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EXPLAINING COALITION FORMATION: THE CASE OF SWEDISH LOCAL GOVERNMENT

by

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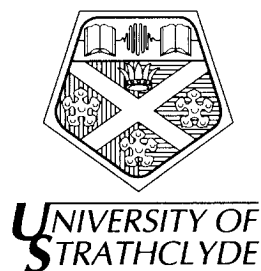### Uppsala University

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EXPLAINING COALITION FORMATION: THE CASE OF SWEDISH LOCAL GOVERNMENT

by Hanna Bäck
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Introduction[*]

In parliamentary democracies a single party rarely controls a majority of the seats in parliament, which makes coalitions vitally important. Early coalition theorists assumed that parties were pure office-seekers and predicted that only minimal winning coalitions would form. Soon after these theories were given their first empirical evaluation, attempts were made to introduce policy as a goal for parties in coalition formation. For example, De Swaan predicted that only coalitions with a minimal policy-range along some dimension would form. A critique raised against these early theories is that coalition formation cannot be seen as an isolated event where parties do not take the future into account. Other assumptions underlying these traditional coalition theories that have been questioned are that coalitions form in an institution-free environment, that parties can be seen as unitary actors, and that the policy-space is one-dimensional. Newer coalition theories often try to incorporate vote-seeking, institutions and multiple dimensions (Axelrod, 1970; De Swaan, 1973; Strøm, 1990; Strøm, Budge and Laver, 1994; Laver and Shepsle, 1996).

One of the problems that characterizes the coalition research of today is that most coalition theories have been thoroughly tested on data on national coalition governments in post-war Western Europe. Laver describes this data set as "one of the most thoroughly picked over in the entire social sciences" and he says that, "as a consequence, the relationship between theory and data has become extremely incestuous".[1] Many coalition theorists have therefore considered the study of coalition formation in local government to be a solution, since this creates a vast number of new cases. Another advantage with studying local coalitions is that we can study a large number of coalition formations at a single moment in time, and in a single national setting, which gives us greater opportunities to test and refine theories. I will here use data on a number of coalitions formed in Swedish local government.

Besides using this "thoroughly picked over" database, coalition researchers often rely on case studies to test and illustrate theories. Even though these case studies possess some methodological drawbacks, such as a difficulty in measuring and isolating effects of a number of variables, they often add to our understanding of coalition formation. The study performed here is not a case study *per se*, since we are here studying a number of coalition formation events, but the study might nevertheless possess the potential drawback that what is true for one country and one level of government might not be true for other cases. The claim of coalition theories that they can predict government coalitions in all parliamentary democracies has often been questioned by country-specialists, claiming that theories need to be country-specific. This is of course an empirical matter to determine, and testing coalition theories on different types of data is therefore an important exercise, and can hopefully increase our understanding of

[1] Laver, 1989:16 (The problem is that theories are often tested on the data that they originate from.)

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coalition formation in general. Adding the potential advantages associated with studying new data, generated within a single country and at a single moment in time, I believe that this study of coalition formation in Swedish local government can be fruitful.

In this paper I use unique elite survey data from an investigation conducted among councilors in a large sample of local authorities in Sweden, to test hypotheses on coalition formation.[2] Using a new methodological approach it is possible to draw conclusions about the relative importance of traditional variables, such as size and policy, and institutional variables. This new approach models government formation as a discrete choice model, where all of the possible combinations of the parties are seen as choices, which means a total of over 8000 choices in the 49 municipalities studied here. Following Martin and Stevenson these data are analysed using conditional logit (Martin and Stevenson, 2001).

Coalition Theory

The minimal winning theory and other traditional theories

Almost 50 years ago, von Neumann and Morgenstern developed a game theoretic account of coalition formation in *The Theory of Games and Economic Behavior* (von Neumann and Morgenstern, 1953). The authors argue that when dealing with strategic interaction, we should expect only "minimal winning coalitions" to form. Minimal winning coalitions are coalitions which are characterized by the fact that if any member leaves the coalition, the coalition loses its "winning status" in the sense that it ceases to control a majority of the seats in the legislature (Laver and Schofield, 1998:69). All members (parties) are necessary for the coalition to be "winning". The minimal winning theory is based on an assumption that parties are pure office-seekers, that is, their only goal is to attain the benefits associated with controlling cabinet positions.[3]

One of the many critiques that can be raised against the minimal winning theory is associated with the central aim of these early coalition theories, that is, to predict coalitions. The authors presented here share an instrumental view on theories and how they should be evaluated and the idea is that "theoretical models should be tested primarily by the accuracy of their predictions than by the reality of their assumptions" (Downs, 1957:21). Aiming to predict, the minimal winning theory can be criticized for the fact that it is not "efficient". The theory predicts a large set of possible candidates to which coalition will

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[2] I focus on hypotheses derived from traditional office and policy theories, multidimensional coalition theory, and some theories incorporating ideas on vote-seeking and institutions. It is of course possible to test other hypotheses, for example hypotheses drawn from bargaining theory and other institutional hypotheses (will be tested in a later stage of this research).

[3] These benefits could for example include the money, prestige and power associated with being in office.

form and increasing the efficiency of the theory would imply reducing this "prediction-set".

In an attempt to reduce the prediction-set Riker further develops the cooperative, constant-sum game presented by von Neumann and Morgenstern. In *The Theory of Political Coalitions,* Riker argues that only a subset of the minimal winning coalitions will form. Based on the assumption that each actor expects to receive a larger share of the "fixed prize", the more weight (in terms of seats in parliament) it brings to a coalition, Riker argues that only *minimum* winning coalitions would form. A minimum winning coalition is a minimal winning coalition that includes the members that gives the coalition the smallest total weight (Laver and Schofield, 1998:94, Riker, 1962). Another way to reduce the minimal winning prediction-set was suggested by Leiserson. In the theory called "the bargaining proposition" Leiserson argues that we should expect the minimal winning coalition with the smallest number of actors to form. This theory is based on the assumption that the smaller the number of parties, the easier it is to agree when bargaining, and the easier it is to form a coalition (Laver and Schofield, 1998:95; Leiserson, 1968).

For some years the theories on coalition formation were based on the assumption of pure office-seeking parties, and policy-goals were not included in accounts of coalition formation. From these policy-blind theories we can draw several testable hypotheses. Following Martin and Stevenson, all of the hypotheses presented in this paper state how specific characteristics of the potential governments affect the likelihood of the governments to form.[4]

H1: Potential governments are more likely to form if they are minimal winning coalitions.

H2: Potential governments are more likely to form if they are minimum winning coalitions.

H3: Potential governments are more likely to form if they are minimal winning coalitions with the smallest number of parties (bargaining proposition).

These three hypotheses are all "size"-hypotheses, that is, they all predict that potential governments of a specific size will form. A basic hypothesis that can be drawn from this literature is that only majority governments will form (Martin and Stevenson, 2001:34).

H4: Potential governments are more likely to form if they control a majority of the seats in parliament.

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[4] Several of the hypotheses tested here are tested by Martin and Stevenson (2001:35-38) on national-level data.

Laver and Schofield describe the introduction of policy concerns into accounts of coalition formation as an attempt to enhance both the realism and the predictive power of the theories (Laver and Schofield, 1998:37). In *Conflict of Interest* Axelrod makes one of the first attempts to include policy goals in a theory of coalitions. Axelrod's minimal connected winning theory says that coalitions will form that are ideologically "connected" along a policy dimension (Axelrod, 1970). For a coalition to be "connected", the parties in the coalition must be adjacent to each other on a dimension. A coalition also has to be "minimal winning" in the sense that if it loses one of its members it no longer controls a majority of the seats in the parliament, or it is no longer connected. This means that coalitions that are larger than minimal winning are sometimes included in the prediction-set, since they may contribute to fulfilling the connectedness-criterion ("filling a hole").

De Swaan was the first author to base a theory on the assumption that "considerations of policy are foremost in the minds of the actors". In *Coalition Theories and Cabinet Formations* De Swaan presents the "policy distance theory" (De Swaan, 1973). Laver and Schofield call this theory a "closed minimal range theory" and they describe it as "a version of the minimal connected winning (MCW) theory that takes account of the actual positions (rather than the ordering) of the parties on the policy dimension in question. The closed minimal range coalition... is the MCW coalition with the smallest ideological range" (Laver and Schofield, 1998:111). The basic idea underlying the policy distance theory is that parties evaluate coalitions on how close they expect the future government policy programme to be to their own ideal position (De Swaan, 1973:88). I will call the coalitions predicted by this theory minimal range coalitions.

As opposed to all of the theories presented above that take an office-goal into account, a coalition theory based on the median voter theorem has been suggested as a pure policy-seeking theory. The median voter theorem states that, under some conditions,[5] the ideal point of the median voter has an important property. The ideal point of the median voter is the only point on this policy dimension that is preferred by a majority of the voters (Laver and Shepsle, 1996:9). In the Downsian tradition this has important implications for party competition, since it means that parties (in a two party system) are expected to move closer to the middle of the policy continuum, to be able to maximize their share of the votes. This theorem can be applied to coalition bargaining. The idea is that the party controlling the median legislator position will have increased bargaining power. In the "median legislator theory" parties are assumed to be pure policy-seekers, that is, they are only motivated by the goal to implement the "best" policy, without considering who is in office and who is not. The increased bargaining power of the median party is explained by the fact that there is no policy-position that can be implemented that is preferred by a majority of the

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[5] For example that voters' most preferred policies can be modeled as ideal points on a single policy dimension, and that they have single-peaked utility functions.

legislators than the ideal policy-position of the median legislator. From the policy-based coalition theories, I derive these hypotheses:

H5: Potential governments are more likely to form if they are minimal connected winning coalitions.

H6: Potential governments are more likely to form if they are minimal range coalitions.

H7: Potential governments are more likely to form if they contain the median party.

Some of these policy-based theories can also be stated in more general terms, by using a semi-continuous variable, "policy-range", and a dichotomous variable, "connectedness".

H8: Potential governments are more likely to form, the smaller their policy-range.

H9: Potential governments are more likely to form if they are connected.
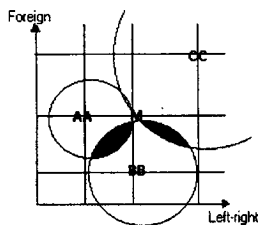
Multidimensional coalition theory

Most recent work on coalition formation assumes, according to Laver and Schofield, that more than one dimension of policy must be considered at the same time. The problem of introducing several dimensions of policy is that the neat game theoretic median voter theorem is no longer applicable to coalition formation, and the possibility of finding an equilibrium in the coalition game is almost impossible. This has of course worried game theorists and the central problem has been described as "...all hell breaks loose when more than one dimension is considered at the same time" (Laver, 1997:100).

Applying the median voter theorem to coalition formation in a one-dimensional policy space, the policy position of the party controlling the median legislator will be implemented. This policy position is a Nash-equilibrium where no party has an incentive to find another solution in the coalition game. If one dimension of policy is not enough to understand the bargaining involved in coalition formation, a problem arises which has been stated in the "chaos" theorems. These theorems imply that there is no equilibrium in a multidimensional policy space since a proposed "bundle of policy positions" can always be majority defeated by another (Laver and Shepsle, 1996:9-10). Seeing that "chaos" almost never occurs in the real world, game theorists have tried to "solve the chaos problem". The most important contribution to solving the chaos problem in coalition formation is Laver and Shepsle's portfolio allocation model (Laver and Shepsle, 1996).

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The portfolio allocation model is based on some important assumptions; (1) politicians behave "as if" they were pure policy seekers, (2) each dimension of policy is governed by a particular portfolio, and (3) ministerial discretion or ministerial autonomy, which means that the minister of a department has considerable discretion to act on his or her own, independently of the other members of the cabinet.[6] The assumption of ministerial autonomy means that for a policy position proposed for a dimension to be credible, it must correspond to the policy position of the party assigned to the portfolio controlling this dimension. From these assumptions Laver and Shepsle draw the conclusion that "government policy outputs are selected from a finite set of policy forecasts, each forecast being associated with a particular portfolio allocation" (Laver and Shepsle, 1996:20-35, 15). Let us look at a hypothetical example to fully grasp how the portfolio allocation model could be a solution to the chaos problem.

Let us assume that there are two salient policy dimensions; a left-right dimension and a foreign policy dimension. Let us also assume that there are three parties: A, B and C and that they are of equal weight and have ideal policy positions on these two dimensions located at AA, BB and CC. In the portfolio allocation model we have to assume that there is a department controlling each of the salient dimensions. Laver and Shepsle assume that the left-right dimension is controlled by the Department of Finance, and the foreign policy dimension is controlled by the Department of Foreign Affairs, so let us do the same. The parties' ideal points (AA, BB, CC) here illustrate which policies a party would implement if the party controlled both the Department of Finance and the Department of Foreign Affairs. The hypothetical example is illustrated in Figure 1 below.

Figure 1: Illustration of the portfolio allocation model

The main argument in solving the chaos problem is that there is only a finite number of policy positions that governments can propose, since there is a fixed set of cabinet portfolios that can be allocated between a fixed set of coalition partners. Recall that the only policy positions that are credible are policy positions that a party would implement if it controlled a portfolio (without this

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[6] The key assumption of ministerial autonomy has been questioned (Warwick, 1999, Müller and Strøm, 2000:16-18).

assumption a government could propose a policy anywhere in the two-dimensional policy space). The policy positions that can be implemented are illustrated by two of the lines crossing, called "lattice points". For example the "lattice point" named M, the multidimensional median, represents the policy position that would be implemented by a coalition where A controlled the foreign policy portfolio and B the finance portfolio (BA). Is the multidimensional median, or the dimension-by-dimension median (DDM-point) illustrated in point M, a policy position in equilibrium in the model proposed by Laver and Shepsle?

The circles illustrate the parties' indifference curves to the DDM-point, and all policy positions inside the circles are preferred to this policy position by a party. Where two indifference curves overlap each other there is an area of policy positions that majority-defeats the policy position of the multidimensional median, that is, two of the parties prefer these policy positions to the DDM-point (grey area in Figure 1). Since credible policy positions can only be found where two lines cross each other, that is, policy positions illustrated as lattice points, and since no lattice point is found in the area which would majority-defeat the multidimensional median, this policy position is in equilibrium (the DDM-point has an empty lattice winset). "This means that there is no alternative cabinet whose forecast policy outputs are preferred to those of the cabinet BA" (Laver and Shepsle, 1996:67).

Some of the major implications of Laver and Shepsle's theory involve an idea of "strong" parties.[7] Laver and Shepsle show that the DDM-cabinet may not be the only equilibrium in the government formation process. Members of a proposed cabinet may veto it by refusing to participate in it, which means that there may be other equilibria. A strong party is a party that participates in every cabinet preferred by a majority to a cabinet where this party takes all portfolios. Laver and Shepsle differentiate between "very strong" parties and "merely strong" parties. If a strong party has an ideal point that has an empty winset, it must be the generalized median, the DDM-government. Laver and Shepsle call this party a "very strong" party. This party can take hold of all cabinet portfolios. A party may have an ideal point with a nonempty winset, but still be strong since the party participates in every cabinet in its winset. This party is called a "merely strong" party (Laver and Shepsle, 1996:67). From this discussion I draw two testable hypotheses[8]:

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[7] A more thorough explanation of the idea of "strong" parties is given in the appendix.

[8] The main implications drawn by Laver and Shepsle (1996:148) are: *"Implication 1*: If the status quo cabinet at time t-1 is at the dimension-by-dimension median, and this has an empty winset at time t, then this cabinet remains in place". *"Implication 2*: If a party is very strong, then it is assigned all portfolios in the government formation process". *"Implication 3*: If a party is strong, then it participates in the cabinet that is the outcome of the government formation process". Here we are focusing on testing a version of the two latter implications. These hypotheses are tested by Martin and Stevenson (2001:38) on national-level data.

H10: Potential governments are more likely to form if they include a very strong party.

H11: Potential governments are more likely to form if they include a merely strong party.

Multiple goals and institutions as explanatory variables

As I described earlier, formal coalition theory has often been criticized for being based on unrealistic assumptions. One of the major critiques is that coalition formation cannot be seen as an isolated event where parties do not take the future into account. Parties have to consider how coalitional choices affect their possibilities of winning future elections. Other assumptions underlying these traditional coalition theories that have been questioned are that coalitions form in an institution-free environment and that parties can be seen as unitary actors. Newer coalition theories often try to incorporate multiple goals such as vote-seeking and internal cohesion, while others focus on incorporating specific institutional features to explain coalition formation. I will test some of the hypotheses that can be derived from this literature. Following Strøm I will focus on hypotheses about party competition and oppositional influence (Strøm, 1990).

Ever since Downs' *An Economic Theory of Democracy*, theories on electoral competition have viewed party policy as instrumental for parties, that is, as a means to help parties to win elections (Downs, 1957). In the Downsian model parties change policies to accommodate votes, and only the potential loss of credibility constrains the parties from completely altering their policy positions. Even though coalition theory has followed in the Downsian rational choice tradition, the instrumental policy goal has mostly been overlooked. Coalition bargaining has been seen as an isolated event where electoral competition does not play any part. As described by Laver and Schofield, "the problem for coalition theory, therefore, is that it has up until now been essentially static, assuming implicitly that politicians do not look forward to the next election when they bargain". The authors argue in favor of a more dynamic model that takes the interaction between coalition bargaining and electoral competition into account (Laver and Schofield, 1998:58-59). The idea is that parties have to take into account how their behaviour in coalition bargaining may affect future electoral results. For example, a party that has not been able to implement the party programme when in government, for the reason of choosing coalition partners with policy views different from their own, may be punished by the voters in the next election.

In his important study on minority governments, Strøm includes the idea of parties looking towards future elections into a coalition model. Strøm argues that parties tend to anticipate that government incumbency leads to electoral losses, and that a decision not to go into government today may be explained by

this anticipation (Laver and Schofield, 1998:75). According to Strøm we should almost always see incumbency as an electoral liability since incumbency parties have their reliability and responsibility more severely tested. The author refers to several studies showing that incumbents often do tend to lose votes in the next election, but he also points to the fact that what really matters is if the central actors recognize this fact and incorporate this in their decision calculi (Strøm, 1990:45).

Strøm argues that several factors influence the electoral costs of holding office, and one of these factors is electoral competitiveness, which is defined as "sensitivity of electoral results to party behavior". One prerequisite for such sensitivity is, according to Strøm, that voters are willing to change parties. To measure this willingness Strøm uses electoral volatility, which is an aggregate measure of the net shifts between all parties. "The greater the level of electoral volatility, the more party leaders have to worry about repercussions in future elections." The hypothesis that Strøm formulates is that as electoral competitiveness increases, the parliamentary basis of governments should decrease and the likelihood of minority governments should increase. Strøm's analysis shows that undersized governments are more likely to form in political systems where elections are competitive and decisive for bargaining power (Strøm, 1990:47-48, 74, 237).

There have also been other attempts at incorporating a model of party competition into coalition theory.[9] Denters formulates "a conditional model of coalition formation" and tests the predictions of this model against data on coalition formation in Dutch local government. Denters assumes that parties are ultimately motivated by office-goals, and that a party faces electoral constraints when seeking the intrinsic office-goal. An electoral constraint is, according to Denters only operative as long as parties believe that their behaviour affects the results at the poll. Denters states two reasons that could induce local politicians to consider the outcome of an election as an outcome that they cannot influence. First, if voters have stable voting habits, parties may view that their own behaviour does not affect voting results (compare to Strøm's volatility above). Second, if outcomes in local elections are largely attributable to national trends, that is, if local elections are "nationalized", local parties may perceive that they cannot affect election outcomes. The idea is that if parties believe that voters only base their voting decisions on the behaviour of the national parties, local parties should not have to take future elections into account when choosing coalition partners (Denters, 1985:296-298). This means that "the greater the level of localization (the lower the level of nationalization), the more party leaders have to worry about repercussions in future elections".

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[9] Austen-Smith and Banks were among the first to try to integrate a model of coalition bargaining and electoral competition. The authors assume that parties are intrinsically motivated by the office-goal, and that they are only concerned with policy to the extent that certain policy positions help them to win elections. In the simplified three-party model, the authors conclude that the governing coalition will consist of the smallest and the biggest party (Austen-Smith and Banks, 1986:407-413). Also see Lupia and Strøm, 1995 for a coalition model incorporating party competition.

Several authors have argued for the importance of including institutional features in theories on coalition formation. Coalition formation does not occur in an institution-free environment, instead we can see that the decisions of actors involved in coalition formation are affected by institutional characteristics. Strøm, Budge and Laver argue that, "if we can synthesize our recognition of institutional determinants with a theory of choice under those constraints, we should be able to make considerable progress in our understanding of party coalitions". The authors give us several examples of institutions affecting coalition formation, such as institutions regulating government formation.[10]

Besides electoral competitiveness, Strøm also argues that there is an institutional feature that could affect the likelihood of minority governments, oppositional influence. Strøm argues that since parties are motivated by policy, government participation is not a necessary condition for policy payoffs. Opposition parties may attain policy objectives in two ways, either the governing parties fulfill the party objectives without the oppositional party having to influence the government, or the opposition parties may be able to exert policy influence through for example the legislative arena. Strøm argues that there may be differences between systems in the relative policy advantage of governing over oppositional parties, and he calls this variable the policy influence differential. The policy influence differential is, according to Strøm low in systems with strongly deliberative legislatures, which is closely related to the strength of the committee system. Strong committees favor the opposition and "the stronger and the more decentralized the committees, the lower the policy influence differential" (Strøm, 1990:38-44).

In systems with a low policy influence differential, that is, in systems where parties in government do not have a big advantage over the opposing parties in influencing policy, we can according to Strøm, expect a higher likelihood of minority governments. The mechanism is simply that if parties can affect policy from outside of government it may sometimes be more advantageous to stay out of government. From this discussion we can draw two (three) testable hypotheses.

H12: Potential governments controlling a minority of seats in the legislature are more likely to form (a) the higher the volatility and (b) the higher the localization.

H13: Potential governments controlling a minority of seats in the legislature are more likely to form the higher the oppositional influence (the lower the policy influence differential).

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[10] Strøm, Budge and Laver, 1994:331 (see also for example Müller and Strøm, 2000:4, 11, Bergman, 1995, Diermeier and Merlo, 2000). In this paper I focus on the policy influence differential (oppositional influence). It is, of course, possible to test other institutional hypotheses on these data (which will be tested in a later stage of this research).

A new methodological framework and new data

A discrete choice framework – conditional logit

I will here follow Martin and Stevenson who model government formation as "an unordered discrete choice problem where each formation opportunity (*not* each potential coalition) represents one case and where the set of discrete alternatives is the set of all potential combinations of parties that might form a government" (Martin and Stevenson 2001:38). According to the authors the main advantage with this approach is that it allows us to draw "conclusions about the relative importance of traditional variables relating to size and ideology and assess the impact of recent new-institutionalist theories on our ability to explain and predict government formation". This means that by using this "new" framework we can evaluate the relative importance of competing coalition theories.[11]

Using this framework, we assume that the actors in a political system choose one of the, often very large number of *potential governments*. The number of potential governments depends on the number of parties in a system. Let us study a simple example, a three-party system with parties A, B and C. In this system there are seven potential governments, that is, all parties may govern alone (A, B or C), two of the parties may coalesce (AB, BC or AC), or all of the parties may choose to govern together (the ABC-coalition). The number of potential governments quickly increases as the number of parties increases, since the number of potential governments is equal to 2^n-1 (where n is the number of parties). This means that in a six-party system there are 63 potential governments, in a seven-party system there are 127 potential governments and so on.

As is stated above, government formation is here modeled as a *discrete choice* problem. Long describes a discrete choice model as a model "based on the principle that an individual chooses the outcome that maximizes the utility gained from that choice".[12] This type of model fits well with the assumption of rational actors that is well founded in coalition theory, that is, actors are assumed to choose the coalition that maximizes their expected utility. To test this discrete

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[11] The "old" approach is described by Martin and Stevenson (2001:33) as "rather limited empirical designs – such as detailed accounts of coalition bargaining across a number of countries, uncontrolled comparisons of large samples of cabinets, or analyses of particularly prominent cases". These "old" approaches for example involved determining the success rates of traditional coalition theories, that is they involved determining how many of the coalitions that actually did form that are minimal winning coalitions, minimum winning coalitions and so on.

[12] Long, 1997:155. Discrete choice models do not necessarily imply utility maximization.

choice model, Martin and Stevenson adopt the *conditional logit model*.[13] Conditional logit was developed by McFadden and others for the purpose of studying travel demand. For example Domencich and McFadden studied consumer's choice of transportation for a shopping trip (Long, 1997:178-179; McFadden, 1968, Domencich and McFadden, 1975). In political science, conditional logit has for example been applied to discrete choice problems, such as a voter's choice between Conservatives, Labour or the Alliance (Alvarez and Nagler, 1998). The analogy here is between an individual choosing which party to vote for, and a "municipality"[14] choosing which potential government to install.

There are several reasons for using the conditional logit model.[15] Which statistical model we choose depends on which data we have at hand. Following Westholm, in the present context this choice can be illustrated in a table (Table 1).[16]

Table 1: Why conditional logit?

		Dependent Variable	
		Continuous	*Discrete*
Variance Analyzed	*Across actors*	Ordinary regression	Binary, ordered or multinomial logit (or probit models)
	Within actors	Fixed effects regression[17]	*Conditional logit*

We are here dealing with a *discrete* dependent variable rather than a continuous dependent variable, which leads to problems when we try to apply the regression model. When we for example apply the linear regression model to a binary outcome, we talk about changes in probabilities that an event occurs as an independent variable changes. Some of the assumptions of the linear regression model are however violated when we apply it to a binary (or any discrete) dependent variable. According to Long it is most problematic that the functional form of the model is linear, that a unit increase in x_k results in a constant change

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[13] Martin and Stevenson, 2001:38-39; McFadden, 1973, 1974. See appendix for further details.

[14] Ultimately the actors that choose which government will form are the members of the local council, but in reality there is often a small number of influential party politicians that are involved in the bargaining procedure.

[15] According to Martin and Stevenson (2001:38) the conditional logit model has the important advantage over the regression approach that the unit of analysis is each formation opportunity and not the potential coalition. The authors mean that this solves the problem that would otherwise arise when you add a case with a very large number of potential governments which would "swamp out" relationships in other systems. Martin and Stevenson mean that attempts to solve this problem within the regression framework by creating elaborate schemes for weighting cases have been unsuccessful.

[16] This table is taken from Westholm (2001:457), with some minor modifications.

[17] "Regression models with fixed individual effects". According to Westholm (2001:457, 445-449) we can use these statistical models: $Y_{ij} - \overline{Y}_i = \beta(X_{ij} - \overline{X}_i) + \varepsilon_{ij}$ or $Y_{ij} = \alpha_i + \beta X_{ij} + \varepsilon_{ij}$.

of β_k in the probability of an event, regardless of the current value of x. This is often unrealistic when talking about changes in probabilities. Instead we should expect that when an outcome is a probability, the effects of independent variables should have diminishing returns. This means that the binary response model (either logit or probit) is more appropriate since it has an S-shaped relationship between the independent variables and the probability of an event (Long, 1997:35-40).

This means that we are left with the statistical models presented in the second column, that is, logit or probit models. We are here dealing with a multiple choice, that is, a dependent variable with more than two alternatives or choices. This means that we cannot use binary logit. We are also not dealing with a dependent variable where the choices can be ordered, which leaves us with either the multinomial logit or the conditional logit model. The difference between conditional logit and multinomial logit, is that conditional logit is "conditional on the characteristics of the choices". This means that when we are analyzing a *variance within actors*, that is, when we have variables that vary across the alternatives from which actors make a choice, we should use conditional logit rather than multinomial logit. Conditional logit has been most widely used in political science when testing the Downsian proximity model of elections. In elections, voters are making a discrete choice, that is, voters choose among a fixed number of parties. Conditional logit allows for characteristics that are specific for the choices, that is, characteristics specific for the parties that might affect the voters' choice, which we have to account for.[18] If we alter the model, conditional logit also allows for individual characteristics, which we might be interested in testing within the same model.[19] For example, income, education and so on are individual characteristics that we often expect affect which party people vote for.

In coalition formation, we are interested in studying how the fact that a potential government has a specific characteristic (for example is a minimal winning coalition), affects the likelihood of that government forming. As I describe above there are a number of characteristics that are specific for a potential government (the choice) that we are interested in studying how it affects the likelihood of the actors choosing a potential government (see hypotheses H1-H11). This means that we are analyzing a variance within actors and therefore the conditional logit model is the appropriate model.[20] We might

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[18] We can for example be interested in studying what happens with a party's vote share when the party alters its position along some dimension of policy (see Alvarez and Nagler, 1998:56, 67).

[19] Liao, 1994:61, Alvarez and Nagler, 1998:66-67. The idea is to make the individual characteristics vary over alternatives.

[20] A potential drawback with the conditional logit model is according to Martin and Stevenson (2001:39) that it imposes the property of independence of irrelevant alternatives (IIA). "The IIA assumption requires that if a new alternative becomes available, then all probabilities for the prior choices must adjust in precisely the amount necessary to retain the original odds among all pairs of outcomes (Long, 1997:182-183). Alvarez and Nagler (1998:57) illustrate this assumption: "IIA implies that the ratio of the probability of choosing one party to the probability of choosing a second

however also be interested in studying how system characteristics (variables that vary across actors) interact with these choice-specific characteristics, such as how the degree of oppositional influence in a system affects the likelihood that minority governments form. Conditional logit allows us to test all of the hypotheses stated above.[21]

Using the methodological framework presented here, I will in this paper study government formation in 49 Swedish municipalities where the average number of parties in a municipality is seven. The data consists of information on

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party is unchanged for individual voters if a third party enters the race. In simple terms, this implies that in a contest between a liberal and a conservative party, the entry of a second conservative party would not alter the relative probability of an individual voter choosing between the two initial alternatives. However, because the two conservative parties are close together in the issue space and hence are likely to be viewed as substitutes by voters, our intuition suggests that these relative probabilities will change." This might be a problem in the framework described above because the choices between different potential governments are probably not independent. If, for example one potential government was prohibited, we would not expect the probabilities to shift in equal proportion to all other possible coalitions, since some of the alternatives might be close substitutes. I will here follow Martin and Stevenson (2001:39) who test whether the IIA assumption is problematic in their application of conditional logit by dropping a random set of alternatives from each formation opportunity and then applying a Hausman test. They conclude that IIA assumption is not problematic in their application. A problem with this test procedure is that we drop a *random* set of alternatives. A more proper test would perhaps be to drop some specific alternatives that we expect are "close substitutes" to some other alternatives. The original test developed by Hausman and McFadden (1984) was based on the idea that we should drop each alternative and test whether the estimated coefficients change. Dropping each alternative would however be quite cumbersome since we are here dealing with so many alternatives. All together, this means that assuming IIA and testing whether IIA holds is problematic in this application. There is however no real alternative to using conditional logit, since for example multinomial probit (which doesn't assume IIA) is computationally impossible with this many choices (Long, 1997: 184-185, Greene, 2000:871-872). Another alternative is according to Greene (2000: 865-870) to use a nested logit model where decisions are assumed to be made in two or more levels. The idea is to group alternatives into subgroups and to maintain the IIA assumption within the groups. According to Greene (2000: 869), "to specify the nested logit model it is necessary to partition the choice set into branches", and if there is no natural partition, the partitioning might turn ad hoc, which leads to the problem that the "results might be dependent on the branches so defined". Since there is no obvious natural partitioning of the choice set studied here, I will not perform a nested logit analysis.

[21] The discrete choice problem that we are applying conditional logit to here is different from the discrete choice problems that conditional logit traditionally has been applied to, in the sense that we are dealing with a very large number of choices. Conditional logit has mostly been applied to cases with a small number of choices (5 or less), while we are here often dealing with a choice between 127 potential governments in a political system. Actors in a political system are faced with all these choices in government formation, but they might of course not always consider all of these choices as "real" choices. This "unusual" application also creates at least three problems: (1) As I describe above, the IIA-assumption is more likely to be problematic seeing that many of the choices are close substitutes, and it is also harder to perform a proper Hausman test. (2) Including variables that vary across systems is more problematic. When we include system-variables in a conditional logit model we usually interact these variables with a dummy of each alternative, which would mean that we would have to create "tons of" interaction terms. This problem can however be solved by only including system-variables that we have an idea of what type of government they make more or less likely. (3) Interpreting coefficients becomes more problematic. Since the conditional logit model is nonlinear, the conditional logit coefficients cannot be directly interpreted as changes in probabilities, and calculating predicted probabilities with this many choices would probably not be very fruitful.

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8399 potential governments for 49 "formation opportunities".[22] In each of these 49 "formation opportunities" of course only one of the potential governments actually did form.

Comparison of predictions

To be able to increase our understanding of coalition formation it is necessary to empirically evaluate traditional and new coalition models. Most of these coalition models are formal game theoretic models. According to Morton there are three types of empirical evaluation of formal models: (1) evaluation of assumptions, (2) evaluation of predictions and (3) evaluation of alternative models. Morton also argues, that "a model is not evaluated if its predictions are not analyzed, regardless of how true the assumptions of the model are believed to be" (Morton, 1999:101-102).

Since the ultimate aim of most of these traditional theories is to predict as many coalitions as possible, I will "test" the theories by determining their predictive power.[23] Above I describe the main advantage with the approach that will be used in this paper, which is that we can evaluate the relative importance of competing coalition theories. My aim is thus also to evaluate alternative models including variables drawn from different types of coalition theories. In comparing these coalition models, I will for the reasons stated above focus on what Morton calls "a comparison of predictions" (See Morton, 1999:105).

Following Martin and Stevenson I will assess the predictive power of the theories by generating predicted probabilities from different models.[24] The authors predict that the potential government with the highest probability will form, and compare these predictions with the governments that actually did form in each formation opportunity (in each municipality) (Martin and Stevenson, 2001:47). A model, which makes a correct prediction, has to find the potential government that formed in a municipality often among hundreds of potential governments by giving it the highest predicted probability in this municipality.

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[22] A problem with the data used in this paper is that we have to rely on a small sample-size. (The effective sample size is not the number of potential governments, but rather the number of formation opportunities.) According to Long (1997:53-54) there is no firm evidence against using maximum likelihood with small sample sizes, but it is "risky" to use maximum likelihood with samples smaller than 100.

[23] The predictive power or the efficiency of a theory consists of two features. Firstly, a theory must be able to correctly predict the coalition that actually forms. For the theory to pass this test, the prediction-set must include the coalition that actually formed. Secondly, a theory must be precise in predicting the actual coalitions that formed. Traditional tests of formal coalition models' predictive power therefore involve evaluating both their "success rate" and their "precision". These two measures combined measure the "efficiency" of the theories (see Laver and Budge, 1992:415, Bäck, 2000:10). The same type of measures are however not possible to calculate when we are dealing with hypotheses that for example state that a system-characteristic will increase the likelihood that a specific type of government will form. The measure of predictive performance used here can be compared to a combined measure of success rate and precision.

[24] These models are further described below.

This mostly implies that the theory makes point predictions about which coalition will form (if several potential governments have the same highest predicted probability, there will be multiple equilibria predictions). Morton argues that formal models' point predictions are easy targets and that we should not expect much from simply studying how many of the point predictions are observed in the real world (Morton, 1999:164-198).

Whether the models presented here perform badly when it comes to making correct point predictions is of course an empirical matter to determine, but it could mean that we should not only rely on this, rather crude test of the theories' predictive performance. We can therefore also draw conclusions about the relative importance of the theories by studying which variables have significant effects and which effects still remain strong after controlling for other variables. For example, if the effect of the minimal winning-variable disappears when we control for a policy-variable, we have reason to believe that the minimal winning theory is not contributing much to our ability to predict coalitions, and that the policy-theory is superior to the minimal winning theory.

Data on local coalition formation

As I mention above, many coalition theorists have drawn the attention to a problem that characterizes the coalition research of today, and that is that most coalition theories have been thoroughly tested on data on national coalition governments formed after 1945 in Western European countries. The same data set is used in almost all coalition studies, which means that new theories are often tested on the data that they originate from, and some authors mean that this has created an "incestuous" relationship between theory and data (Laver, 1989:17). Many coalition theorists have therefore considered the solution to be to study coalition formation in local government. The main advantage with studying local coalition formation is that it opens up a "new universe" of cases of coalition formation. Another important advantage with studying coalitions in local government is that we can analyse a large number of coalition formations at a single moment in time, and in a single national setting, which gives us greater opportunities to test and refine theories.[25]

In this paper I will study coalition formation in Swedish local government. One potential drawback with studying coalition formation in local government is the fact that local government in most European countries is not organized as a parliamentary system. Coalition theorists mostly study coalition formation in parliamentary systems where the coalitions form in connection to

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[25] Mellors, 1989:13. The opportunity to test coalition theories on local government formation has not been fully exploited. Some studies testing coalition theories on local coalition formation have however been made, see for example, Bäck, 1997, 2000 (Sweden), Denters, 1985 (Belgium), Downs, 1998 (Germany, France, Belgium), Gravdahl, 1997 (Norway), Laver, Rallings and Thrasher, 1998; and Temple, 1995 (Great Britain), Steunenberg, 1992 (The Netherlands).

the formation of government.[26] Before the 1970s all Swedish municipalities could be characterized as assembly government systems, using a proportional representation rule when appointing the executive committee (which of course means that no coalitions formed in connection to the formation of government). During the 1970s however a discussion took place and the system was questioned. The arguments against the assembly government system were mainly a concern for the problems of accountability and decision-making efficiency. The proportional appointment of the executive was retained, but some parliamentary traits were introduced in most municipalities. Bäck and Johansson argue that there was an almost complete breakthrough for quasi-parliamentarism in the late 1970s. The system that was introduced involved letting a majority party or a majority coalition appoint all committee leaders and full-time politicians. A similar system is used in the other Nordic countries.[27]

The "quasi-parliamentary" character of the Swedish local system creates a problem of "finding the government in local government". It can however be argued that the committee leaders and the full-time politicians form the "real" executive, since the parties controlling these seats have important executive power. Martinussen argues that an informal sort of cabinet forms in a majority of municipalities in Norway in association with the mayoral elections and that these mayoral coalitions can be considered as cabinet coalitions (Martinussen, 1999). It is of course not necessary to argue that the majority holds the executive power to be able to study coalitional behaviour in local government. It is however important to find out if coalitions do form and if they can be considered, in some sense to be governmental coalitions.

After the election in 1994 the Swedish weekly tabloid *Kommunaktuellt* conducted a study where executive committee leaders in all 288 municipalities were asked "Which parties form the new majority?". The answers indicated that coalitions did form. A majority of the municipalities were indeed governed by a coalition and the most common coalitions were coalitions between the bourgeois parties (Centre, Liberals, Christian Democrats, Conservatives) or between the two socialist parties (Left, Social Democrats) (Kommunaktuellt, 1995, no 5) No such systematic study was however conducted after the 1998 election. I have after the 1998 election conducted an e-mail survey, where I asked a similar question as *Kommunaktuellt* asked after the 1994 election; "Which parties are part of the governing majority?".[28] The survey indicates an increasing complexity in coalition formation. There were, of course, a number of

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[26] We might, of course, be interested in studying legislative coalitions instead of executive coalitions.

[27] Bäck and Johansson, 2000: 11-12. Norway is somewhat special since the municipal act of 1992 allows for a parliamentary system to be introduced. However, the parliamentary model has so far only been introduced in Oslo and Bergen (Bäck, Johansson and Larsen, 2000:50).

[28] The survey was opened with a short description of the quasi-parliamentary character of the local government system. Only a very small number of the respondents claimed that another type of system was used in their municipality. The survey was in most cases answered by the Chief Executive Officer (CEO) or a full-time politician.

"traditional" bloc coalitions, but there were also examples of coalitions that can be described as "unholy alliances" where the Left Party had joined the bourgeois parties, or where the two big parties, the Social Democrats and the Conservatives, had coalesced.

I will in the following analysis use unique elite survey data from an investigation conducted among councilors in a large sample of local authorities in Sweden. In the spring of 2000 a questionnaire was sent to approximately 2200 local councilors in 49 Swedish municipalities.[29] In the questionnaire the politicians were for example asked questions about which parties were included in the government that formed after the 1998 election, about the character of the negotiations in this government formation, and how they would place the parties in their municipality along a left-right dimension and along a green dimension of policy. Using these data we can test all of the hypotheses that are stated above, and I will now describe the operationalizations of all the variables used in the following analysis.

The first four hypotheses are all based on the assumption of pure office seeking actors, and these theories require only a minimum of information to be tested. Besides information on which parties are included in government, which I have discussed above, we need information on the distribution of seats among the parties in the parliament, or here, the local council. Information on the distribution of seats in the local council is easily obtained in the records published after every election by *Statistics Sweden*. Using these data we can determine which potential governments control a majority of the seats (H4)[30], which governments are minimal winning coalitions (H1) and minimum winning coalitions (H2). Recall that a minimal winning coalition is characterized by the fact that if any member leaves the coalition, the coalition ceases to control a majority of the seats in the legislature, and a minimum winning coalition is a minimal winning coalition that includes the members that gives the coalition the smallest total weight. By adding information on the number of parties in government we can also measure hypothesis 3 (minimal winning coalitions with the smallest number of parties).

To test the hypotheses drawn from the policy based coalition theories (H5-H9) we need information on the policy positions of the parties along a key policy dimension, which is often assumed to be the left-right dimension. In the survey referred to above the local politicians were asked to place the parties along a left-right scale. The party policy positions I will use to measure the variables in hypotheses five through nine are average scores for a party from the

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[29] More specifically, the survey was sent to all of the councilors in the 49 municipalities of Västra Götaland (2203 local councilors) and to almost all of the representatives in the new regional authority of Västra Götaland (a total of 2500 politicians). 1749 politicians answered the survey (70 percent), where 1524 were local councilors.

[30] Following Martin and Stevenson, (2001:41) minority governments will be coded as ones, instead of majority governments, since this makes the interpretations of the hypotheses H12 and H13 easier since these hypotheses involve system variables, such as volatility, interacted with "minority status".

responses to the question "can you, on the scale presented below state your view on how the parties in the local council place themselves on this [the left-right] dimension?".[31] Using this information we can determine which potential governments are minimal connected winning coalitions (H5), that is, coalitions that at a loss of a member would lose either their minimal winning status or their "connected-status". For a coalition to be connected, the parties included in it must be placed beside each other (see also H9). Minimal range coalitions are, as I mentioned earlier, minimal connected winning coalitions with the smallest policy range (H6). A coalition's policy range is the distance between the parties on the extremes in a coalition (see also H8). One more (traditional) policy hypothesis has to be operationalized, the median party-hypothesis (H7). The median party is the party that controls the median legislator, who is found by adding the seats of the parties from left to right and finding the median.

What type of information do we need to be able to test the hypotheses drawn from multidimensional coalition theory, that is, that potential governments including very strong or merely strong parties are more likely (H10, H11)? An important piece of information that is needed to test these hypotheses is according to Laver and Shepsle information on the *jurisdictional structure* of government decision-making. This type of information involves determining "the allocation of key policy dimensions to the jurisdiction of particular cabinet portfolios". To test the hypotheses we also need information on the *policy positions* of legislative parties on these key policy dimensions.[32]

To be able to find these types of material to use in the following analysis it is necessary to determine how applicable the portfolio allocation model is to Swedish local government. It is for example necessary to find the equivalent to a cabinet portfolio in local government. Laver, Rallins and Thrasher argue that the portfolio allocation model can be applied to British local government since the

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[31] There are several possible materials that can be used to measure party policy positions. For example Laver and Schofield (1998:248-249) argue that we can rely on expert judgements, roll call data, mass survey data, or on dimensional analysis of the content of policy documents. I argue in favor of using elite survey data to measure party politicians, since this is the closest we can come to obtaining the information used by party politicians when making decisions in the coalition game. Other authors argue in favor of performing content analysis on party policy programmes (Laver and Garry, 1999:2). One potential drawback with using the survey data presented here is that the data was collected after the coalitions formed. This is a problem, since actors might rationalize that parties that they have joined in a coalition are placed closer to their own party than they "really" are. Joining a coalition might of course also have the effect that the parties in it move closer to each other. Optimally we should use data on policy positions collected before the coalitions formed. It is of course possible to validate these data by for example analyzing election manifestos. This is not a very good option when studying local coalitions since all parties do not present a local election manifesto. Another possibility to validate these data on policy-positions is to study municipalities over time to see whether policy-positions are altered over time, and especially when new coalitions form (tests will be performed in a later stage of this research).

[32] Laver and Shepsle, 1996:91. We also need information on the *decisive structure* of the legislature, which is not problematic to obtain. This information is "generated by a set of legislative parties, their weights, and a decision rule." Laver and Shepsle take the decision rule to be majority voting.

chairs of key local authority committees can be seen as the functional equivalents of the national cabinet portfolios. In another paper I conclude that the Swedish local authorities are organized in a similar way as the British local authorities, and that it should be possible to apply the portfolio allocation model on coalition formation in *Swedish* local government (at least as well as applying it to coalition formation in *British* local government) (Laver, Rallings and Thrasher, 1998:333; Bäck, 2000:19-20).

In the same paper, I draw the conclusion that the left-right dimension is a key policy dimension, and I also conclude that in many of the local authorities more than one dimension of policy is needed to describe the policy space. This second key policy dimension in Swedish local authorities is mostly a green dimension of policy (Bäck, 2000:21). We also have to determine which committee chairs control these key policy dimensions. I assume that the executive committee can be seen as the functional equivalent of the finance department, and that the chair of the executive committee is the portfolio attached to the left-right dimension. Which committee chair to attach to the green dimension is not straightforward to determine and therefore I have tried different alternatives of committees that handle for example environmental issues and urban planning. To obtain party policy positions along a green dimension, I have asked the politicians in the survey to place the parties along a green policy dimension. All of this information is then used as input in a computer programme provided by Laver and Shepsle, to determine which parties are "very strong" parties and "merely strong" parties.[33]

How do we measure the remaining hypotheses (H12-H13)? Hypothesis twelve stated that potential governments controlling a minority of the seats are more likely to form the higher the volatility and the higher the localization. Following Pedersen, we can calculate the aggregate volatility in a system by studying the net change in votes between parties within the party system. I will study volatility by using the first formula (a) presented below. $P_{i(t)}$ stands for the percentage of the vote, which was obtained by party i at election t (here 1998), and $P_{i(t-1)}$ stands for the percentage of the vote at the previous election (here 1994). Adding the absolute changes for all parties gives us the "total net change", which is divided by two, giving us the aggregate volatility. The aggregate volatility can be calculated in all municipalities and can take on values between 0 and 100.[34]

a)

$$\frac{\sum_{i=1}^{n} \left| P_{i(t)} - P_{i(t-1)} \right|}{2}$$

b)

$$\frac{\sum_{i=1}^{n} \left| (LP_{i(t)} - LP_{i(t-1)}) - (NP_{i(t)} - NP_{i(t-1)}) \right|}{4}$$

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[33] The computer programme can be downloaded at http://homepage.tinet.ie/~doylep/Winset/ws_index.htm

[34] Pedersen, 1983:32-33 (2 equals the number of elections studied).

The localization variable can be measured in a similar way, which is illustrated in the second formula presented above (b). Following Denters and Downs, localization is considered as the extent to which changes in party voting shares between elections at the local arena deviate from the changes for the national counterpart between these elections. Greater nationalization is therefore indicated when the deviations are small, that is, when changes in local elections mirror those occurring in the national elections.[35] $LP_{i(t)}$ here stands for the local party's share of the vote at time t, and $LP_{i(t-1)}$ stands for the local party's share of the vote at the previous election, while NP stands for the national counterpart's share at the same points in time.[36]

Hypothesis thirteen states that potential minority governments are more likely, the higher the oppositional influence. I will measure oppositional influence with a survey question. The local councilors were asked to mark to what extent they agree with this statement about their municipality: "Parties in opposition often have a substantial influence on the shaping of policy".[37] In hypotheses 12-13, a system characteristic (for example volatility) interacts with a choice characteristic (minority government), which gives us a new choice-variable that is an interaction between these two variables (volatility * minority government). The original system variables only vary across municipalities, but when we interact these with the minority variable, we create variables that vary across the alternatives (within municipalities).

Results – explaining and predicting coalitions

Effects of traditional and "new" variables

Following Martin and Stevenson I will test the hypotheses stated above by using several models that include groups of related variables. By testing a model including one group of variables and then adding more variables in several steps, we can compare the effects of different types of variables (Martin and Stevenson, 2001:41). The hypotheses drawn from the office-based coalition

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[35] I have made some adjustments to the measure used by Downs (1998:156-157). Downs divides the numerator by the number of parties. The numerator is divided by 4 to give the measure a variation between 0 and 100 (4 equals the number of elections times 2).

[36] It may also be argued that we have to take local parties into account in a measure of localization. I believe that the existence of a local party in itself is an indicator of localization. I have therefore also tested an adjusted measure where the change in voting shares for local parties are included (giving it a change of zero at the national level). Using this measure instead of the original measure does not alter the results significantly. In the presented analysis the "adjusted" measure is used.

[37] The answers vary between "completely agree" = 4 to "completely disagree" = 1. One problem with this measure of oppositional influence is that the answers to the questions may be affected by the type of government already in place. Oppositional parties are likely to have more influence in local authorities governed by a minority cabinet, since the governing parties are often dependent on the support of some of opposing parties to make certain policy decisions. Another, associated problem with the survey question might also be that it is more a measure of the "actual power" rather than the "potential power" of opposition parties, which Strøm measures (1990:42-43).

theories (H1-H4) are all included in model 1 (*Office*) and the policy-based coalition theories (H5-H7[38]) are added in model 2 (*Policy*). The variables derived from multidimensional coalition theory (H10, H11) are added in model 3 (*Multiple dimensions*), and the variables drawn from theories on multiple goals and institutions (H12, H13) are added in model 4 (*Votes and Institutions*). In the following tables I will present the unstandardized conditional logit coefficients, which tell us if a variable increases or decreases the likelihood of the potential governments to form. I will also present if these effects are statistically significant, and the standard errors.[39]

The results of testing the models including traditional variables, that is, the office- and policy-variables are presented in table 2. The results of testing model 1 indicate that the minimal winning-variable, the variable drawn from the bargaining proposition theory and the minority government-variable all have significant effects in the hypothesized direction, while the effect of Riker's minimum winning-variable is not significant.[40] The most important result here

[38] I have excluded two policy-variables (H8 and H9), primarily since I cannot include too many independent variables since I am working with a relatively small sample-size. I have chosen these variables since they are features already included in the traditional coalition theories. These variables can be used if we want to create an alternative coalition model (see below).

[39] Martin and Stevenson (2001:41). As I mention above, the conditional logit model is nonlinear, which means that the unstandardized conditional logit coefficients cannot be directly interpreted as "what happens with the probability that a potential coalition is chosen when we alter a choice-specific variable", which we are ultimately interested in. When presenting results from conditional logit analysis, Alvarez and Nagler (1998:69) suggest an approach that involves changing a choice-specific variable of interest and then estimating the new predicted probabilities for each individual and then aggregating over all individuals to measure the total impact of the change on the probability that individuals make a particular choice. This is not really a possibility since we are in this application dealing with a very large number of choices. The results can be transformed into odds ratios by taking the antilogarithm of the coefficient estimate (e-). This is, according to Liao (1994:13), the easiest and most useful way of interpreting logit models. The odds ratio describes the effect of a unit change in a variable on the odds of an individual making a particular choice. An odds ratio greater than 1 indicates an increased chance of a potential government being chosen, while an odds ratio smaller than 1 indicates a decreased chance of its formation. Since I am not sure that these odds ratios will make the interpretations easier they will only be presented in footnotes.

[40] Including these office-variables in the same model means that we might expect problems with collinearity, since H2 and H3 predict different subgroups of the coalitions that are predicted by H1. None of the tests that I have performed indicate that this is a problem in this model (by using fixed-effects regression). Since we might expect problems with collinearity, I have also used another operationalization of H2 and H3. Instead of the minimum winning-variable (H2) I have used a measure of "parliamentary basis" (share of seats) of a potential government, and instead of Leiserson's bargaining proposition (H3) I have used a measure of the "number of parties" included in a potential government. Using these variables gives us somewhat different results if we compare the effects within model 1, that is, when we compare the performance of the office-theories. The number of parties-variable does not have a significant effect when we control for the other office-variables, while the parliamentary basis-variable does have a significant effect in this altered office-model. To get closer to Riker's and Leiserson's predictions we can create an interaction term between parliamentary basis and the minimal winning-variable (= Riker), and an interaction term between number of parties and the minimal winning-variable (= Leiserson). Using these variables, the results are similar to the results presented in table 2, that is Leiserson's theory performs better than Riker's minimum winning theory (the effect of "number of parties * minimal" is significant).

is of course whether these effects remain strong after controlling for other coalition variables. Except from the minority-variable, the effects of the office-variables, all turn insignificant when we control for the traditional policy-variables, that is, in model 2. By studying the results from testing model 2 presented in Table 2, we can see that the effect of the minimal range-variable is highly significant and positive as expected. The fact that a potential government is a minimal range coalition significantly increases the likelihood of its formation. As you may recall, the minimal range coalition is the minimal connected winning coalition with the smallest policy-range. The minimal connected winning-variable (MCW) therefore has a somewhat larger prediction-set (lower precision) which gives it a smaller effect in this analysis. The effect of the MCW-variable is however still positive as expected and significant at 90 percent level of confidence, after controlling for the other traditional variables. The third policy-variable, the median party-variable is positive as expected, but not statistically significant, indicating that this pure policy-based theory does not add much to the policy-based theories that take an office-goal into account, that is, Axelrod's minimal connected winning theory and De Swaan's minimal range theory. The effect of the minority-variable is somewhat smaller when controlling for these policy-variables, but it is still significant. By studying the Pseudo-R^2's for model 1 and 2, we can also see that adding policy-variables improves the model substantially (from 0.12 to 0.40).[41]

The conclusions that can be drawn from comparing different types of models (1-4) do not change significantly when we use this alternative specification of model 1.

[41] The Pseudo R^2 presented throughout the text is calculated as $1-LL_1/LL_0$, where LL_1 and LL_0 are the logaritmized likelihood-value for the estimated model and for the so-called, "null-model", with only the constant included (also called McFadden's R^2), see Teorell and Westholm, 1999:189; Hagle and Mitchell, 1992.

Table 2: Conditional logit analysis of the effects of traditional variables[42]

Independent variables	Model 1 (OFFICE)		Model 2 (POLICY)	
	Coef.	Std.err.	Coef.	Std.err.
(H1) Minimal winning coalition	**1.02****	0.45	-0.06	0.59
(H2) Minimum winning coalition	**0.56**	0.46	0.50	0.60
(H3) Minimal winning coalition with smallest nr. of parties	**0.86***	0.50	0.62	0.66
(H4) Minority government	**-1.69*****	0.49	-1.02*	0.53
(H5) Minimal connected winning coalition	-	-	**1.39***	0.79
(H6) Minimal range coalition	-	-	**2.91*****	0.74
(H7) Coalition including the median party	-	-	**0.63**	0.44
LR Chi²	61.32		193.29	
Pseudo R²	0.13		0.40	
Average p-value for rejecting IIA[43]	0.73		0.87	

Significant at * 90% level of confidence, ** 95% level of confidence, *** 99% level of confidence, N=8399

All together, a basic idea of majority status, the traditional minimal range theory and minimal connected winning theory significantly increase our understanding of coalition formation in Swedish local government. This indicates that traditional variables, such as size and policy are important, and that the parties take both office- and policy-goals into consideration when choosing coalition partners, since they seem to aim at majority status, connectedness and at minimizing the policy-range in the coalition.

Let us now turn to studying the effects of the "new" variables, the variables derived from multidimensional coalition theory, and coalition theories incorporating ideas on institutions and vote-seeking. The results of testing these models are presented in Table 3. When we add the variables derived from multidimensional coalition theory, the very strong and merely strong party-variables, the effects of the traditional variables are not altered much. The effects of the minimal range-variable, the minimal connected-variable and the minority-variable are still significant. The multidimensional variables do not seem to add much to our understanding of coalition formation in Swedish local government since neither of the effects of these variables is significant when we control for the traditional variables. This could mean that the portfolio allocation model is not properly specified, but it could of course also mean that we do not need to consider multiple dimensions when we try to explain coalition formation in

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[42] The odds ratios for model 1 are: 2.77 (minimal winning), 1.75 (minimum winning), 2.36 (minimal winning coalition with smallest number of parties), 0.18 (minority government). The odds ratios for model 2 are: 0.94 (minimal winning), 1.65 (minimum winning), 1.86 (minimal winning coalition with smallest number of parties), 0.36 (minority government), 4.01 (minimal connected winning), 18.36 (minimal range), 1.88 (median party).

[43] An average p-value < 0.05 indicates that we can reject the IIA assumption (Martin and Stevenson, 2001:39, 42). In neither of the models tested here the average p-value obtained over 50 replications (where a random 10% of the alternatives is dropped) is lower than 0.05. This means that we could perhaps draw the conclusion that the IIA assumption is not problematic in this application. The results do however indicate that when some samples are dropped, the IIA assumption is rejected.

Swedish local government, or that this model is not applicable to local coalition formation.[44]

In model 4 I add the variables drawn from coalition theories incorporating vote-seeking as a party goal, that is, the hypotheses that minority governments are more likely the higher the volatility and the higher the localization. Minority governments do not seem to be more likely the higher the volatility since the interaction term constructed by taking the product of minority and volatility is not significant (and negative) when we control for the other variables. The other vote-seeking variable, localization does however seem to be of some importance, since the effect of the interaction term created by multiplying this variable with the minority government-variable is significant. This means that potential minority governments seem to be more likely the more localized the elections are in a municipality. This indicates that party leaders in municipalities with localized elections are less inclined to choose to join a government coalition since they fear to lose votes in the next election. In model 4 I also add the institutional variable drawn from Strøm's theory on minority governments, that is, the interaction term "minority government * oppositional influence". The effect of this variable is positive (as expected) and significant at 95 percent level of confidence, indicating that potential minority governments are more likely, the higher the oppositional influence in a municipality.

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[44] It could also indicate that a green policy dimension is not a second key policy dimension.

Table 3: Conditional logit analysis of the effects of "new" variables[45]

Independent variables	Model 3 (MULTIPLE DIMENSIONS)		Model 4 (VOTES & INSTITUTIONS)	
	Coef	Std.err.	Coef	Std.err.
(H1) Minimal winning coalition	-0.06	0.59	-0.10	0.60
(H2) Minimum winning coalition	0.51	0.60	0.68	0.61
(H3) Minimal winning coalition w. smallest nr. of parties	0.63	0.68	0.61	0.68
(H4) Minority government	-1.04*	0.53	-18.13*[46]	10.82
(H5) Minimal connected winning coalition	1.38*	0.80	1.36*	0.80
(H6) Minimal range coalition	2.89***	0.74	2.92***	0.75
(H7) Government including the median party	0.52	0.55	0.49	0.56
(H10) Government including very strong party	-0.17	1.38	-1.03	1.62
(H11) Government including merely strong party	0.44	0.89	0.61	0.91
(H12a) Minority government * volatility	-	-	-0.20	0.20
(H12b) Minority government * localization	-	-	0.59*	0.36
(H13) Minority government * oppositional influence	-	-	6.87**	3.51
LR Chi^2	193.61		206.57	
Pseudo R^2	0.40		0.42	
Average p-value for rejecting IIA	0.91		0.99	

Significant at * 90% level of confidence, ** 95% level of confidence, *** 99% level of confidence, N=8399

By studying the results presented above we can also try to create an alternative model, which uses the traditional and new variables optimally. These results indicate that office-, policy-goals and institutional characteristics are important to take into consideration if we want to explain and predict coalitions in Swedish local government, and in an alternative model we can use the more general office- and policy-variables presented in the theoretical section of this paper. I will in this model include variables specifying if a potential government is a majority or minority government (H4)[47], if it is connected (H8) and how large its policy-range is (H9). The analysis presented above indicated that both connectedness and policy-range are important variables to include in a coalition model. In this model I will also include the institutional variable tested here, that is, the interaction between minority government and oppositional influence (H13). The results with these variables included in the model are presented in Table 4.

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[45] The odds ratios for model 3 are: 0.94 (H1), 1.67 (H2), 1.88 (H3), 0.35 (H4), 3.98 (H5), 17.99 (H6), 1.68 (H7), 0.84 (H10), 1.55 (H11). For model 4: 0.90 (H1), 1.97 (H2), 1.84 (H3), 1.34*10^{-8} (H4), 3.88 (H5), 18.50 (H6), 1.62 (H7), 0.36 (H10), 1.83 (H11), 0.82 (H12a), 1.81 (H12b), 967.02 (H13).

[46] When we include the interaction terms in the model, the minority variable turns very small. It is not clear why this happens, but it could be explained by a lack of variation left in this variable when we control for the interaction variables. If we do not include the minority-variable in the model, the coefficients for the interaction terms would be very hard to interpret.

[47] Including the minimal winning variable does not improve the model. Including the minimal winning variable in this model does not alter the effects of the other variables much and the effect of this variable is negative (not as expected) and not statistically significant (coefficient: -0.19, Standard error: 0.41). This means that we can conclude that parties seem to aim at majority status, but not minimal winning status, again indicating that the traditional office-theories do not add much to our understanding of coalition formation.

Table 4: Conditional logit analysis of an alternative coalition model[48]

Independent variables	Alternative model	
	Coef.	Std.err
(H4) Minority government	-20.80***	7.06
(H8) Connected government	1.45***	0.44
(H9) Policy-range	-1.25***	0.16
(H13) Minority government * oppositional influence	5.74**	2.78
LR Chi^2	267.07	
Pseudo R^2	0.55	
Average p-value for rejecting IIA	0.87	

Significant at * 90% level of confidence, ** 95% level of confidence, *** 99% level of confidence, N=8399

All of the effects are of hypothesized signs, that is, a potential government is more likely to form if it is a majority government, if it is connected, and the smaller its policy-range, and a potential minority government is more likely to form the higher the oppositional influence (when we control for the other variables). All of the effects are significant at 95 or 99 percent level of confidence. The Pseudo-R^2 in this model is also much higher than the best of the other four models presented above (0.55 compared to 0.42). Let us now turn to comparing the models' predictive performance.

The coalition theories' predictive performance

Since the aim of most coalition theories is to efficiently predict coalitions, it is important to compare the theories' predictive performance, that is, to perform a "comparison of predictions". I will in this section compare the predictive performance of the four models derived from traditional and "new" coalition theories, and the alternative model presented above. As I state above I will assess the predictive performance by generating predicted probabilities from these five models, and predicting that the potential government with the highest probability will form, and then comparing these predictions with the governments that actually did form in each formation opportunity (Martin and Stevenson, 2001:47).

Model 1, the model including variables drawn from pure office-seeking coalition theory, gives a rather weak performance, predicting the potential government that did actually form in 8 percent of the cases (4 out of 49). This model predicts that potential governments including the Social Democrats and the Conservatives are most likely to form in 28 of the municipalities studied here.[49] This coalition is unusual in Swedish politics, which is often explained by

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[48] The odds ratios for this model are: 9.31*10^{-10} (minority government), 4.27 (connected government), 0.29 (policy-range), 312.36 (minority government * oppositional influence).

[49] In 20 of the 49 municipalities model 1 gives us more than one potential government with the highest predicted probability (multiple equilibria predictions). The other models tested here gives us (the preferred) point predictions in 48 of the 49 municipalities.

the fact that these parties place themselves at the opposite sides of the left-right scale, and incorporating this idea means that we have to take policy concerns into account.

The idea that policy concerns has to be included is further supported by the fact that model 2, the model that includes variables drawn from traditional coalition theory that takes policy into account, gives us an impressing performance. The potential governments predicted most likely to form by this policy-model go on to form 51 percent of the time. Model 2 makes correct predictions in 25 of the 49 municipalities, which means that adding traditional policy variables, such as the minimal range and the minimal connected winning variables increases the prediction rate by over 40 percent. The most frequent potential government, predicted 9 times by this model is a coalition between the bourgeois parties, that is, the Centre, the Liberals, the Christian Democrats and the Conservative Party.

Adding the variables drawn from multidimensional coalition theory (model 3), the variables drawn "vote-seeking" and institutional theories (model 4) does not alter the predictions. These models predict the same potential governments as model 2, which means that these variables do not add much to our ability to predict coalitions in Swedish local government. As you may recall, some variables in the "votes-institutions" model were however significant, for example the variable predicting that minority governments are more likely in systems with a high level of oppositional influence. This indicates that some of the variables that do not increase our ability to predict coalitions do in fact add to our understanding of coalition formation in Swedish local government. This also confirms the suspicion that this measure of the models' "predictive performance" is a rather crude measure, and that we should not only rely on this measure to determine which theory is "superior". The alternative model, specified by using some of the variables drawn from traditional and new coalition theory, also predicts the same potential governments as the traditional policy-model (model 2). This means that connectedness, policy-range, majority-status and oppositional influence are important variables if we want to predict coalition formation in Swedish local government. The advantage this model has over model 2 is that it is more parsimonious since it uses a smaller number of variables to predict the same coalitions.

Let us compare these results with the results obtained by Martin and Stevenson when testing "traditional" and "new" models using this methodological framework on national-level data. In Martin and Stevenson's investigation, traditional variables give a much weaker performance, predicting the correct potential governments only 11 percent of the time. Adding variables drawn from Laver and Shepsle's portfolio allocation model do in their case add to the model's predictive performance. They also include a number of institutional variables, which also seem to increase the predictive performance, giving them a "best" model that predicts the correct potential government 43 percent of the time. This indicates that understanding coalition formation in Swedish local government is not "the same as" understanding coalition

formation at national level in several Western European countries. It does however also indicate that the same type of variables, such as size, policy and institutional variables, can explain coalition formation in different countries, and at different levels of government.

As I describe above, the "best" models presented here predict the correct coalition over 50 percent of the time, but is a prediction rate of over 50 percent a high predictive performance? In most systems hundreds of coalitions could potentially form, and the best model specified here make point predictions in almost all cases, which means that the model finds the potential government that did form often by excluding 126 other potential governments. This means that the model's predictive performance is rather impressive. Martin and Stevenson conclude that using this statistical framework for testing coalition models is much more fruitful than previous coalition studies, where models mostly do not receive an efficiency level higher than 25 percent (Martin and Stevenson, 2001:47-48). My results further support Martin and Stevenson's conclusion that this methodological framework is a useful tool in our attempts at explaining and predicting coalitions.

There are however reasons to modify this tool slightly, since this measure does not take the number of potential governments in a system into account. The number of potential governments vary across systems, for example in the municipalities studies here the number of parties vary between 6 and 9, which means that the number of potential governments varies between 63 and 511. In a study where we include a number of different national systems, we might expect an even greater variation in the number of potential governments. This means that we should account for this when determining the theories' predictive performance, since a theory that finds the government that actually formed among over 500 potential governments performs "better" than a theory finding this coalition among 63 potential governments. By using a prediction rate weighted by the number of potential governments in a system we can account for this variation in potential governments. This gives the office-model (model 1) a prediction rate of 8 percent (636/8399) and the other models a prediction rate of 49 percent (4071/8399), that is, the results are not altered much. This means that we can still draw the conclusion that the best models tested here give a rather impressive performance.

Conclusions

I have in this paper used a new methodological framework to test coalition theories on data on local coalition formation, and by using this framework I have compared the predictive performance of these theories. The conclusions that can be drawn from this exercise is that in coalition bargaining parties seem to aim at forming a coalition with majority status, with parties "connected" along a left-right dimension, and with a minimal policy-range between the parties in the coalition. I believe that this indicates that coalition theories should be based on

an assumption that parties obtain their expected utility from satisfying multiple goals, such as an office-goal, a policy-goal and a vote-seeking goal.

Parties seem to aim at majority status, which would not necessarily be an important goal if parties were pure policy-seekers, since government participation is not a necessary condition for policy payoffs, and this result supports the idea that parties are interested in satisfying an office-goal. Parties may of course also aim at majority status since this type of government is an efficient means to influencing policy. In the early 1970s, De Swaan argued that parties evaluate coalitions on how close they expect the future government policy programme to be to their own ideal position and therefore try to choose the coalition with minimal policy-range. The importance of the policy-range variable in the analysis could be explained by an intrinsic or an instrumental policy goal, that is, parties may choose a partner that is ideologically close to their own to be able to implement the party's policy programme, but they may also choose this partner to decrease the possibility of being punished by the voters in the next election. The analysis also indicates that minority governments are more likely in systems with the institutional characteristic, high oppositional influence. This indicates that parties are policy-seekers, since parties seem to be content to stay out of government in systems where they have an opportunity to influence policy in the opposition.

The results also indicate that parties aim at forming a connected coalition, that is, a government with parties that are adjacent to each other along a policy dimension. Why do parties aim at connectedness? Some authors would argue that if parties are both office- and policy-seeking, then a "dummy" party (a party not necessary to obtain majority status) should always be excluded since it contributes nothing to the policy payoffs, and adds to the overall demand for office payoffs (Laver and Schofield, 1998:98-99). There might be other reasons for including these parties, for example the fact that if parties in a coalition exclude a party, only because it is not necessary for obtaining majority status, they could lose credibility and also lose votes in the next election. Some of the more recent coalition theories tested in this paper were not supported in this analysis, for example the hypotheses drawn from Laver and Shepsle's portfolio allocation model.

All together, the analysis shows that traditional variables, such as size and policy, perform rather well when it comes to explaining and predicting coalitions in Swedish local government. A model including these traditional variables made it possible to predict about half of the coalitions that formed in the municipalities studied here. If we want to further increase our ability to predict coalitions and increase our understanding of coalition formation, we will however probably have to look elsewhere. The results presented here indicate that finding important institutional characteristics and variables that take vote-seeking into consideration is perhaps the solution, and this implies that our aim should be to construct a model which optimally takes these multiple goals and institutions into account. To further increase our ability to predict coalitions we could also take into account how incumbency, and past coalitional agreements

might affect coalition formation. It is also possible that our prediction ability could be improved by taking into consideration that parties are not unitary actors, for example by testing hypotheses on how intra party democracy, and the goal of internal cohesion affects coalition bargaining.

The results presented here supported the idea that modeling government formation as a discrete choice model where actors choose between potential governments, and that using conditional logit to analyze these data is fruitful. Comparing the results obtained in this analysis using data on local coalition formation with analyses performed on national level data indicated that understanding coalition formation at the local level is not "the same" as understanding national coalition formation. The results did however indicate that the same type of variables, such as size, policy, and institutional variables, could be used to predict coalitions at both levels of government, indicating that the study of local government coalitions can increase our understanding of coalition formation in general. Further development of the new methodological approach used here and further studies of these new data on local coalitions should therefore increase our possibility to explain and predict coalition formation.

Appendix

Data structure and conditional logit

This appendix should be seen as a complement to the "A new methodological framework..." section in this paper. For further review of the conditional logit model see for example Greene's *Econometric Analysis* and Long's *Regression Models for Categorical and Limited Dependent Variables*. I will in this appendix give a short description of the structure of the data studied here, and the conditional logit model.

     Since we are here dealing with data with a discrete dependent variable and we are analyzing a variance within actors, I use the conditional logit model to analyze these data on coalition formation. Let us study how the data are structured to better understand this model. Let us study a simple example, a data set consisting of two municipalities, both with three parties represented in the local council. In these three-party systems there are seven potential governments. Let us for simplicity also assume that parties A, B and C are of equal weight. Using these data on the distribution of seats we can for example measure a minimal winning-variable and a minority-variable. Let us also add information on the volatility in the municipalities. Let us assume that municipality 1 has a volatility of 0.10 and municipality 2 has a volatility of 0.30. One of the hypotheses described above is that minority governments are more likely, the higher the volatility in a system. This hypothesis can be tested by creating an interaction term, by taking the product of the volatility- and the minority-variable. Let us also assume that in municipality 1 a coalition between party A and party B was chosen and in municipality 2, party A was chosen to govern on its own. These data are described in Table 5.

Table 5: An example describing the structure of the data

Potential government	Municipality	Minimal winning	Minority government	Volatility	Volatility * minority	Government chosen
A	1	0	1	0.10	0.10	0
B	1	0	1	0.10	0.10	0
C	1	0	1	0.10	0.10	0
AB	1	1	0	0.10	0	1
BC	1	1	0	0.10	0	0
AC	1	1	0	0.10	0	0
ABC	1	0	0	0.10	0	0
A	2	0	1	0.30	0.30	1
B	2	0	1	0.30	0.30	0
C	2	0	1	0.30	0.30	0
AB	2	1	0	0.30	0	0
BC	2	1	0	0.30	0	0
AC	2	1	0	0.30	0	0
ABC	2	0	0	0.30	0	0

As we can see, there are seven observations corresponding to the seven choices, or potential governments in each municipality. Only one of these potential

governments was actually installed in each municipality. This potential government is indicated as a "one" in the column "government chosen". We can also see that volatility only varies between municipalities, but when we create the interaction between volatility and minority government, we also receive a variation within municipalities. This means that what value a potential government receives on this variable depends both on which municipality it is, and which choice it is (if it is an AB-coalition, an AC-coalition and so on). This gives us a data structure where all of the variables used in the analysis vary across alternatives (the potential governments).

As I describe above, when we are dealing with discrete dependent variables, the logit model is more appropriate than linear regression. When we are dealing with a dichotomous dependent variable we can use binary logit, and when we are dealing with a "polychotomous" dependent variable, which consists of an unordered or discrete choice, we can use conditional logit. In conditional logit, the probability that individual i (here: municipality) chooses alternative j (here: a specific potential government) is:

$$\text{Prob}(Y_i = j) = \frac{e^{\beta z_{ij}}}{\sum_{j=1}^{J} e^{\beta z_{ij}}}$$

where $j = 1, 2, ..., J$ for a total of J alternatives (Greene, 2000:862). Note that in the conditional logit model, the z variables have two subscripts (ij), which indicates that the variables measure the characteristics of choice j relative to individual i. Alvarez and Nagler describe the conditional logit model as a fundamentally different model specification than binary logit (or multinomial logit) since conditional logit allows for an individual's utility of a choice to be based upon the characteristics of the choice.[50]
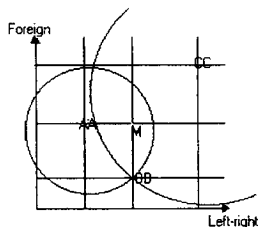
Very strong and merely strong parties

The idea of "strong" parties is best described in a hypothetical example. Let us continue using the example illustrated above with the equally weighted parties A, B and C (see section on "Multidimensional coalition theory"). The indifference curves now illustrate how party A and party C feel about the cabinet where party B takes both the finance portfolio and the foreign policy portfolio. The only cabinet that is majority-preferred to this cabinet (BB) is the cabinet taking the policy position M, the DDM-point, that is, a cabinet where B gets the finance portfolio and A gets the foreign policy portfolio. Party B is a "strong" party since it participates in the only cabinet that is preferred by a majority to the

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[50] Alvarez and Nagler, 1998:66. For further discussion on the probability equation in the conditional logit model, see for example Greene (2000:858), Liao (1994:60) or Long (1997:179).

cabinet where B takes both portfolios. Party B may use its veto power to try to get control over both portfolios, that is, to implement policy position BB.

Figure 2: Illustration of a strong party

Laver and Shepsle differentiate between "very strong" parties and "merely strong" parties. If a strong party has an ideal point that has an empty winset, it must, according to Laver and Shepsle, be the generalized median, the DDM-government. Laver and Shepsle call this party a "very strong" party. This party can take hold of all cabinet portfolios. A party may have an ideal point with a nonempty winset, but still be strong since the party participates in every cabinet in its winset. This party is called a "merely strong" party (Laver and Shepsle, 1996:70). In the example above, party B is a merely strong party.

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