

Use of Fuzzy set in an explanatory research: a study on the characteristics of coalition agreement¹

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Summary

This research aims to understand why the complete and precise character of the coalition agreement varies. I assume that the fuzzy set is the appropriate method in such an explanatory phase of the research, because it allows the “necessary dialogue between ideas and evidence”. The results suggest to consider the redaction of the agreement as a two level game, between the parties and between the government and the parties which support it.

Introduction

Recently some scholars “rang the bell” about the lack of researches on government (contrasting with the multiple researches on parties²), and more specifically on “coalition governance”³. In order to understand better how do parties govern together in coalition, I think that studying the coalition agreement (CA)⁴ is crucial, because it helps us to understand better how parties do “govern by contract”. Furthermore this study gives us information about the (under – studied) relationship between the government and the parties which support them. More exactly I aim to study how and why the characteristics of the coalition agreement vary across and within countries. By “characteristics”, I mean the comprehensiveness and precision of the CA. I suppose indeed that it is important, at least theoretically, to distinguish between the two notions because they are likely to correspond to two different logic’s.

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² BLONDEL J. and COTTA M., *Party and Government. An Inquiry into the Relationship between Governments and Supporting parties in Liberal Democracies*, London, MacMillan, 1996.

³ BLONDEL J. and COTTA M., *The nature of party government. A comparative European Perspective*, London, MacMillan, 2000.

⁴ MULLER W. and STROM K., *Coalition governments in Western Europe*, Oxford, Oxford University Press, 2000.

DE WINTER L., “Parties into and within governments” in LUTHER K.R. and MULLER ROMMEL F., *Political parties and Democracy in Western Europe*, Oxford, Oxford University Press, 2002.

⁴That is “the most authoritative document that constrains party behaviour”. MULLER W. and STROM K., “The Keys to Togetherness: Coalition Agreements in Parliamentary Democracies”, *Journal of Legislative Studies* 5, n° 3-4 : 255-82, 1999.

I think that in a such unexplored stage of the research, the Fuzzy set is the appropriate methodology, because it allows us to start from the theory, for exploring the evidences, presenting a theory proposal and eventually proposing possible fruitful research (Fuzzy sets, statistical or in depth study) to test this new theoretical proposition.

I will divide this paper in five parts: Firstly, I will justify the choice of the fuzzy set as a methodology, secondly I will present the (limited) theories existing on the CA, thirdly and fourthly I will present the results of the empirical research and the “Fuzzy test” of the explicative variables induced from this research. Finally I will conclude presenting a new theory proposal, and in which directions future research should be oriented.

1. Relevance of the Fuzzy set method

Concretely, my research question is “*Why does the concrete and / or precise character of the CA vary*⁵?””. I assume here that the Fuzzy set is the appropriate method to answer this question, given the “explanatory” stage of the research on one hand and given the specificity of the researched outcome on the other hand.

As I'll explain more in detail in the next section, the studies on coalition agreements are very little developed. Indeed the majority of the empirical studies on coalition governments concerns the formation phase, and the theories on coalition agreements presents two opposite views and then little nuance. The recent works by Muller and Strom⁶ on the contrary tries to find out why will negotiators redact a long CA and why not. However their method is the statistical research of correlation, based on the economic theory and they didn't present any result so far.

I consider however that in such a state of limited knowledge it would be opportune to “dialogue between ideas and evidence”⁷, that is to start from a few empirical researches, check the hypothesis derived of this research, and elaborate a testable new theory. Furthermore, after the Fuzzy – sets tests, the research can go into two directions: in-depth qualitative studies of more cases (indicated as interesting by the

⁵ Please note that an other interesting research will be to find out why the CA is redacted, and why not. I didn't choose to answer to this latter question, because the research presented here belongs to a broader one which aims to find out what is the importance of the CA.

⁶ Muller and Strom, 1999 and 2000, op.cit.

⁷ RAGIN C., *Fuzzy set social sciences*, Chicago and London, The University of Chicago Press, 2002.

results given by the Fuzzy sets) or statistical studies with large populations to test the proposition of theory.

The result to explain – the characteristics of the CA- also suits very well to a Fuzzy – set analysis. Indeed first of all the limited period to study (redaction of the CA) allows a researcher working alone to analysis in-depth around 15 cases. Secondly I assume that the choice, or possibility, of the redactors of the CA to write down a long and or / complete CA may depends not only on one cause, but on diverse configurations of causes. Finally, I use the Fuzzy sets and not the QCA to allow for a more precise analysis.

2. *From theory....*

Studying the redaction of the CA concerns two fundamental aspects of the government: the relationships between parties, and the relationships between the party and the government.

1) Regarding the relationships between parties the coalition agreement is a possible “contract” between parties, to ensure that policies preferred by each of them will be implemented. Two main views stand on coalition agreement and have some theoretical implicit implications for my research.

The first view considers the formulation of the coalition agreement as a “ritual dance”, a “public relations exercise”⁸ which no impact on future governmental policies and then only contents vague propositions. The party presidents are reluctant to decide upon concrete policies because they want to minimise disunion within their own party⁹, to avoid to attract the attention on the points of disagreement between the parties of the coalition¹⁰, or because ministers are anyway autonomous for the matters regarding their own department¹¹. The theoretical implication for the result is that the *CA will be generally little precise and complete*.

⁸ LAVER M. and BUDGE I., *Party policy and government coalitions*, Basing stoke, Hans, Mac Millan, 1994.

⁹ LUEBBERT G. *Comparative Democracy: policy making and governing coalitions in Europe and Israel*, New York. Columbia University Press, 1986.

¹⁰ LAVER M. and Shepsle A.K., *Cabinet Ministers and parliamentary government*, Cambridge, Cambridge University Press, 1996.

¹¹ LAVER M. and SCHOFIELD N., *Multiparty government: The politics of coalition in Europe*, Oxford, Oxford University Press, 1990.

KLINGEMANN H.D., HOFFERBERT R. and BUDGE I. *Parties, Policy and Democracy*, Boulder, Westview, 1994.

On the other hand, others scholars believe that the formulation of the coalition agreement is a genuine opportunity for parties to settle the future policy-making. The authors argue this view by the fact that the arena is more informal than during the legislature¹², the redaction of the CA is likely prevent conflict between the partners¹³ and to limit the autonomy of the individual ministers¹⁴. In consequences, parties are willing to decide upon concrete policies, and the *CA is likely to be complete and precise*.

The positive view is empirically supported by empirical research but is biased by the fact that the case studies are mainly countries where the CA is usually very important (as Belgium and the Netherlands). For my part, I believe that the *characteristics of the CA vary across and within countries*. This view was shared by Muller and Strom¹⁵. Basing themselves on the economic theory of transaction cost, they suppose that the CA is likely to be more comprehensive the fewer the parties redacting the CA., the longer the time horizon of parties (similarly the pre electoral agreement is expected to be shorter than the post electoral one), the more vulnerable coalition (that is the minimal winning coalition) and the greater the preference diversity.

2) However a point is generally ignored while studying the CA: the party-government relationship. Indeed party-government relationship has been surprisingly little studied, and until the work conducted by Cotta and Blondel¹⁶ the researches conceptualised the party-government as a government controlled by the parties¹⁷. However as Cotta and Blondel pointed out: “interpreting the government, as a purely executive tool in the hands of the party is an oversimplification (...). Government enjoys a significant extent of autonomy vis-à-vis parties in many cases. They also exercise influence on parties.” Furthermore, government is an institution different of the parties, with its own resources and constraints.

¹² PETERSON R., DE RIDDER M., HOBBS J. and Mc CLELLAN E.F., “Government formation and policy formulation: patterns in Belgium and the Netherlands”, *Res Publica*, n° 25:49-82.

¹³ TIMMERMANS A., *High politics in the low countries: An empirical studies of the coalition agreements in Belgium and the Netherlands*, Aldershot, Ashgate, 2002.

¹⁴ STROM K., MULLER C. W. and BERGMAN (eds.) *Coalition governance in Western Europe*, Oxford, Oxford University Press, forthcoming and STROM K., MULLER C. W. “The keys to togetherness: Coalition agreement in parliamentary democracies”, in *The Journal of Legislative Studies*, 3-4, 1999.

¹⁵ Idem.

¹⁶ For the reasons of this lack of research see Blondel (2000).

¹⁷ To see i.e. KATZ R.S., “Party government: A Rationalistic conception” in CASTLES F.G. and WILDENMANN R., *Visions and realities of Party government*, Berlin, De Gruyter, 1986.

Specifically regarding our subject, party leaders usually redact the CA for the government. A long and precise agreement, then, is a possible tool for the parties to control the government, above all in case of separation of function. This relation of control can sometimes be inverted, as the party leader if they expect to stay or to join the government might, respectively by “socialisation” or by “anticipated socialisation” adopt a more governmental point of view (that is: an agreement more pragmatic and more oriented towards the interests of the civil service, interest groups,...). In that case a long and precise agreement is a possible tool for the government to control the parties. Then it might happen that the “cabinet forms itself, makes its own agreement, and bonds the majority”¹⁸.

3. To evidence...

Context and selection of case studies

As defined by Rihoux and De Meur¹⁹, the first step in the QCA (and by extension fuzzy sets) is to define the context. I chose the cabinets in Western parliamentary countries, since 1985. I include in this group France under cohabitation because, as assumed by Sartori, France works as a presidential system if the president wins the majority and as a parliamentary regime in case of cohabitation²⁰. The point of time 1985 is an arbitrary one, chosen in order to facilitate the research in a first step, but could be enlarged later on.

The second step, after determining the context, is to choose the cases making sense regarding the result. Of course, after the first fuzzy tests, they could be chosen again basing oneself on the identified variable. In order to make the results vary, I'll choose countries 1) where the redaction of CA is (almost) always redacted, and where the CA is usually long and complete (as in Belgium and the Netherlands) and 2) where there is not culture of redacting a CA normally (as in Italy and France). Furthermore I wanted to make the outcome vary as well across countries and then I chose cases among these four countries where the CA was shorter / longer than the average. In Belgium, the last four coalition presents different outcome: two precise and complete CA's for Dehaene II and Verhofstadt II (the former however less precise than the

¹⁸ The Netherlands, in Blondel and Cotta: party and government.

¹⁹ DE MEUR G., RIHOUX B., L'analyse quali-quantitative comparée (AQOC-QCA). Approches, techniques et applications en sciences humaines, Louvain-La-Neuve, Academia Bruxellant, 2002.

²⁰Corriere de la sera, 07/05/2002.

latter), an uncompleted and not very precise for Dehaene I and the CA for Verhofstadt I is an intermediary case (see details of comprehensiveness / completeness above). In the Netherlands, I have from one part one of the longest CA of the Dutch history (Kok II), a very short one (Balkenende II), and two intermediary case (Lubbers III and Kok I) varying in their score in comprehensiveness and preciseness.

France and Italy are countries where usually a CA is not redacted, or not considered by the public as an important determinant of the subsequent decision making. In these two countries (in Italy from 1994²¹), the CA is redacted before the elections, as the party already presented themselves in a block of left versus a block of right in front of the electors. For Italy there are only 2 cases where a CA has been redacted: for the leftist Ulivo's government (1994-1996, led by Prodi) and the rightist Casa della libertà's one (2001-?, led by Berlusconi). The two CA were very different, as in the first case we were in front of a complete, although not very precise program. For Berlusconi, the CA was more or less complete, and very imprecise.

In France, there are have been 3 cases of cohabitation since 1985 (Jospin (1997-2002), Balladur (1993-1995), Chirac (1986-1988). In the 3 cases, the partners redacted a CA: RPR – UDF in 1986, UMP (union of these both parties for the 1993 elections) in 1993, and a CA socialists – Greens and an other socialists – PC in 1997. The CA of 1993 is the more precise complete in France, the one redacted in 1986 is an intermediary case, and the two CA redacted with the socialists are little complete and precise.

Of course this first choice is intuitive, and could be discussed. For example I could have kept constant the variable pre / post electoral redaction. Similarly I could have chose more intermediary case, instead of opposing cases where the CA is traditionally very important / cases where it is not important. I can answer to these possible critics stating that the in-depth empirical researches are limited, and biased by the fact that they consider only the countries where the CA is generally long. Here I would like to find *crucial explicative elements to explain the result*. Then it is logical to suppose that if we find some configurations of causes explaining the result in different cases, we might expect these configurations to explain the result in intermediary cases as well.

²¹ Italy experienced radical change in the half nineties, and passed to the Second Republic.

Explanatory variables coming out from the empirical research

The empirical research is based on newspapers analysis, and scholars' analysis and tries to enlighten the factors which might have been determinant in the comprehensiveness / completeness of the CA.

Obviously there is an important empirical differences between the Majority versus Proportional electoral systems. In the first group (France and Italy²²), the CA (if it exists) has been redacted before the elections, and the partners already present themselves as the future governmental team before the elections as well. In the proportional system on the other hand, the governmental team is decided after the elections, and the CA is redacted after the elections as well. CA's in PR system are tendentially more precise and more complete than the ones in majority system. This could be explained by the fact that the CA, wrote down after the elections, is more oriented towards the government (even if it should be approved by the party members and by the Parliament). On the other hand, the pre-electoral CA might be used as a governmental tool, but is as well directed to the voters and then might be more rhetorical, less complete and precise.

Secondly, an important factor that comes up from the analysis is the kind of governmental antecedent and the relationships among partners. Indeed it appears that the partners who *previously governed together and made public their will to govern again* together (as Dehaene II, Verhofstadt II²³, and Kok II) redact a CA more complete and precise than the average. Indeed the three cabinets quote 1 – 1 for precision and completeness²⁴, except for Dehaene II's CA which is less precise than the average. This non preciseness could be explained by the factor time, as the European meeting in Cannes was programmed a few weeks after the elections, and that the negotiators wanted to achieve the CA for this date, in order to defend better Belgium's interest.

²² Even if his electoral system includes a partial proportional system

²³ The same coalition, Greens excepted.

²⁴ Please note that in general Kok II's CA is more complete and precise than Dehaene II's and Verhofstadt. It might be due to the different character of Belgium and Netherlands cabinet (Belgium cabinet is hierarchical, while the Netherlands cabinet is more collegial, furthermore in the Netherlands the departmental interest are strongest, and ministers act more as head of department than heads of their party. (or at least the same). However the differences is still quite small in a larger comparative perspective, and we're not going to take it into account for or analysis. We'll keep it in mind however for further analysis.

The partners of Verhofstadt I were governing for the first time together, but journalists reported pre-electoral negotiations, as the partners agreed to govern together if the elections allowed it. Its CA quotes 0.75 on both preciseness and completeness scale. All the partners of the majority system did present themselves as a team before the elections and then belong as well to the category of the partners who did pre-electoral agreement to govern together.

On the other hand we have the partners *who didn't want to govern together*, but who has been forced to due to the failure of other negotiations (as Dehaene I (Socialists and Christian's previous coalition failed because of an argument among the partners); or Balkenende II (D66 wanted a time in opposition, and VVD would have preferred a larger majority). For these two cabinets, the CA is relatively short, and to a less extent, imprecise.

For the *intermediary cases* (partners who didn't agree before the elections to govern together, but neither were reluctant to), we have Lubbers III, Kok I. Lubbers III and Kok I present the same P&C membership degree, even if there are variation in preciseness and completeness. Indeed Lubbers III is less complete, while Kok I is less precise. This difference is difficult to explain. However a partial explanation can be the method followed in the case of the CA redaction in Kok I: as a document redacted first by the formateur, Kok, and ratified by the other parties. In order to make the other parties to agree, and after some formation failures, maybe Kok avoided some precise policies in order to limit affront between the parties.

As we told the CA in the majority system are less precise and complete, but the preciseness and completeness of the CA varies, as we have (from the least to the most complete and precise): the agreement PS – PC (0), Jospin – Verts, Chirac, Berlusconi (0.25) et Prodi et Balladur (0.5). Apart for PS – PC, a common element explaining Prodi and Balladur would be the separation of function between party leader and minister. When the parties leader entered the government (Berlusconi, Chirac, Jospin), the CA is less precise and complete.

Indeed if for Balladur the party leaders of the different branches of the UPF participated in the government, Chirac the party president of the RPR didn't, in order to reserve himself for the presidential elections of 1995. The Balladur's government was even called by the Press as the double cohabitation, referring to the cohabitation with Mitterand as a president and with Chirac as a RPR party leader. Then it might be that this more complete CA was due to a will of Chirac to constrain the actions of the

government. However a longer CA might be explained as well by *better relationships* between the two parties than in 1986, who in 1993 presented themselves as a unique federation: UMF (Union pour la France).

In the case of Prodi, there was as well a separation between the functions of minister and party leader, but the situation was rather uncommon. Indeed Prodi, the leader of Ulivo (federation of centrist and leftist parties) didn't belong to any party. He redacted himself the Ulivo's program, with the help of some collaborators, and all of them entered the government. The party leaders (and the party congress) ratified the document, sometimes with some opposition.

For Berlusconi, the figure was somewhat different: the CA has been presented only 10 days before the elections, and was available only on the internet web sites of the partners. It is more or less complete, and very imprecise. This program has taken however very intention to the Press, because Berlusconi front in a TV emission his "contract with Italian people", promising his retirement of the public life if he didn't respect some of the pledges included in the program.

The case of the CA between PS-PC is a contradictory case, however. Indeed PC's leader R. Hue didn't enter the government and the CA is very incomplete and imprecise. This contradiction however can be explained by the fact that the partners claimed that the partners didn't wanted to redact any governmental agreement, but just to expose the points of agreement between the partners.

Finally, the analysts report the factor good conjuncture / recession as an important factor determining the negotiations. Indeed in good conjuncture the negotiations are obviously easier, because the task is about to "share the cake", while in bad conjuncture some painful measures have to be taken to do some economies, are then they are more likely to enhance tensions among partners, especially if these partners opposes themselves on the left – right spectrum. For example, Verhofstadt's CA was seen as a global compromise, that is with each partner inserting a part of their manifesto rather than a compromise on each item. Commentators said that it won't be the case for Verhofstadt II, at the conjuncture was not as good as for the former.

From the empirical studies of the formation phase, 4 causal conditions seemed to have a repeated role in the characteristics of the CA: 1) the Pre-electoral versus post electoral redaction of the CA, 2) relationships between partners, 3) the entrance of the parties leaders into the government and 4) the good/ bad economical conditions.

Codification of results and explanatory variables

Defining characteristics of CA: Strom and al.'s research²⁵ measure the characteristics of the CA using the number of words and a value of completeness attributed by national experts. The number of words can allow to compare CA's regarding their length, but doesn't allow a differentiation between text of same length but respectively very precise and or / complete on one hand, or vague and rhetorical on the other hand. Furthermore the evaluation of completeness given by national expert are likely to be country – biased. If these measures might be sufficient in a correlation analysis, the choose of a small population allows us to go further than these indicators.

More concretely, I will measure two different characteristics of the CA – its completeness and its preciseness. I hypothesis indeed that these two characteristics enhances two different causal mechanisms.

Indeed when the CA is precise and comprehensive (perfect contract), it is likely to be important in the subsequent policy-making (or at least the negotiators where wishing so). On the contrary, if it is neither precise nor comprehensive, its redaction has probably been a “ritual dance”, with no intention of deciding on real policies. In the intermediary cases, a CA complete but imprecise (“interpretable contract”) is a list of directions to all areas of policy-making, without giving any precise details; and a CA precise but not complete (“partial contract”) is a precise resolution of policies on some matters, letting the other ones unresolved.

Table 1 : Types of coalition agreement

		Precision of CA	
Comprehensiveness of CA		Yes	No
Yes	Perfect contract	«Interpretable » contract	
No	Partial contract	Ritual contract	

I will however, in a third step, evaluate the causal mechanisms for a complete and precise (C&P) coalition agreement.

To measure the *completeness* of the CA, I decided to compare an “ideal index of CA” (grouping together all the items treated by the CA's) to each CA of the cases studies, and to codify them according to proportion of themes they include. I took into

²⁵STROM K. and al, forthcoming, op.cit.

consideration that Belgium is a federal countries and then I took away from the ideal index all the items that don't belong to the competencies of the federal state. More exactly, the fuzzy values are attributed as follow: 1: the CA includes at least $\frac{3}{4}$ of the items of the "ideal CA", 0.75: between $\frac{3}{4}$ and $\frac{1}{2}$, 0.5: $\frac{1}{2}$, 0.25: between $\frac{1}{2}$ and $\frac{1}{4}$, 0: less than $\frac{1}{4}$.

Regarding the *preciseness* of the CA, I made a distinction between three types of pledges, as proposed by Royed²⁶: rhetorical pledges (impossible to objectively identify if the pledges have been fulfilled or not, ex: "to reduce poverty"), real difficult definite pledges (pledges objectively identified, but the precise implementation is indefinitely explained, ex.: "to reduce tax") and real definite pledges (pledges objectively identifiable, and whose way of implementing is precisely defined, ex.: "to reduce tax of 3% for all workers"). Then in a second step I count the proportion of each group, and then I classified the preciseness as followed: 1: The majority group is the definite pledges; 0.75: There are big two groups of equal weight: definite and difficult definite; 0.5: majority of difficult definite, or half definite and half rhetorical; 0.25: half difficult definite, half rhetorical; 0: majority of rhetorical pledges.

The assessment of the membership in the set of countries in good economical condition is calculated basing oneself on the % of change from the previous year in real growth (sources: OCDE²⁷), and codified as followed: below 0 or between 0 and 1 change: 0, between 1 and 2%; 0.25, between 2 and 3: 0.5%, between 3 and 4: 0.75, more than 4: 1.

The membership scores in the set of countries good relationship between partners is a mega – variable constructed with two variables: the governmental antecedent, and the pre-electoral arrangement. It is codified so: 1: the partners have been together in the government, and publicly expressed their will to stay the same team if the electoral results allows it, 0.66: partners didn't govern together in the precedent legislature but agreed to govern together if the elections allows it, 0.33: partners neither reject publicly to govern together neither agreed it before the elections (whatever they governed together in the precedent legislature or not), 0: the partners didn't wanted to govern together, but were forced to accepted because the other combinations failed (whatever the government failed because of their disagreement or not).

²⁶ ROYED T., "Testing the mandate model in Britain and the United States: Evidence from Reagan and Thatcher eras", British Journal of Political Science, n. 26: 45-80.

²⁷ <http://www.oecd.org/dataoecd/6/27/2483806.xls>

The entrance of party leader is codified as followed: 1: all the parties leader enter the government, 0.75: a majority of the party leaders do, and one of them became Prime Minister, 0.5: idem but none of them became Prime Minister, 0.25: the minority of party leaders enter the government, but one of them became Prime Minister, 0: the minority or none of the party leaders enter the government and none of them became Prime Minister.

Table 2: Fuzzy Membership Scores for countries with a CA

Cabinets	Preciseness	Completeness	P&C	Good ec. conditions	Good rel.	Party leaders enter	Post
Dehaene I (1992-95)	0.5	0.25	0.25	0	0	0	1
Dehaene II (1995-99)	0.75	1	0.75	0.5	1	0	1
Verhofstadt I (1999-2003)	0.75	0.75	0.75	0.75	0.66	0.75	1
Verhofstadt II (2003-?)	1	1	1	0.5	1	0	1
Berlusconi (2001-?)	0.25	0.75	0.25	0.25	0.66	1	0
Prodi (1996-98)	0.5	1	0.5	0.25	0.66	0.25	0
Chirac (1986-88)	0.25	0.5	0.25	0.25	0.66	1	0
Balladur (1993-95)	0.5	0.75	0.5	0	0.66	0.25	0
PS-Verts (1997-2002)	0.5	0.25	0.25	0.25	0.66	1	0
PS-PC (1997-2002)	0	0	0	0.25	0.66	0.75	0
Lubbers III (1989-1994)	0.75	0.5	0.5	1	0.33	1	1
Kok I (1994-1998)	0.5	0.75	0.5	0.75	0.33	0.75	1
Kok II (1998-2002)	1	1	1	1	1	0.5	1
Balkenende I (2003-?)	0.5	0.25	0.25	0.25	0	0.75	1

Results

Given the limited number of cases, the test are done with the veristic method.

Necessity analysis: No necessary conditions are found for an agreement complete, precise and both.

Sufficiency analysis: The only sufficient equation is found for the complete character, as: **Completeness = GOODREL POST + GOODEC partylead POST**, fit 0.574 but GOODREL alone fit 0.535. There is not sufficient equation for precision, but the graph shows us that only one case is contradictory: Dehaene II, which is a grade (0.25) less precise than expected. As we saw, this can be explained by the forthcoming presence of the European Congress of Cannes. If we allowed the acceptance of Dehaene II in the group of very precise redacting CA we find:

Preciseness = GOODREL POST + GOODEC partylead POST, fit 0.712 (but GOODREL POST only 0.646), and

P&C = GOODREL POST + GOODEC partylead POST, fit 0.780, alone GOODREL POST fit: 0.726).

First of all, we see that (after correction of the score of Dehaene) the equations for preciseness and completeness are identical, even if the measure of fit is different. That means that the hypothesis of two separate logic's for preciseness and completeness is not so powerful, even if not completely wrong.

Secondly we see that the best explicative cause for a precise and complete agreement is the good relationship amongst partners in systems where the CA is redacted after the elections. If one comes back to the operationalisation of the variable, we see that if partners previously governed together, and expressed their will to do so again, the CA is likely to be very complete and precise. On the other hand, if the partners publicly expressed their reluctance to govern together, the CA is likely to be less complete, and to a less extent less precise (it is here that the difference of think is playing, in the sense that if the partners have very bad relationships they are likely to redact an incomplete, but still more or less precise CA).

An other sufficient condition to explain the redaction of a complete and precise CA is the absence of party leaders in the government, in good conjuncture, in system where the CA is redacted after the elections. This equation however doesn't make a lot of sense theoretically, as there is no reasons for the absence of party leader to play only in good conjectural times.

As we saw the post-electoral redaction of the CA belongs to the each branch of the equations. However we should note that the variable "relationship within partners" and "economical situation" are operationalised as almost constant in the six cases. We can use this constancy to evaluate the impact of the absence / presence of party leaders. The conclusions here won't be used as a theory, due to the limited number of cases, but still could direct us towards some ideas.

As for the pre-electoral redaction, the CA is less complete and constant, I decide to test the more or less complete and / or precise character of the CA. In the first analysis, the agreement between PC and PS appeared as a contradictory cases. Due to the fact that the partners claimed that it was not a real governmental agreement, we try the equations removing this case and we find:

More or less complete = partylead, fit 0.507.

More or less precise = partylead, fit 0.600

More or less complete and precise = partylead, fit 0.600

We see that, expect in the case of the agreement between Jospin and Hue, the absence of party leader in the government is a sufficient condition for a precise and complete

CA. However the test is based only on five cases, whose two are quite particular (the “double cohabitation” between Balladur and Chirac and the fact that the leader of Olivo, R. Prodi, didn’t belong to any party).

4. Back to the theory

Regarding the differentiation between the preciseness and completeness of the CA, we see that these concept didn’t really belong to different logic’s as supposed before. However the distinction is still useful to codify the characteristics of the CA.

But the principal conclusion of this preliminary research is that the existence of good relationship among partners (especially when they stay in the government for the second time, and they express the wish to do so) in the post electoral system is a powerful explicative variable for a preciseness and or complete coalition agreement. The conclusion for the majority system are less clear, due to the fact that two variables were kept almost constant (the relationship among partners and the economical situation). However a possible sufficient variable for a more or less precise and / or more or less complete CA might be the absence of the party leaders into the government. But this proposition is still an hypothesis, as there was one contradictory case, and the test was done on only five.

This results “make sense” theoretically. Indeed we can consider the redaction of the coalition agreement as a “two-level game”, between the parties on one hand and between the parties and the government on the other hand. Indeed two elements seemed to influence the characteristics of the CA: 1) the relationships among the parties, and 2) the party – government relationships.

Regarding the relationships among the parties, the CA is likely to be more complete and precise when the parties expressed (formally or informally) their wish to govern together if the elections allowed it. On the contrary if the parties were reluctant to govern together, the CA is likely to be incomplete but still more or less precise.

Furthermore, the CA is likely to be more complete and precise when the governmental point of view is predominant, that is when the CA is redacted after the elections, by the parties *for* the government. When it is redacted before the elections, it is likely to be a document written by the parties for themselves, to get support from the voters. In order not to present to the voters a too long document, and to keep the parties’ identity, the CA is likely to be less complete and above all less precise. Also,

the CA might be more complete and precise when the government and the party are clearly distinct institutions, and when one of these two institutions might have incentives to “bind” the other one by a long and complete document. The party may want to bind the government when the redactors of the CA stay outside of the government, or the government may want to bind the parties when the negotiators already belong to the government when they write the CA.

The result given by the method directs us towards potentially fruitful future researches. A first interesting step will be to test the equations with other cases, More exactly, that is to answer to the following questions:

- 1) Do we find some cases where the partners did govern together, expressed the wish to stay for the next legislation and redacted a short and incomplete CA? If it is the case, why?
- 2) Do we find some cases where the partners did everything to avoid to govern together and nevertheless wrote down a very complete and precise CA? If it is the case, why?
- 3) Is it true that in majority system the CA tends to be longer when the parties leader didn't enter the government, and vice versa?

Secondly, an other research should try to enlarge the sufficient condition for an precise and / or complete CA, and then for example:

- 1) to try to find out if the pre-electoral agreements redacted when the partners belongs to the government during the redaction are likely to be more precise and complete;
- 2) To elaborate a more refined operationalisation of the “good relationships among partners” in order to include a differentiation among the cabinets in majority system, who always scored the same in this research.

Thirdly one might try to elaborate the theoretical proposition, and try to find out more precisely how does the two levels of the “game” interact. This will be the object of the in-depth analysis of one or two cases

5. Conclusion: Relevance of the Fuzzy set method in an explanatory research.

In my view for an under-explored theme of research, the fuzzy set is (one of) the appropriate method.

The method - consisting in going from the theory, to the cases, and going back to the theory - allowed me to propose a new theory, and then to identify the more interesting future research. Furthermore this possible future research can go in many directions – of large populations to check the hypothesis, or of in – depth cases studies to elaborate better the theory proposal.

