%. \tag{6}$$

These regressions, along with the data distinguished by the binary variable $CanRun$ are shown in Figure 2.

The regression for parties that cannot run on their own in the second round suggests that parties with a vote share larger than $0.024/0.277 = 0.09$ do worse than predicted by the Gamson hypothesis. This is true of all such parties in our sample since the minimum vote share is 0.11. On the other hand, for parties that can run in the second round, the regression suggests that those with a vote share larger than $0.022/0.064 = 0.345$ do better than predicted by the Gamson hypothesis.

Disagreement Points and Bargaining

Next, I examine the estimated disagreement points. First, I describe how the standard view of a Nash bargaining problem could be applied to this situation. This view is that there is a set of feasible expected payoffs to the parties and a disagreement point, i.e. a point giving each party's expected payoff if no agreement is reached. The Nash bargaining solution would be the payoff vector that maximizes the product of the differences between parties' expected payoff and their disagreement point. This (or some other) solution vector would be implemented by selecting a combined list that achieves the desired expected payoffs. In order to be able to calculate a party's expected

payoff one would need to know a party's payoff as a function of the number of seats it obtains and the party's subjective probability distribution over the number of seats it could win.[25] Since these things are unknown, one would need to make assumption about such variables in other to obtain a formal Nash bargaining problem. It is unclear to me what such assumptions would be. Another issue is that there might not be a unique list that achieves a desired vector of expected payoffs. For these reason I will not present a formal bargaining model. Instead I will focus on a narrower hypothesis on the relationship of the disagreement point and the combined lists.

The hypothesis that I will examine is related to another view of this bargaining problem. I will assume that the parties view the situation as really being a series of bargaining problems, i.e. how to divide the number of seats won for each of the possible number of seats. The number of seats to be divided is determined by the second round vote. However, no matter what the number of seats won turns out to be, the combined list divides this number of seats between the parties involved. Therefore, the combined list can be used to obtain whatever division the parties want to achieve for each number of seats won *ex post*. Again, the solution to this problem depends on information about the parties that is unknown. However, one might argue that it is reasonable to assume that the parties will divide the the number of seats associated with the disagreement point in a way that corresponds to the number of seats each party expects to receive at the disagreement point. If parties can achieve the disagreement point by not reaching an agreement then it seems reasonable that if a combined list were to win the same number of total seats then the parties would want those seats divided in the same way. This might seem especially true when parties view the combined list as

[25] A party's expectation about the distribution of votes across department in a region would also matter since the number of seats coming from a particular department's list depends on the fraction of the combined lists regional vote obtained in that department.

a way of implementing a desired division of any number of seats won *ex post*.

Therefore, the hypothesis that is examined is that the estimated disagreement point is on the seat allocation function. This is done by using the data in Table 3, except that we will convert the raw number of seats into a fraction of the total number of seats at the disagreement point. This gives the variables $dis\%$ giving the fraction of seats a party gets at the disagreement point and $list\%$ giving the fraction of the total number of seats at the disagreement point a party is allocated by the seat allocation function. Figure 3 shows the pair of these variables for each party.

Figure 3 also distinguishes parties based on whether or not all parties in the associated list can maintain their first-round list. If the binary variable $allrun = 1$ then all parties of the combined list can submit their own list in the second round, i.e. all parties involved have received more than 10% of the first round vote. If at least one party received less than 10% and therefore cannot submit a second round list then $allrun = 0$. The two regression lines for these two sets of points is also given in Figure 3.

These two regression line can be found by estimating the following regression equation including the $allrun$ binary variable:

$$\begin{array}{lllll} list\% = & 0.106 & -0.131 allrun & +0.739 dis\% & +0.314 allrun * dis\%, \\ & (0.011) & (0.028) & (0.018) & (0.054) \end{array} \tag{7}$$

which has an $R^2 = 0.962$. The constant term, $allrun$ binary variable, and the interaction term are all significantly different from zero at well less than the 0.01 level. This regression also implies that for parties of a combined list in which all parties can run on their own in the second round the relationship the fraction of seats given by the seat allocation function and the fraction of seats at the disagreement point is

$$list\% = -0.025 + 1.054 dis\%. \tag{8}$$

while for parties in lists in which not all parties can run on their own in the

second round the relationship is

$$list\% = 0.106 + 0.739 dis\%. \tag{9}$$

In equation (8) the constant term is not significantly different from zero and the coefficient is not significantly different from 1 at over the 0.15 level, both individually and jointly. Therefore, for parties that are bargaining with other parties, all of which can maintain their first-round lists in the second round, there is some statistical support for the hypothesis that the disagreement point is on the seat allocation function.

On the other hand, the constant and slope coefficient are significantly different from 0 and 1, respectively, at less than the 0.01 level. The equation implies that parties that get a small fraction of seats at the disagreement point get more than that fraction of seats as allocated by the seat allocation function. This can also be seen in Figure 3 by noticing that parties getting no seats at the disagreement point generally get a positive number of seats according to the list. These are parties that received less than 10% of the first-round vote and cannot run in the second round. Such parties, receive, on average, receive a positive number of seats, i.e. they get more that the disagreement number of seats. This might seem to contradict the earlier results of equations (2) and (3) that small parties receive a smaller fraction of seats than their share of the total first-round vote of the parties in the list. However, that result is about the actual seat distribution outcome, while the disagreement point analysis is examining what would happen if a list only won the number of seats associated with the disagreement point.

Seat Allocation Functions Properties

Now I turn to individual regions and examine the seat allocation functions implied by combined lists. The first question examined is whether the in-

dividual seat allocation functions are linear and divide any possible number of seats won in the same way as the first round vote distribution. In other words, I ask whether the parties combining in a second-round list use a Gamson proportionality norm to divide every possible number of seats they could win. In other words, do the parties select a list that implements a proportionality norm *ex post* for every possible number of sets won?

The seat allocation functions, whose graphs are shown in Table 4 of the supporting information, will be used to address this question. When there are 3 parties combining for the second round, the seats allocated to the two smaller parties are added together to form the variable $Other$. Just examining the graphs suggests that, at least in many regions, these seat allocation functions are not linear. Therefore, in those regions, the answer to the previous question would be no.

To examine this a bit more precisely, I run regressions of the form

$$Largest = c + aOther, \tag{10}$$

where $Largest$ is the number of seats allocated to the largest first-round list of the combined list, which is always either SOC or UMP list. The 38 regressions are summarized in the Table 5 and only use data for possible number of seats won.

If the parties followed a Gamson proportionality norm to allocate every possible number of seats won then the regressions should have $c = 0$ and a should be equal to the ratio of first-round votes received by the largest party to the sum of votes of the other parties combining. The estimates reject at the 0.05 level the hypothesis that the slope coefficient equals the ratio of first-round votes in 25 of the 38 cases.

One might think that this hypothesis would more likely to be satisfied in situations where all parties can maintain their lists in the second round. However, this hypothesis is rejected at the 0.05 level in 9 of 16 cases where

all parties involved could maintain their lists in the second round, while it is rejected in 16 of the other 22 cases. So the hypothesis is rejected less often when all parties can maintain their first-round lists; however, it is difficult to draw any strong conclusions from such a small sample.

Finally, I examine the nonlinearity of the seat allocation functions by seeing if this function differs depending on whether the list wins in the second round. This will be done by introducing a binary variable, $Majority$, that is 1 for a number of seats representing a majority and 0 otherwise. I also introduce an interaction term involving this variable and $Other$. The regressions also only use data for possible numbers of seats won. The regressions are reported in Table 6.[26]

If a seat allocation function is linear then the coefficients of the binary variable $Majority$ and its interaction term with $Other$ should both be 0. The joint hypothesis that both these conditions are true is rejected in 27 of 36 cases at the 0.05 level. Testing the hypothesis that the slope coefficients are the same is rejected in 20 of the 36 cases at the 0.05 level. This suggests that a majority of the seat allocation functions are nonlinear. More work would be useful to understand what is causing the nonlinearity in some regions.

Conclusion

This paper has examined the bargaining problem facing parties between rounds of the 2004 and 2010 French regional elections. No formal bargaining model is presented. I know of no theoretical model where bargaining is explicitly over the composition of a list of candidates. Such a model would be useful, not only for the situation considered in this paper, but also for

[26]Regressions for the 2004 elections in Limousin are not possible because of a lack of variation in the number of seats allocated to the smaller party on both the right and the left. So there are only 36 regressions.

analyzing other elections in parliamentary systems.

The analysis presented is primarily descriptive. The focus has been to see what one can learn from how the combined second-round lists of parties implicitly divide a number of seats that might be won. I know of no other empirical work that has examined lists of candidates in this way. As in the literature on coalitional bargaining and allocation of ministries, I find strong support for a Gamson proportionality norm. However, as in this other literature, there are also some deviations from exact proportionality. More work is needed to discover any systematic deviations from such a norm in this situation.

References

Blais, A. and I. Indridason, "Making Candidates Count: The Logic of Electoral Alliances in Two-Round Legislative Elections", *The Journal of Politics* 69 (2007), 193-205.

Browne, E. and M. Franklin, "Aspects of Coalition Payoffs in European Parliamentary Democracies", *American Political Science Review* 67 (1973), 453-69.

Gamson, W, "A Theory of Coalition Formation", *American Sociological Review* 26 (1961), 373-82.

Golder, Sona, *The Logic of Pre-Electoral Coalition Formation* (Columbus: The Ohio State University Press, 2006).

Laver, Michael, Colin Rallings and Michael Thrasher "Coalition Theory and Local Government: Coalition Payoffs in Britain", *British Journal of Political Science* 17 (1987), 501-9.

Laver, Michael, Colin Rallings and Michael Thrasher "Policy Payoffs in Local Government", *British Journal of Political Science* 28 (1998), 333-53.

Laver, Michael and Norman Schofield, *Multiparty Government: The Politics of Coalition in Europe* (Oxford: Oxford University Press, 1990).

Election results supplements to *Le Monde* issues of March 23, 2004; March 30, 2004; March 16, 2010; and March 23, 2010.

Ministere de l'Interieur, "Regionales 2010 Dossier de Presse", (in French) available at http://www.interieur.gouv.fr/sections/a_votre_service/elections/actualites/regionales-2010.

Nash, John, "The Bargaining Problem", *Econometrica* 18 (1950), 155-62.

Schofield, Norman and Michael Laver, "Bargaining Theory and Portfolio Payoffs in European Coalition Governments 1945-83", *British Journal of Political Science* 15 (1985), 143-64.

Warwick, Paul V. and James N. Druckman, "Portfolio Salience and the Proportionality of Payoff in Coalition Governments", *British Journal of Political Science* 31 (2001), 627-49.

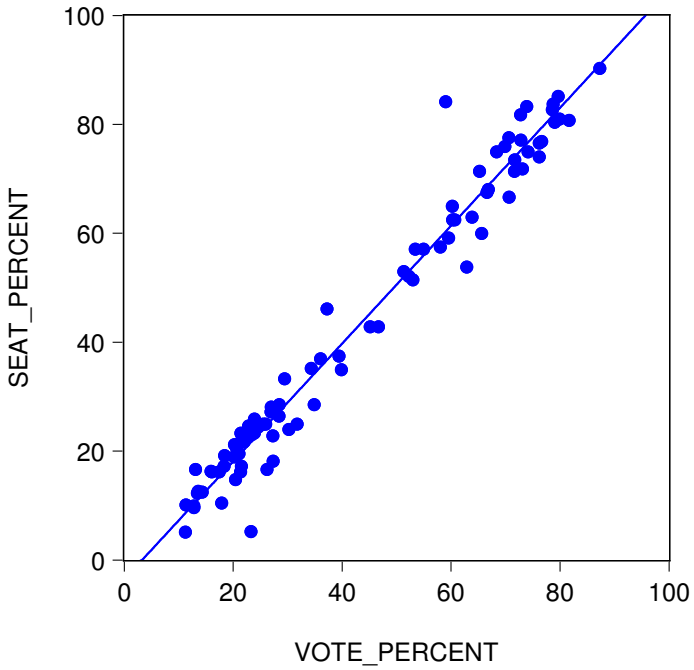


Figure 1: Percentage of seats won vs. percentage of vote

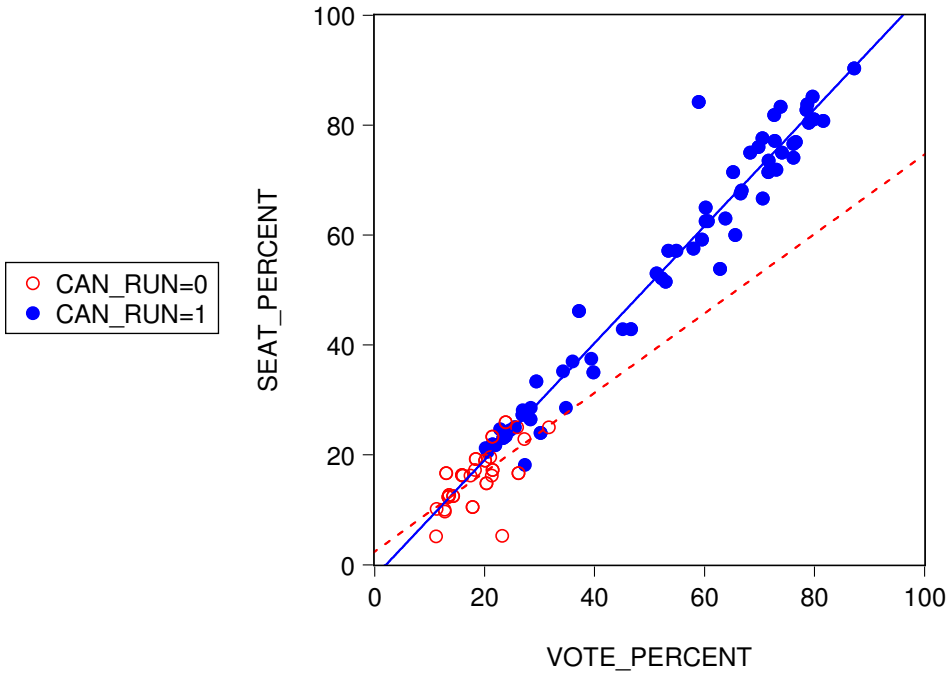


Figure 2: Regression with CanRun Dummy Variable

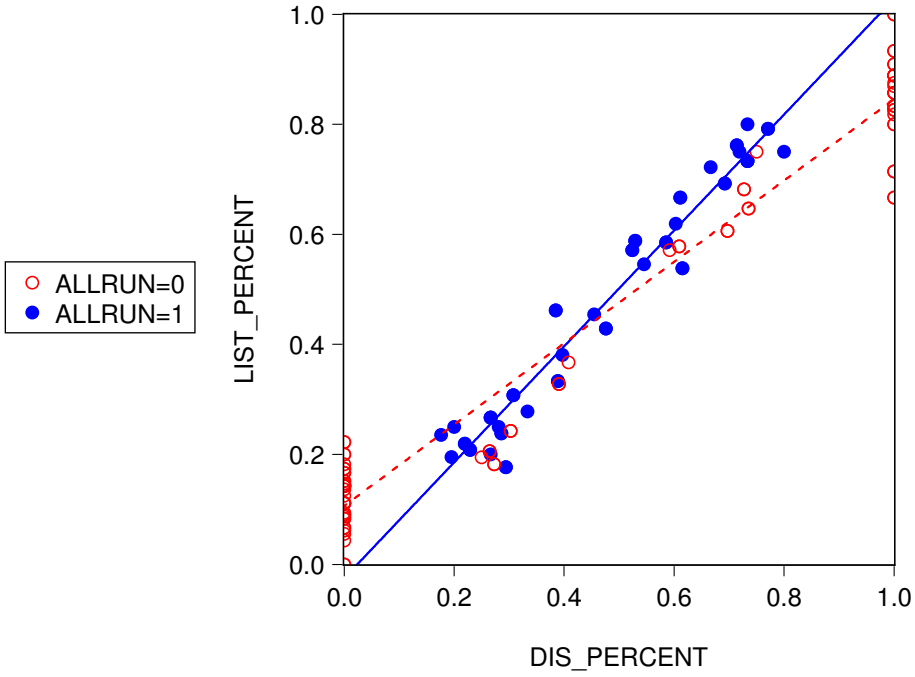


Figure 3: Percentage of the disagreement number of seats given by a list vs. percentage of seats at the disagreement point

Supporting Information (online only)

Table 1: Summary of Lists Eligible to Combine and Actually Combining

Notes: The above considers only 21 regions in France excluding Corse and the Outre Mer regions. Also, lists above might contain members of other parties. Meaning of abbreviations are given in the text.

First-Round List Composition	**Number of Regions**	**Number receiving > 10%**	**Number running alone in 2nd**	**Number combining in 2nd**	**Number receiving between 5% and 10%**	**Number combining in 2nd**
2004 Lists:						
SOC,COM,VEC	8	8	8	0	0	0
SOC and COM	6	6	2	4	0	0
SOC and VEC	5	5	3	2	0	0
SOC alone	2	2	0	2	0	0
COM alone	7	2	0	2	2	2
VEC alone	8	1	0	1	7	5
UMP and UDF	6	6	6	0	0	0
UMP alone	15	15	4	11	0	0
UDF alone	15	9	0	8	6	3
FN	21	17	17	0	4	0
CPNT	9	0	0	0	6	0
LO-LCR	21	0	0	0	6	0
MEI	6	0	0	0	4	0
others	2	0	0	0	2	1
2010 Lists:						
UG	5	5	0	5	0	0
SOC	16	15	1	14	1	0
VEC	21	12	1	11	9	8
COP	17	3	1	2	9	7
UMP	21	21	21	0	0	0
MoDem	20	1	1	0	3	0
FN	21	12	12	0	9	0
others	2	1	1	0	1	0

Table 2: Summary of actual outcomes compared to the division given by the seat allocation function assuming that second round departmental vote distributions are the same as in the first round for a list.

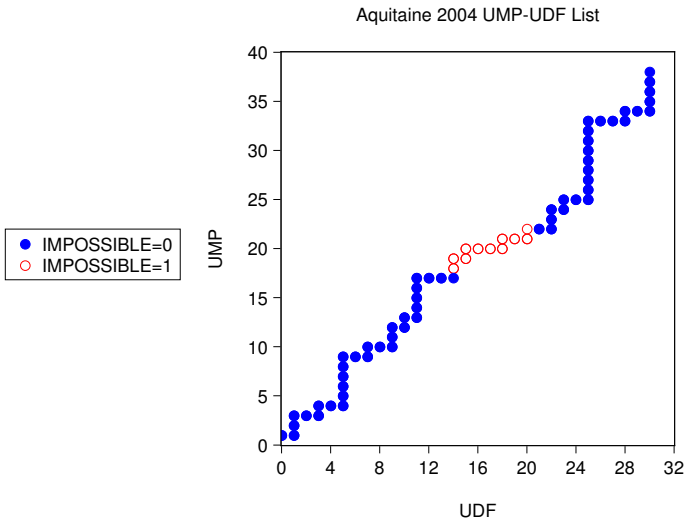
Department	Parties	Outcome	Estimate
2004 Lists on the Right			
Aquitaine	UMP,UDF	12,9	12,9
Bertagne	UMP,UDF	19,6	19,6
Centre	UMP,UDF	13,7	13,7
Champagne-Ardenne	UMP,UDF	10,5	10,5
Ile-de-France	UMP,UDF	40,24	39,25
Limousin	UMP,UDF	10,2	10,2
Lorraine	UMP,UDF,DVD	16,1,2	15,2,2
Midi Pyrenees	UMP,UDF	15,6	16,5
Nord-Pas de Calais	UMP,UDF	18,6	18,6
Haute Normandie	UMP,UDF	7,6	7,6
Pays de la Loire	UMP,UDF	27,6	27,6
2004 Lists on the Left			
Auvergne	SOC,COM,VEC	18,7,5	18,7,5
Bertagne	SOC,VEC	47,11	47,11
Ile-de-France	SOC,COM	105,25	105,25
Limousin	SOC,VEC	28,3	28,3
Nord-Pas de Calais	SOC,COM,VEC	46,18,9	46,18,9
Basse Normandie	SOC,VEC	21,7	21,7
Picardie	SOC,COM	25,9	25,9
Rhone Alpes	SOC,VEC	72,22	72,22
2010 Lists			
Alsace	SOC,VEC	8,6	8,6
Aquitaine	SOC,VEC,COP	45,10,3	46,10,2
Auvergne	SOC,VEC,COP	17,7,9	17,7,9
Bourgogne	UG,VEC	31,6	32,5
Centre	SOC,VEC,COP	29,12,8	29,12,8
Champagne-Ardenne	UG,VEC	24,5	24,5
Franche-Comte	SOC,VEC	20,7	20,7
Ile-de-France	SOC,VEC,COP	74,50,18	75,48,19
Limousin	SOC,VEC	23,4	23,4
Lorraine	UG,VEC	37,9	37,9
Midi Pyrenees	SOC,VEC,COP	47,15,7	47,15,7
Nord-Pas de Calais	SOC,VEC,COP	42,15,16	42,15,16
Basse Normandie	UG,VEC	23,9	23,9
Haute Normandie	SOC,VEC,COP	25,6,6	25,6,6
Pays de la Loire	UG,VEC	45,18	46,17
Picardie	SOC,VEC	27,8	27,8
Poitou-Charentes	SOC,VEC	30,9	30,9
Provence-Alpes-Cote-d'Azur	SOC,VEC,COP	45,18,9	44,18,10
Rhone Alpes	SOC,VEC,COP	53,37,10	53,37,10

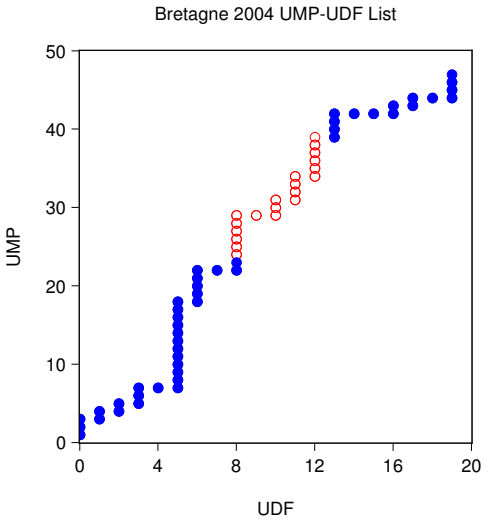
Table 3: Summary of estimated disagreement points compared to the division of the seat allocation function at the same number of seats.

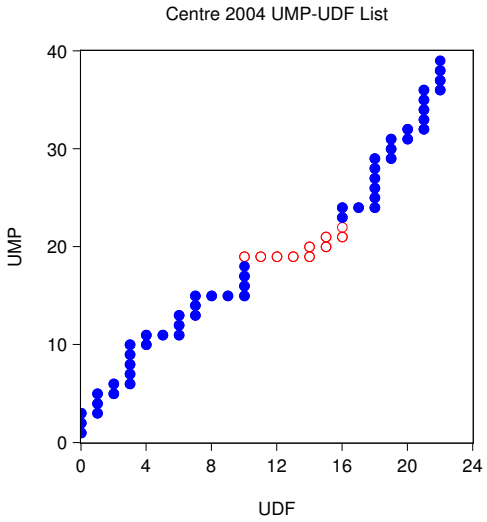
Department	Parties	Disagreement Point	Seat Allocation Function
2004 Lists on the Right			
Aquitaine	UMP,UDF	11,10	12,9
Bertagne	UMP,UDF	15,6	16,5
Centre	UMP,UDF	11,7	12,6
Champagne-Ardenne	UMP,UDF	9,4	9,4
Ile-de-France	UMP,UDF	38,25	39,24
Limousin	UMP,UDF	7,0	6,1
Lorraine	UMP,UDF,DVD	12,0,0	10,1,1
Midi Pyrenees	UMP,UDF	12,6	13,5
Nord-Pas de Calais	UMP,UDF	14,0	12,2
Haute Normandie	UMP,UDF	8,5	7,6
Pays de la Loire	UMP,UDF	22,8	24,6
2004 Lists on the Left			
Auvergne	SOC,COM,VEC	9,0,0	6,2,1
Bertagne	SOC,VEC	23,0	19,4
Ile-de-France	SOC,COM	50,0	40,10
Limousin	SOC,VEC	13,0	13,0
Nord-Pas de Calais	SOC,COM,VEC	25,9,0	22,7,5
Basse Normandie	SOC,VEC	8,0	7,1
Picardie	SOC,COM	11,4	11,4
Rhone Alpes	SOC,VEC	37,11	38,10
2010 Lists			
Alsace	SOC,VEC	6,5	6,5
Aquitaine	SOC,VEC,COP	23,0,0	20,2,1
Auvergne	SOC,VEC,COP	9,3,5	10,4,3
Bourgogne	UG,VEC	15,0	14,1
Centre	SOC,VEC,COP	16,6,0	15,4,3
Champagne-Ardenne	UG,VEC	11,0	10,1
Franche-Comte	SOC,VEC	9,0	8,1
Ile-de-France	SOC,VEC,COP	39,25,0	37,21,6
Limousin	SOC,VEC	12,0	10,2
Lorraine	UG,VEC	18,0	16,2
Midi Pyrenees	SOC,VEC,COP	27,9,0	27,7,2
Nord-Pas de Calais	SOC,VEC,COP	24,8,9	24,8,9
Basse Normandie	UG,VEC	11,4	11,4
Haute Normandie	SOC,VEC,COP	14,0,0	10,2,2
Pays de la Loire	UG,VEC	23,9	24,8
Picardie	SOC,VEC	11,0	9,2
Poitou-Charentes	SOC,VEC	16,4	15,5
Provence-Alpes-Cote-d'Azur	SOC,VEC,COP	23,10,0	20,8,5
Rhone Alpes	SOC,VEC,COP	29,20,0	28,18,3

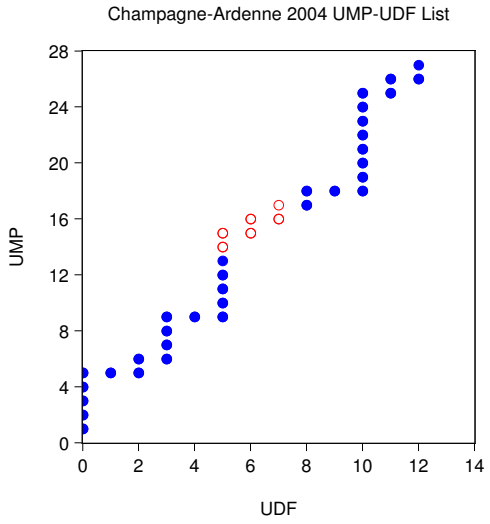
Table 4: Seat Allocation Functions

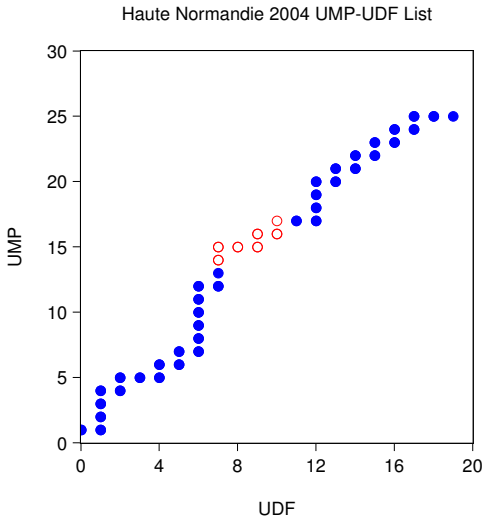
This table gives the seat allocation functions for each combined list in 2004 and 2010. The seat combinations that are not possible are indicated by open circles. When three parties combined the graph plots the estimated number of seats assigned to the largest party against the sum, which is the variable called *Other*, of the seats assigned to the other two parties.

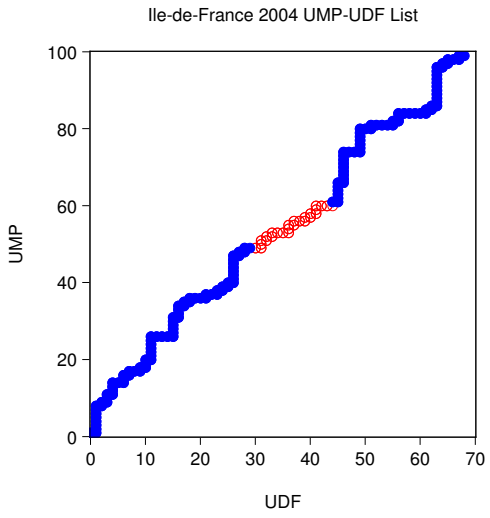


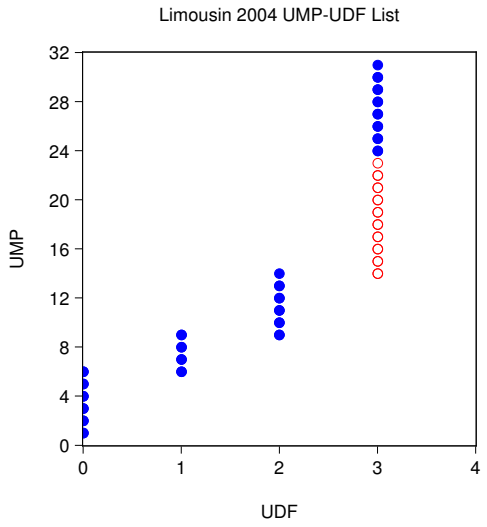


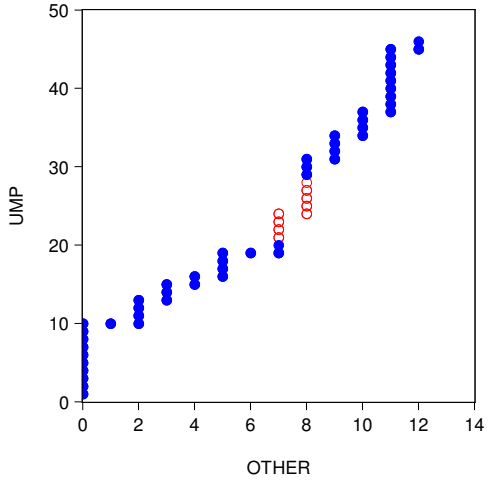


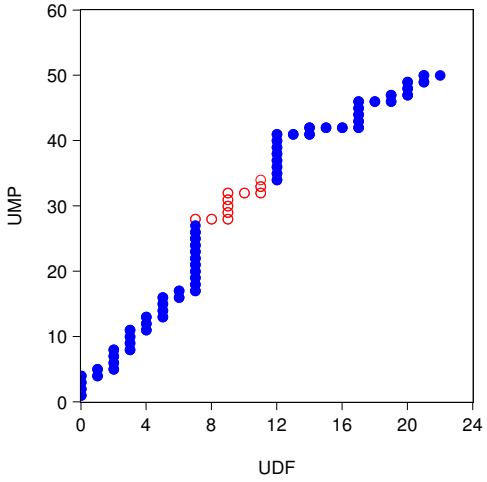

Champagne-Ardenne 2004 UMP-UDF List
UMP
UDF
0
4
8
12
16
20
24
28
0
2
4
6
8
10
12
14

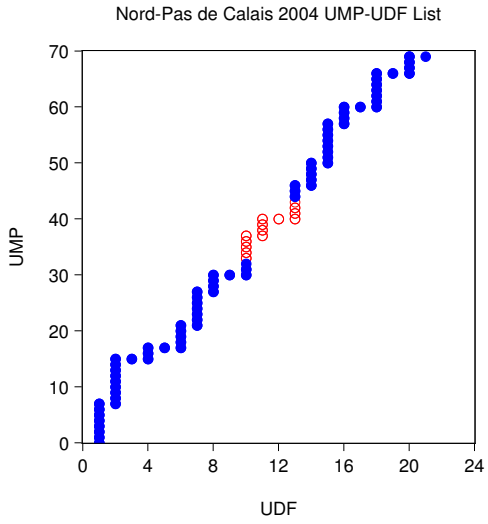

Haute Normandie 2004 UMP-UDF List
UMP
UDF
0
5
10
15
20
25
30
0
4
8
12
16
20

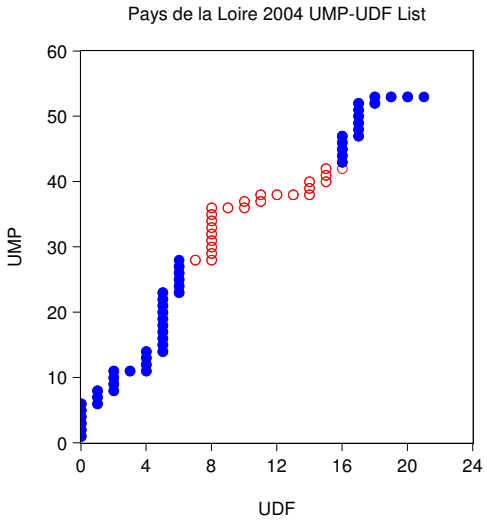

Ile-de-France 2004 UMP-UDF List
UMP
UDF
0
20
40
60
80
100
0
10
20
30
40
50
60
70

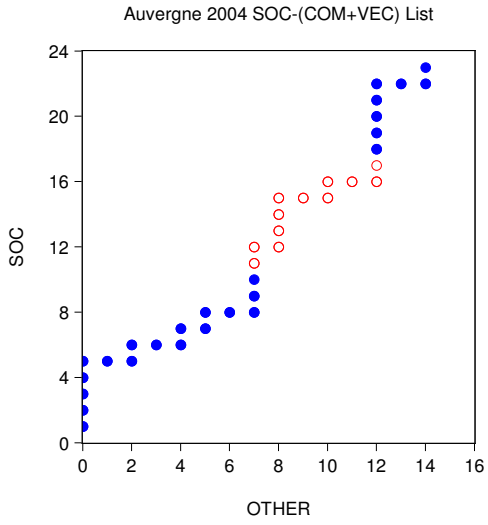

Limousin 2004 UMP-UDF List
UMP
UDF
0
4
8
12
16
20
24
28
32
0
1
2
3
4

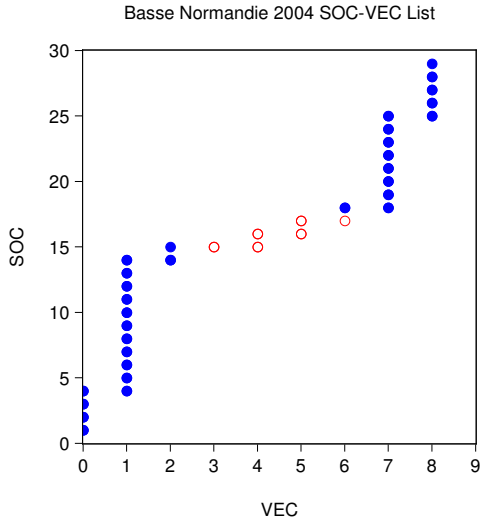

Lorraine UMP-(UDF+DVD) List
UMP
OTHER
0
10
20
30
40
50
0
2
4
6
8
10
12
14

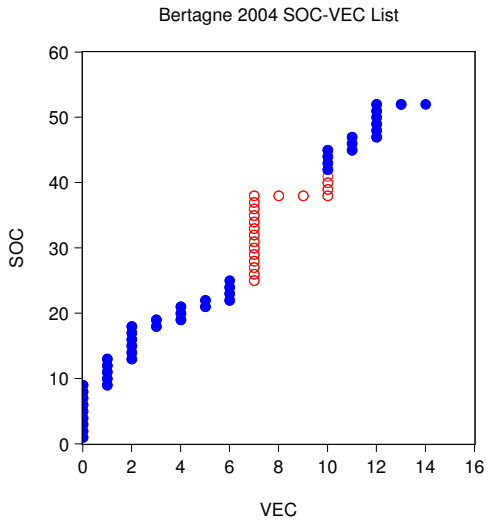

Midi Pyrenees 2004 UMP-UDF List
UMP
UDF
0
10
20
30
40
50
60
0
4
8
12
16
20
24

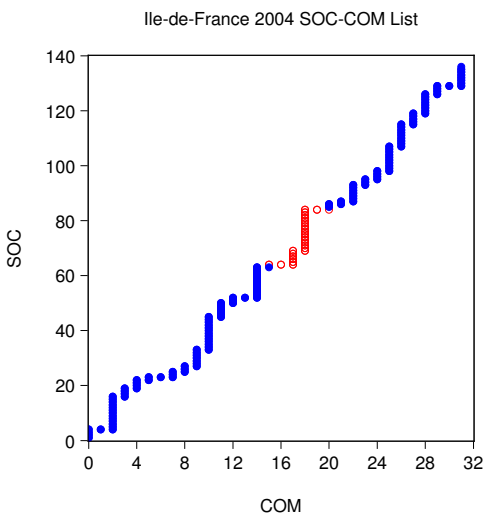

Nord-Pas de Calais 2004 UMP-UDF List
UMP
UDF
0
10
20
30
40
50
60
70
0
4
8
12
16
20
24

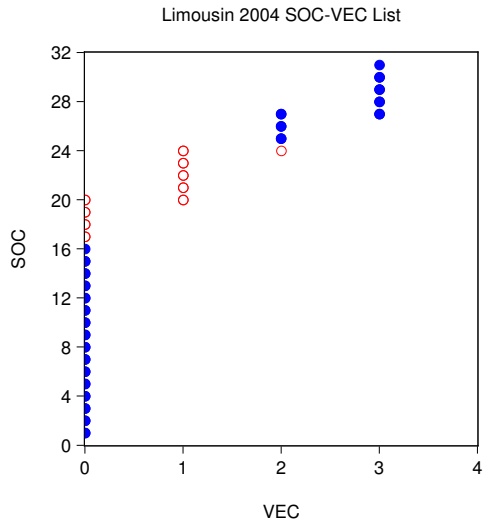

Pays de la Loire 2004 UMP-UDF List
UMP
UDF
0
10
20
30
40
50
60
0
4
8
12
16
20
24

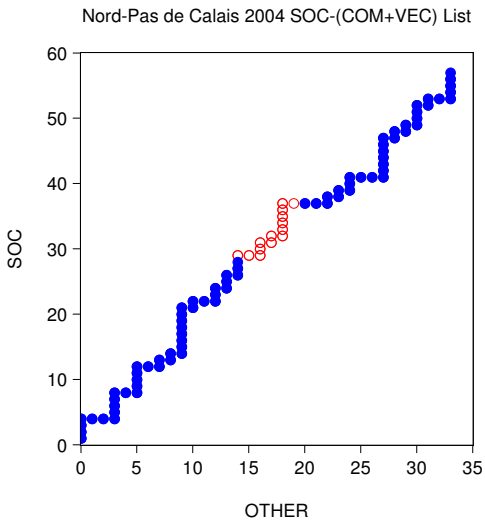

Auvergne 2004 SOC-(COM+VEC) List
SOC
OTHER
0
4
8
12
16
20
24
0
2
4
6
8
10
12
14
16

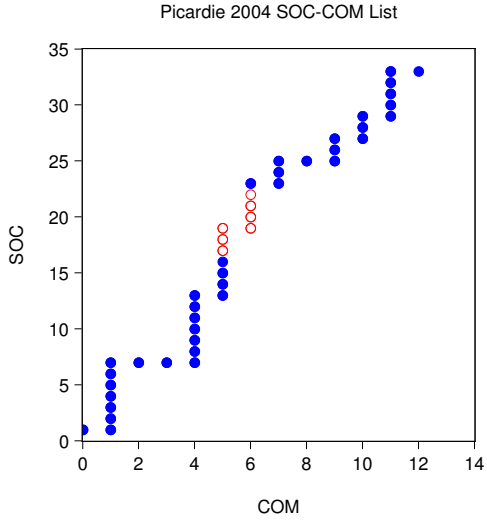

Basse Normandie 2004 SOC-VEC List
SOC
VEC
0
5
10
15
20
25
30
0
1
2
3
4
5
6
7
8
9

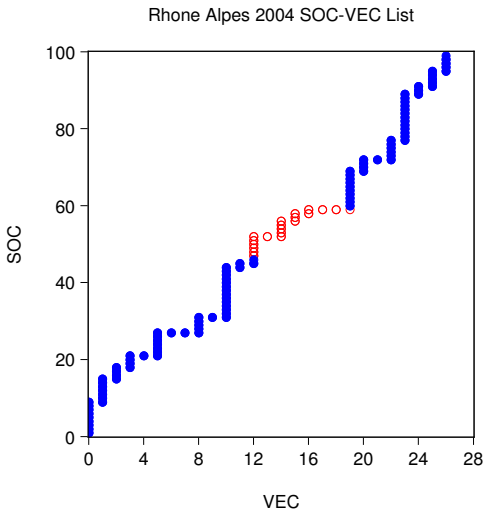

Bertagne 2004 SOC-VEC List
SOC
VEC
0
10
20
30
40
50
60
0
2
4
6
8
10
12
14
16

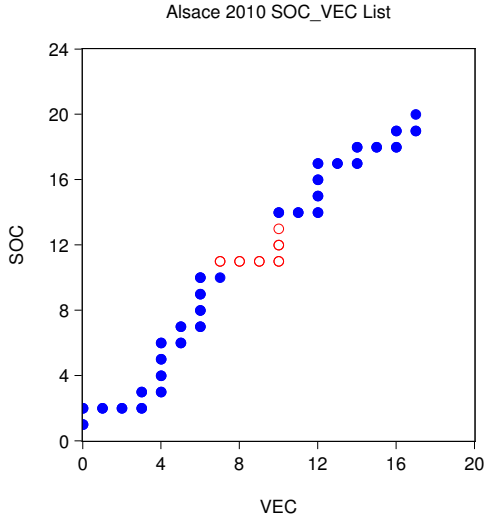

Ile-de-France 2004 SOC-COM List
SOC
COM
0
20
40
60
80
100
120
140
0
4
8
12
16
20
24
28
32

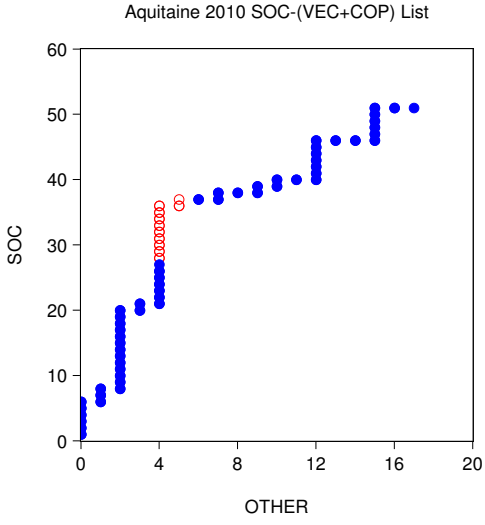

Limousin 2004 SOC-VEC List
SOC
VEC
0
4
8
12
16
20
24
28
32
0
1
2
3
4

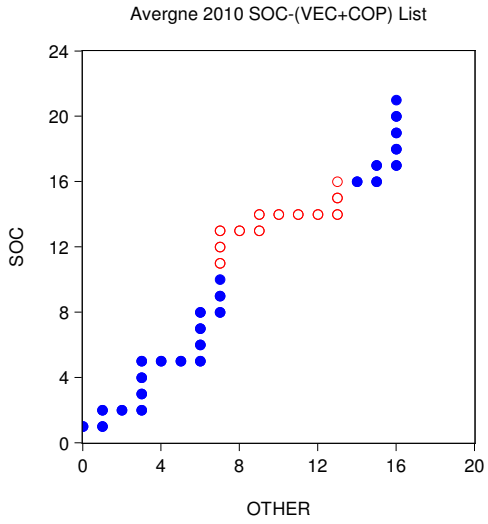

Nord-Pas de Calais 2004 SOC-(COM+VEC) List
SOC
OTHER
0
10
20
30
40
50
60
0
5
10
15
20
25
30
35

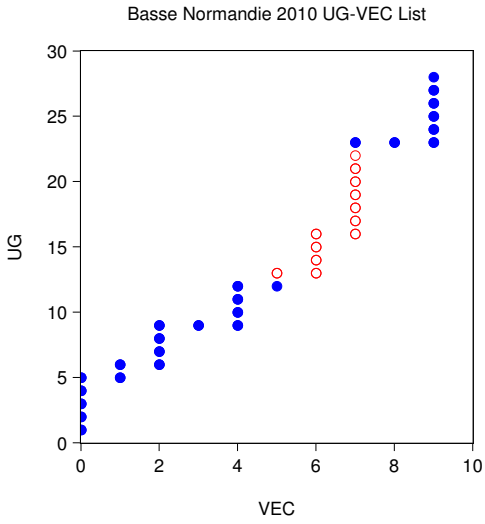

Picardie 2004 SOC-COM List
SOC
COM
0
5
10
15
20
25
30
35
0
2
4
6
8
10
12
14

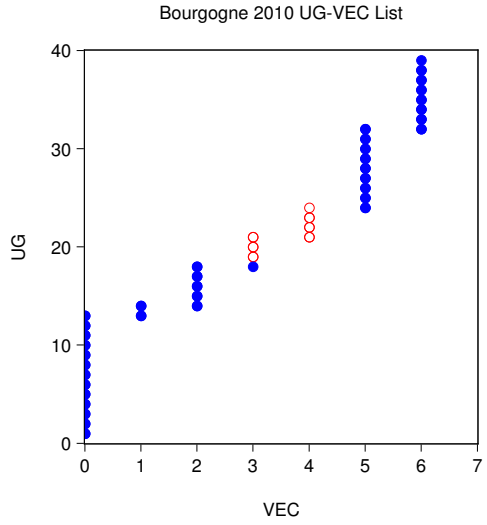

Rhone Alpes 2004 SOC-VEC List
SOC
VEC
0
20
40
60
80
100
0
4
8
12
16
20
24
28

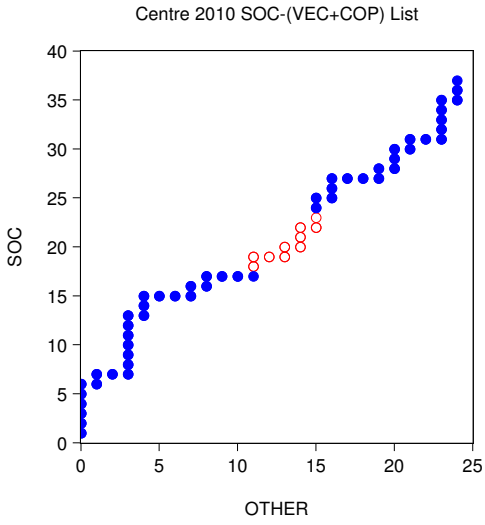

Alsace 2010 SOC_VEC List
SOC
VEC
0
4
8
12
16
20
24
0
4
8
12
16
20

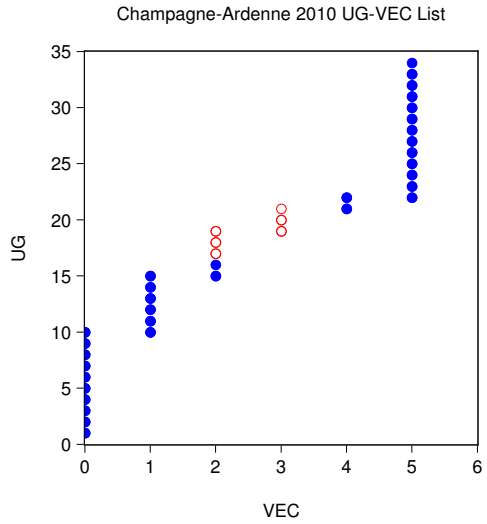

Aquitaine 2010 SOC-(VEC+COP) List
SOC
OTHER
0
10
20
30
40
50
60
0
4
8
12
16
20

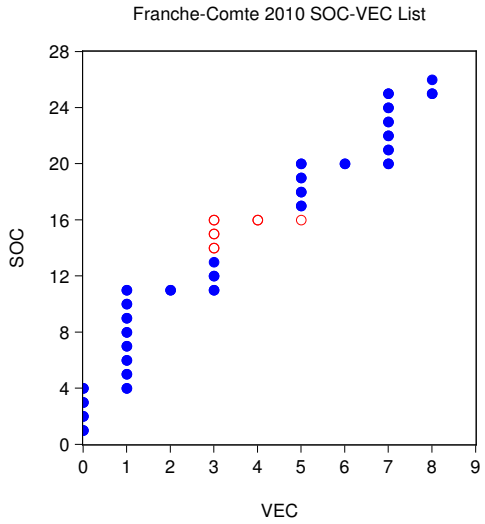

Avergne 2010 SOC-(VEC+COP) List
SOC
OTHER
0
4
8
12
16
20
24

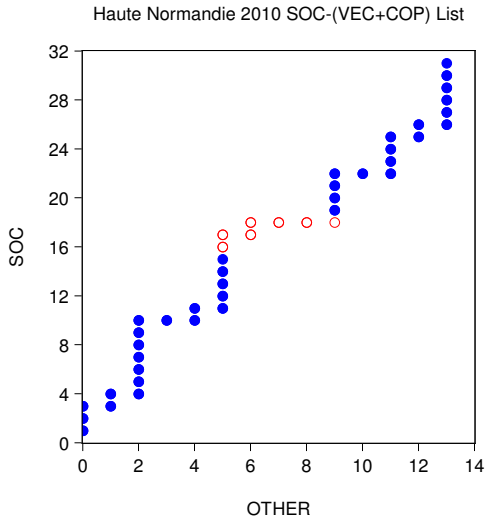

Basse Normandie 2010 UG-VEC List
UG
VEC
0
2
4
6
8
10
15
20
25
30

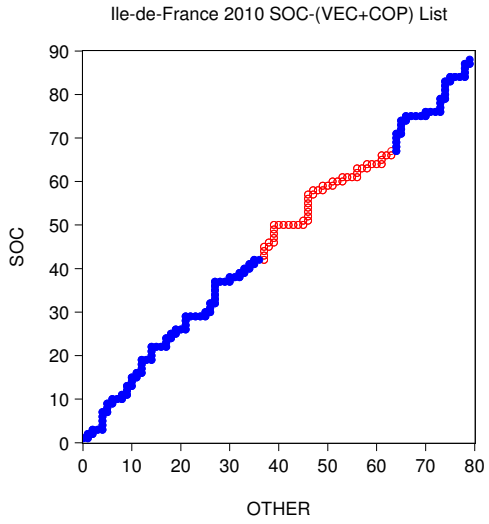

Bourgogne 2010 UG-VEC List
UG
VEC
0
1
2
3
4
5
6
7
10
20
30
40

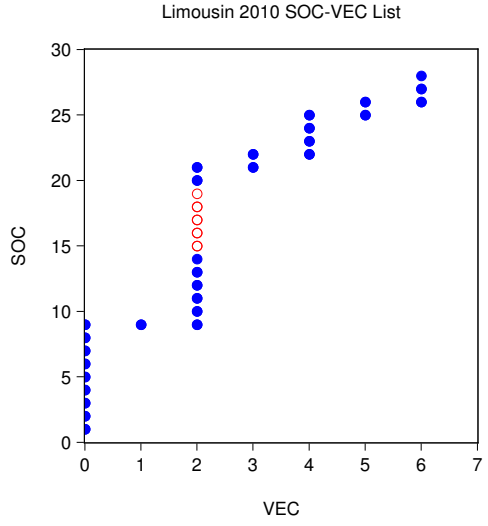

Centre 2010 SOC-(VEC+COP) List
SOC
OTHER
0
5
10
15
20
25
30
35
40

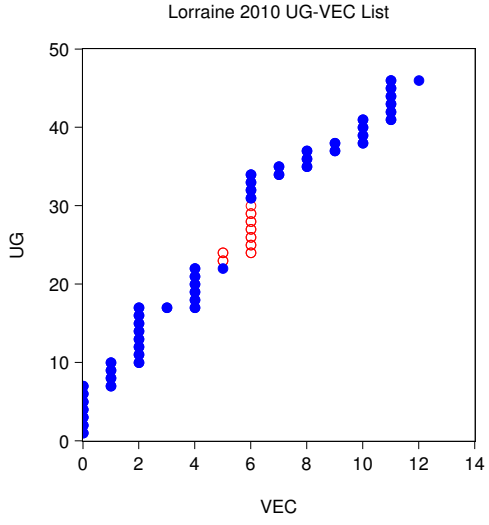

Champagne-Ardenne 2010 UG-VEC List
UG
VEC
0
1
2
3
4
5
6
10
15
20
25
30
35

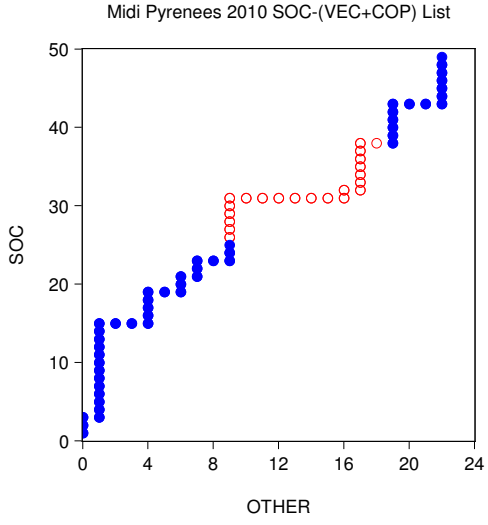

Franche-Comte 2010 SOC-VEC List
SOC
VEC
0
1
2
3
4
5
6
7
8
9
4
8
12
16
20
24
28

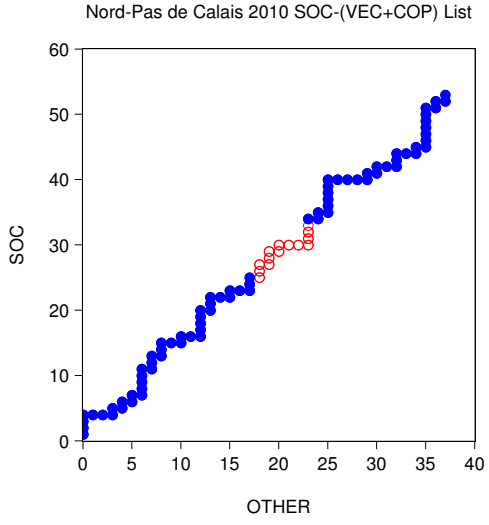

Haute Normandie 2010 SOC-(VEC+COP) List
SOC
OTHER
0
4
8
12
16
20
24
28
32
0
2
4
6
8
10
12
14

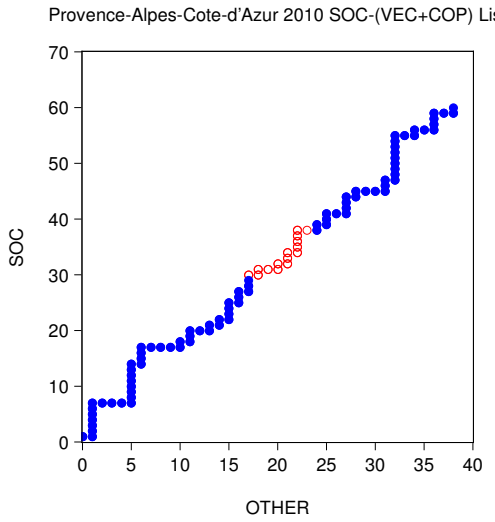

Ile-de-France 2010 SOC-(VEC+COP) List
SOC
OTHER
0
10
20
30
40
50
60
70
80
90
0
10
20
30
40
50
60
70
80

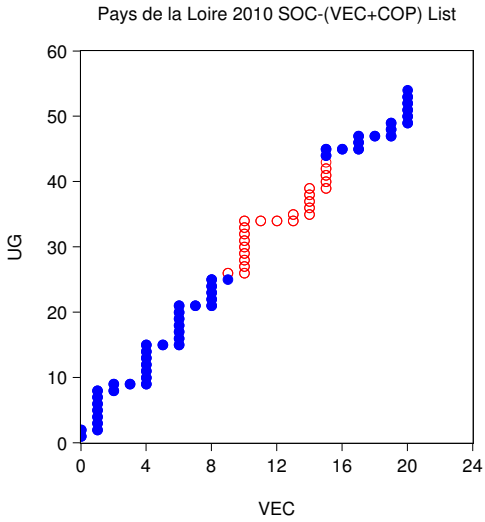

Limousin 2010 SOC-VEC List
SOC
VEC
0
5
10
15
20
25
30
0
1
2
3
4
5
6
7

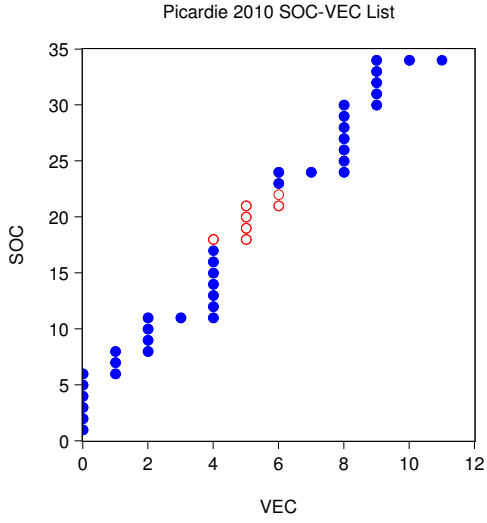

Lorraine 2010 UG-VEC List
UG
VEC
0
10
20
30
40
50
0
2
4
6
8
10
12
14

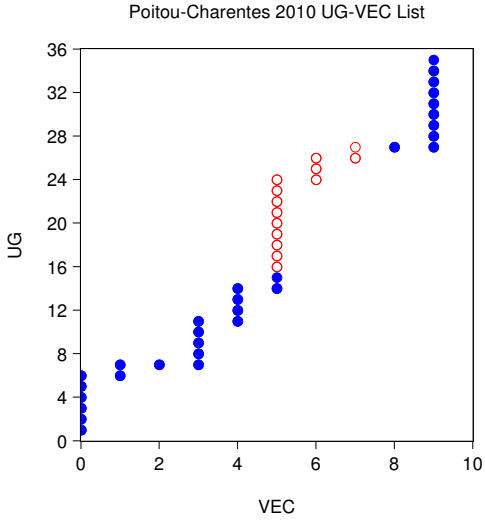

Midi Pyrenees 2010 SOC-(VEC+COP) List
SOC
OTHER
0
10
20
30
40
50
0
4
8
12
16
20
24


Nord-Pas de Calais 2010 SOC-(VEC+COP) List
SOC
OTHER
0
10
20
30
40
50
60
0
5
10
15
20
25
30
35
40


Provence-Alpes-Cote-d'Azur 2010 SOC-(VEC+COP) List
SOC
OTHER
0
10
20
30
40
50
60
70
0
5
10
15
20
25
30
35
40


Pays de la Loire 2010 SOC-(VEC+COP) List
UG
VEC
0
10
20
30
40
50
60
0
4
8
12
16
20
24


Picardie 2010 SOC-VEC List
SOC
VEC
0
5
10
15
20
25
30
35
0
2
4
6
8
10
12


Poitou-Charentes 2010 UG-VEC List
UG
VEC
0
4
8
12
16
20
24
28
32
36
0
2
4
6
8
10

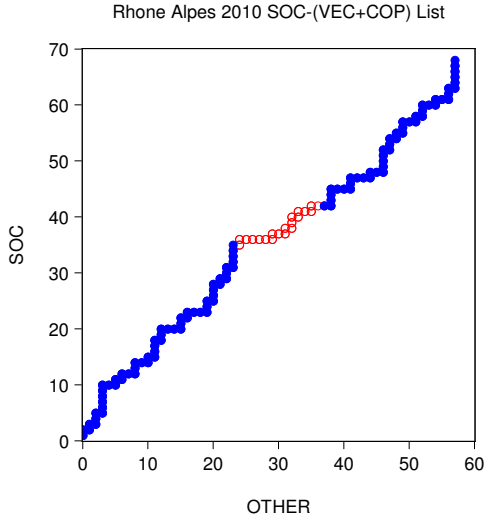

Rhone Alpes 2010 SOC-(VEC+COP) List
SOC
OTHER
0
10
20
30
40
50
60
70
0
10
20
30
40
50
60

Table 5: Seat Allocation Function Regressions

This table summarizes the regressions of the number of seats allocated to the largest party on the sum of seats allocated to the other parties in a combined second-round list. The table also gives the ratio of the largest party's first-round vote to the sum of the other parties first-round vote for each combined list.

Department (Parties)	Constant (std. err.)	Slope Coef (std. err)	Vote Ratio
2004 Lists on the Right			
Aquitaine	1.03	1.13	1.146
(UMP,UDF)	(0.47)	(0.03)	
Bertagne	1.10	2.57	2.314
(UMP,UDF)	(0.91)	(0.09)	
Centre	2.90	1.44	1.512
(UMP,UDF)	(0.46)	(0.03)	
Champagne-Ardenne	2.05	1.96	2.400
(UMP,UDF)	(0.53)	(0.07)	
Ile-de-France	7.09	1.36	1.538
(UMP,UDF)	(0.46)	(0.01)	
Limousin	1.10	7.84	2.824
(UMP,UDF)	(1.43)	(0.70)	
Lorraine	4.36	3.19	1.437
(UMP,UDF)	(0.70)	(0.10)	
Midi Pyrenees	3.87	2.39	1.873
(UMP,UDF)	(0.76)	(0.07)	
Nord-Pas de Calais	1.44	3.38	2.158
(UMP,UDF)	(0.56)	(0.05)	
Haute Normandie	1.15	1.40	1.691
(UMP,UDF)	(0.40)	(0.04)	
Pays de la Loire	5.16	2.56	2.662
(UMP,UDF)	(0.65)	(0.06)	
2004 Lists on the Left			
Auvergne	1.87	1.43	
(SOC,COM,VEC)	(0.60)	(0.08)	1.905
Bertagne	6.14	3.56	3.969
(SOC,VEC)	(0.56)	(0.08)	
Ile-de-France	-1.29	4.27	4.435
(SOC,COM)	(0.68)	(0.04)	
Limousin	8.69	7.17	6.830
(SOC,VEC)	(1.04)	(0.67)	
Nord-Pas de Calais	2.64	1.58	1.763

(SOC,COM,VEC)	(0.37)	(0.02)	
Basse Normandie	5.64	2.46	2.856
(SOC,VEC)	(0.86)	(0.17)	
Picardie	0.74	2.80	2.526
(SOC,COM)	(0.69)	(0.10)	
Rhone Alpes	6.13	3.30	3.192
(SOC,VEC)	(0.67)	(0.04)	
2010 Lists			
Alsace	0.65	1.18	1.216
(SOC,VEC)	(0.41)	(0.04)	
Aquitaine	8.76	2.85	2.397
(SOC,VEC,COP)	(0.93)	(0.11)	
Auvergne	0.13	1.15	1.123
(SOC,VEC,COP)	(0.39)	(0.04)	
Bourgogne	6.99	4.50	3.690
(UG,VEC)	(0.76)	(0.20)	
Centre	5.89	1.20	1.471
(SOC,VEC,COP)	(0.44)	(0.03)	
Champagne-Ardenne	6.35	4.32	3.656
(UG,VEC)	(0.85)	(0.25)	
Franche-Comte	4.12	2.69	3.192
(SOC,VEC)	(0.56)	(0.12)	
Ile-de-France	3.93	1.05	1.092
(SOC,VEC,COP)	(0.31)	(0.01)	
Limousin	5.65	4.02	3.908
(SOC,VEC)	(0.90)	(0.29)	
Lorraine	5.73	3.57	3.749
(UG,VEC)	(0.63)	(0.10)	
Midi Pyrenees	7.76	1.77	2.009
(SOC,VEC,COP)	(0.62)	(0.05)	
Nord-Pas de Calais	2.01	1.34	1.381
(SOC,VEC,COP)	(0.36)	(0.02)	
Basse Normandie	2.26	2.54	2.712
(UG,VEC)	(0.57)	(0.11)	
Haute Normandie	2.72	1.96	1.991
(SOC,VEC,COP)	(0.44)	(0.05)	
Pays de la Loire	2.67	2.49	2.519
(UG,VEC)	(0.46)	(0.04)	
Picardie	3.19	3.04	2.669
(SOC,VEC)	(0.54)	(0.09)	
Poitou-Charentes	1.66	3.14	3.271
(SOC,VEC)	(0.76)	(0.13)	

Provence-Alpes-Cote-d'Azur	2.88	1.49	1.514
(SOC,VEC,COP)	(0.40)	(0.02)	
Rhone Alpes	4.86	1.03	1.053
(SOC,VEC,COP)	(0.34)	(0.01)	

Table 6: Seat Allocation Function Regressions
This table summarizes the regressions of the number of seats allocated to the largest party on the sum of seats allocated to the other parties in a combined second-round list with a Majority binary variable and an interaction term.

Department (Parties)	Constant (std. err.)	Majority Binary (std. err)	Slope Coef (std. err.)	Interaction Term (std. err)
2004 Lists on the Right				
Aquitaine	0.27	-12.08	1.28	0.33
(UMP,UDF)	(0.60)	(3.04)	(0.08)	(0.14)
Bertagne	-0.38	30.51	2.85	-2.05
(UMP,UDF)	(0.86)	(2.17)	(0.19)	(0.23)
Centre	3.10	-19.98	1.43	1.00
(UMP,UDF)	(0.44)	(3.22)	(0.08)	(0.18)
Champagne-Ardenne	2.89	-5.98	1.59	0.90
(UMP,UDF)	(0.54)	(2.29)	(0.18)	(0.27)
Ile-de-France	5.14	4.08	1.52	-0.21
(UMP,UDF)	(0.49)	(3.39)	(0.03)	(0.07)
Lorraine	6.19	-8.92	2.20	1.76
(UMP,UDF,DVD)	(0.78)	(2.92)	(0.19)	(0.35)
Midi Pyrenees	1.37	21.32	2.84	-1.57
(UMP,UDF)	(0.54)	(1.86)	(0.17)	(0.19)
Nord-Pas de Calais	2.93	2.13	2.98	0.21
(UMP,UDF)	(0.93)	(2.78)	(0.14)	(0.21)
Haute Normandie	0.85	5.19	1.44	-0.37
(UMP,UDF)	(0.48)	(1.71)	(0.14)	(0.17)
Pays de la Loire	2.76	14.32	3.32	-1.48
(UMP,UDF)	(0.59)	(6.90)	(0.20)	(0.44)
2004 Lists on the Left				
Auvergne	3.31	1.18	0.83	0.47
(SOC,COM,VEC)	(0.53)	(5.61)	(0.11)	(0.43)
Bertagne	6.86	11.46	3.11	-0.56
(SOC,VEC)	(0.79)	(3.99)	(0.22)	(0.41)
Ile-de-France	1.78	-19.84	3.85	1.08
(SOC,COM)	(0.78)	(3.52)	(0.09)	(0.16)
Nord-Pas de Calais	1.17	0.78	1.82	-0.22
(SOC,COM,VEC)	(0.46)	(2.10)	(0.05)	(0.09)
Basse Normandie	2.72	-15.72	6.11	-1.14
(SOC,VEC)	(0.67)	(5.56)	(0.48)	(0.88)
Picardie	1.33	10.25	2.38	-0.67

(SOC,COM)	(0.80)	(1.69)	(0.24)	(0.29)
Rhone Alpes	7.71	-33.14	3.02	1.68
(SOC,VEC)	(0.70)	(3.55)	(0.11)	(0.19)
2010 Lists				
Alsace	0.16	5.68	1.28	-0.47
(SOC,VEC)	(0.69)	(1.42)	(0.15)	(0.17)
Aquitaine	3.26	22.74	5.27	-3.80
(SOC,VEC,COP)	(0.72)	(1.44)	(0.26)	(0.28)
Auvergne	0.21	-9.34	1.13	0.62
(SOC,VEC,COP)	(0.45)	(7.91)	(0.11)	(0.54)
Bourgogne	7.23	-16.73	4.27	3.23
(UG,VEC)	(1.05)	(7.02)	(0.60)	(1.40)
Centre	5.16	1.70	1.42	-0.27
(SOC,VEC,COP)	(0.69)	(1.85)	(0.14)	(0.17)
Champagne-Ardenne	5.82	-10.32	5.63	0.87
(UG,VEC)	(0.91)	(4.90)	(0.82)	(1.43)
Franche-Comte	3.62	3.59	3.11	-0.89
(SOC,VEC)	(0.77)	(2.10)	(0.37)	(0.48)
Ile-de-France	1.93	-1.22	1.18	-0.09
(SOC,VEC,COP)	(0.36)	(3.81)	(0.02)	(0.06)
Limousin	5.04	11.74	3.26	-1.56
(SOC,VEC)	(0.90)	(1.12)	(0.60)	(0.62)
Lorraine	4.73	14.27	3.81	-1.65
(UG,VEC)	(0.64)	(1.47)	(0.24)	(0.29)
Midi Pyrenees	6.52	-3.55	2.19	-0.22
(SOC,VEC,COP)	(1.05)	(7.28)	(0.18)	(0.40)
Nord-Pas de Calais	1.52	6.58	1.38	-0.24
(SOC,VEC,COP)	(0.43)	(2.21)	(0.04)	(0.08)
Basse Normandie	3.33	9.02	1.83	-0.38
(UG,VEC)	(0.54)	(4.16)	(0.18)	(0.55)
Haute Normandie	2.20	-0.20	2.19	-0.18
(SOC,VEC,COP)	(0.56)	(2.61)	(0.17)	(0.29)
Pays de la Loire	2.15	19.62	2.60	-1.15
(UG,VEC)	(0.56)	(3.52)	(0.10)	(0.23)
Picardie	3.86	2.60	2.57	0.11
(SOC,VEC)	(0.59)	(2.64)	(0.26)	(0.41)
Poitou-Charentes	3.46	-8.46	2.13	1.87
(SOC,VEC)	(0.61)	(7.42)	(0.19)	(0.94)
Provence-Alpes-Cote-d'Azur	3.56	-4.49	1.40	0.21
(SOC,VEC,COP)	(0.62)	(1.46)	(0.05)	(0.07)
Rhone Alpes	2.92	-4.58	1.23	-0.07
(SOC,VEC,COP)	(0.41)	(1.78)	(0.03)	(0.05)