

Categorizing the diverse assumptions of recent office and policy motivation theories on coalition building*

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(January 2012)

JEL classification code: D72; C70

Abstract

Recent coalition theories assume parties being both office and policy motivated and thus use utility functions that combine both motivations. Although such utility functions may be adequate in general, a discussion on the theories' assumptions in detail is lacking by now. This discussion is necessary, since minor formal changes lead to substantially varying results and reflect a completely different understanding of what is going on in coalition bargaining processes. In order to close this gap, we systematically discuss implications of the most crucial assumptions and categorize recent coalition theories according to their major differences.

Keywords

coalition theory ▪ office and policy motivation ▪ institutions ▪ EITM

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* This contribution has been written in the context of the research project 'Government Formation as an Optimal Combination of the Office- and Policy-Motivation of Parties'. We thank the German Research Foundation (DFG) for its financial support. Furthermore, we are grateful to all members of the DVPW study group 'decision theory,' especially to Joachim Behnke, Thomas Bräuninger, Dirk Junge, and Susumu Shikano, as well as Wolfgang C. Müller for helpful comments on a former version of this paper.

1. Introduction

In many social sciences, scientific knowledge is extended by developing theoretical models and testing them empirically. We can roughly differentiate between empirical applications, in which one single model is tested, and those which compare two or more (concurring) theories. Analyses with regard to one model often deduce hypotheses from the model and test them empirically in order to confirm – or confute – the general usefulness of the model. There is a dispute on whether or not it is necessary that models reflect the empirical world. Whereas some authors argue that models should do in order to reproduce reality, others take the view that it is sufficient when the results are the same *as if* actors would follow the theory (Friedman 1953).

In general, this question is open, too, for analyses which compare two or more theories empirically. If, however, this comparison's aim is to learn about what is going on in reality, we are on the standpoint that model assumptions need to be as realistic as possible. If a theory T_1 is better able to explain bargaining results than another theory T_2 , then probably T_1 's underlying assumptions better reflect reality. If T_2 's explanatory power is higher than T_1 's, actors probably rather behave like T_2 's assumptions suggest.

Such a learning process, however, is not possible, if T_1 and T_2 differ on too many assumptions. We then do not know at the end which assumptions cause the higher quality of T_1 or T_2 , which are negligible, and which might even run counter to the better theory's excellence. From a comparativist's view, one could propound a most similar cases design in which all assumptions of T_1 and T_2 but one are the same. Then, the superiority of T_1 or T_2 can clearly be explained by this single assumption, and we learn something about reality.

On the other side, different erroneous assumptions within one theory could even compensate for each other. An example from coalition theory may help to underscore that point. In the German three-party system, between 1961 and 1975 the strongest and the smallest party formed a coalition after three out of four elections. This was the case in 1961, 1965 and 1972 (Linhart 2009: 184-186). One could interpret that result as corroborating Austen-Smith's and Banks' (1988) theory of coalition building for that time period in Germany, which comes to exactly this result. Thus, it would be plausible that the theory's assumptions were appropriate, and we learn for Germany that, according to Austen-Smith's and Banks' approach, during this period, formateurs play an outstanding role, that the largest party is usually chosen as formateur, and that coalition parties share cabinet posts 50-50. In fact, all that is wrong. Formateurs are unknown to the German constitution¹, but coalition building processes were always characterized by freestyle bargaining (Bäck and Dumont 2008: 355). Gamson's Law unambiguously holds for Germany, in contrast to bargaining power models that predict an equal share of offices (Linhart, Pappi, and Schmitt 2008).

In political science models, embedding behavior into institutions is of special relevance. Thus bargaining among parliamentary parties about the next coalition

¹ This was a purposeful decision after WWII in contrast to the Weimar Constitution, which granted the discretionary right to appoint a formateur to the *Reichspräsident*.

government depends not only on agreement between parties' policy goals but also on institutional rules like the necessity to win a majority in a formal investiture vote or the rights of a formateur assigned more or less discretionarily by a head of state. We will focus on those institutional assumptions of coalition models which refer to the central bargaining mechanism including, of course, more institution free models and model implications for the type of parliamentary decision making following government investiture.

If one agrees, that it is one important goal to learn something about the real world by comparatively testing theories, it is necessary to intensively discuss the theories' assumptions. When we stay in the field of coalition theories, the status quo is as follows. We see three categories of coalition theories, roughly evolving one after the other. A first generation assumes parties as purely office seeking. This first generation of coalition theories evolved with Von Neumann and Morgenstern's (1947) work. Further well-known contributions are by Gamson (1961), Riker (1962), Leiserson (1968) and Peleg (1981). A second generation of theories originated between the 1970s and the 1990s with the contributions of DeSwaan (1973), Van Roozendaal (1992), Schofield (1996), Austen-Smith (1996), Laver and Shepsle (1996), and Van Deemen (1997). These theories model parties as purely policy seeking. Since empirical work confirms that parties are driven both by offices and policy (cf. Martin and Stevenson 2001; Bäck and Dumont 2007; Debus 2008; Shikano and Linhart 2010), a third generation consequently considers both motivations. This third generation of theories originated with the contributions of Austen-Smith and Banks (1988), Sened (1995, 1996), Morelli (1999), Baron and Diermeier (2001), Diermeier (2006), Schofield and Sened (2006) and Bandyopadhyay and Oak (2008).²

The theories of the first and second generation have sufficiently been reviewed, for example in the book of Laver and Schofield (1990). An analogous discussion of the third generation models is lacking by now, although these models have become standard in coalition research. Despite the models' significance and the above described high relevancy of a careful discussion of model assumptions, it seems to us that the assumptions were in many cases chosen in order to derive analytical solutions rather than as a result of a careful discussion of their adequateness. Authors present them in a way as if a common agreement existed on them³ (see critique of Laver, de Marchi, and Mutlu 2011). Beyond, we find empirical applications which obviously are in contrast to institutional arrangements, when

² Axelrod's (1970) theory of minimal connected winning coalitions detected very early that offices as well as policies matter. However, his approach is restricted to one policy dimension only, which is generally believed to be inappropriate for most political systems (cf. Laver and Hunt 1992), and it is not of the form $o+p$ (see section 2). Thus, it will not be discussed in our paper.

³ The plurality of different assumptions shows that this is not the case. The unwillingness to question the appropriateness of the assumptions can already be seen by the way they are introduced in many theories. For example: "There are two key assumptions [...]. Second, we assume that government formateurs are selected in proportion to their seat shares." (Baron and Diermeier 2001: 935.) There is no debate whether this assumption makes sense. The only justification for this assumption is of technical nature: "Adding the second assumption permits us to generate a unique strong Nash electoral equilibrium outcome for every status quo." (Baron and Diermeier 2001: 935.)

formateur models are developed for countries such as Germany (Baron and Diermeier 2001), where formateurs are unknown (Saalfeld 2000), and theories without formateurs are applied to Italy (Giannetti and Sened 2004), where formateurs do play a role (Verzichelli and Cotta 2000). An appropriate coalition theory, however, must consider institutional arrangements (Diermeier, Eraslan, and Merlo 2007), as well as informal norms and rules that are important for coalition bargaining processes.

To be fair, we have to note that authors generally are aware that their models are too specialized to be adequate for any coalition bargaining process in any institutional setting. Diermeier and Merlo (2000: 64), for example, state, “Obviously, our model is too stylized to explain cross-country differences in government formation and stability.” Furthermore, it is clear that one central aim of the models is to reduce complexity and to simplify. A simple, economical model is better than a detailed one when both are able to explain the empirical world to an equal degree. Consequently, a *general* model *cannot* allow for any possible institutional setting; it is unavoidable that cross-country studies with different cases cannot cope with every institutional detail. This is not our point. We argue that a careful discussion of the models’ assumptions must generally take place for the above mentioned reasons. This has not been the case for third generation coalition theories by now. It is our aim to close this gap by discussing the assumptions of recent coalition theories.

Therefore, the paper is structured as follows. In section 2 we first give an overview of the third generation theories and their refinements. We then discuss the theories’ most crucial assumptions in comparison and point out implications (section 3). In this section, we discuss theoretical implications of the assumptions, as well as the adequateness in relation to certain institutional rules and informal norms. This is not to evaluate single assumptions in a normative sense or to say that one assumption is better than another. The aim is to show which false conclusions can arise when uncritically using theories with wrong assumptions. Section 4 summarizes the results and categorizes the theories. We conclude with a summary of our discussion results and some perspectives for further research.

Some readers might think that it might be eligible to directly test the various assumptions empirically. However, in a single paper there is either space for a careful theoretical discussion or an empirical application. In contrast to empirical applications, the theoretical discussing is lacking by now. We thus decided to focus on the theoretical aspects.

2. An overview of the third generation of coalition theories

Recent office and policy motivation theories (o+p theories) on coalition building formalize political parties’ combined utility functions, taking simultaneous account of both motivations and embedding them into coalition formation games.

According to these third generation theories, each party p is able to evaluate each coalition C with respect to the offices that p gains in C , $u_p^{off}(C)$, and with respect to the policy that C is expected to realize, $u_p^{pol}(C)$. By now, in all modern coalition theories, both components are combined in an additive way so that the overall utility for party p equals

$$(1) \quad u_p(C) = u_p^{off}(C) + u_p^{pol}(C).$$

We thus shortly refer to these theories as o+p theories. Some authors include party- or system-specific parameters for weighting the two components. Sened (1995, 1996), for example, allows for party specific parameters α_p and β_p , which weight a party p 's focus on offices or policies, respectively. The fact that, on the whole, all modern o+p theories apply the same utility function could lead to the impression that the various models differ in marginal details only, if at all. In fact, just the opposite is right. The various theories are based on different assumptions with highly relevant implications for coalition formation games. The utility functions in the various models differ with regard to mainly three points. First, some theories restrain the quantitative distribution of offices among the coalition parties; others give leeway. Second, possible policy outcomes (or compromises by coalition parties) are restricted to certain points in some theories, or parties can be assumed to bargain freely on policy compromises in others. Third, the theories diverge in how the utility of opposition parties is estimated. A fourth, more general point concerns the coalition formation game, in which the utility functions are embedded. Some o+p theories allow for free bargaining (Sened 1995, 1996; Schofield and Sened 2006), while others include formateur games (all other above cited approaches).

These seemingly minor variations reflect a substantively different point of view on parties' motives and behavior during coalition bargaining processes. Needless to say, minor formal changes might also strongly determine the models' results. Some o+p theories are, for example, able to explain minority or surplus governments (Bandyopadhyay and Oak 2008), while others are not (Austen-Smith and Banks 1988). In the following subsections, we discuss the o+p theories in detail. Since it is not our aim to give a general overview on the current status of coalition theories, we will neither discuss first and second generation theories nor newer contributions to coalition theory, such as Jackson and Moselle (2002), Fréchette, Kagel, and Morelli (2005), or Volden and Wiseman (2007), beyond these o+p models. Furthermore, we abstain from reviewing publications that give such an overview (Bandyopadhyay and Chatterjee 2006, Humphreys 2008). Predominantly empirical applications, for example Giannetti and Sened 2004 or Shikano and Linhart 2010, will only be discussed in the context of the theories they test and only if they refine theoretical assumptions beyond an empirical testing.

2.1. The Austen-Smith and Banks approach

The first contribution using the above cited utility function is the theory of Austen-Smith and Banks (1988). The authors propose a four-stage model of political decision processes beginning with the electoral campaign, continuing with the stages of elections and coalition building, and ending with the legislative decision-making game (cf. Figure 1). Hereby, the various stages do not follow each other independently, but are connected by influencing each other. Each stage produces results that affect the following stage(s). The electoral result, for example, as the second stage's outcome, determines which possible coalitions have parliamentary majorities. Although being a winning coalition is not a necessary attribute for future governments, the question of whether a coalition government is minority, minimal winning or oversized strongly influences the likeliness of a coalition

coming into office (cf. Bäck and Dumont 2007; Debus 2008). Following backward induction logic, as Austen-Smith and Banks do, coalition theories need to focus on stages 3 and 4 only. At the point of the coalition building process, the campaign is over and the electoral result is common knowledge. Thus, the parties playing the coalition game – Austen-Smith and Banks assume a three-party system without an absolute majority for one party – must only anticipate the fourth stage, the legislative process.

- Figure 1 about here -

Let P be the set of parties in a parliament, O a one-dimensional policy space, and $y_p \in O$ the positioning of a party p . Further, let G be a fixed office amount that parties can distribute among each other.⁴ Then, for the coalition building stage, Austen-Smith and Banks make the following assumptions: The largest party is chosen as formateur⁵ and may propose a coalition C with an allocation of portfolios (offices) $g = (g_p)_{p \in P}$ (with $\sum_{p \in P} g_p = G$; $g_p \geq 0$) and a policy compromise y_C . All parties vote on this proposal. If a majority accepts it, C gets in office, implements y_C , distributes the offices according to g , and the game ends. If the proposal does not find a majority, the second largest party takes the formateur role and proposes a new (or the same) triple (C, g, y_C) . The game continues until a proposal is accepted. If there is still no agreement after the smallest party has made its proposal, “then a ‘caretaker’ government is implemented which ‘equitably’ makes the policy and benefits decisions.” (Austen-Smith and Banks 1988: 409; double instead of single quotation marks in the original.)

The value of the offered portfolios, g_p , is an incentive for a party p to join a coalition C and vote for the proposal. At the same time, p must accept a policy compromise y_C that, in general, deviates from its position y_p . Austen-Smith and Banks model the parties’ policy utility component via the negative squared distance between ideal position and compromise, so that the specific o+p utility function is assumed as

$$(2) \quad u_p(C, g, y_C) = g_p - \|y_C - y_p\|^2 \quad \text{for each party } p.$$

This means that office benefits can be interpreted as incentives to compensate policy losses. Depending on g_p , y_C and y_p , the utility can take positive as well as negative values. However, the authors assume G to be at least that large, that a caretaker government could choose a tuple (g, y_C) so that all parties’ utilities equal zero. Acting on the assumption of zero utility in the case of a caretaker government,⁶ Austen-Smith and Banks derive the optimal offer at the second to last

⁴ Because we compare different contributions with varying notations, single notations cannot correspond with each publication’s notation. We harmonized the notations so that they do not vary within our paper.

⁵ Austen-Smith and Banks (1988: 407) do not refer to formateurs in their text, but the described process is that of formateur games.

⁶ It is worth mentioning that this assumption is highly crucial for the following solution of the game. However, it is likewise problematic. Austen-Smith and Banks do not formulate upper bounds for G . This means that in general games the zero utility solution is not Pareto optimal. But why should a caretaker government choose a Pareto dominated solution when a ‘better’ alternative exists? Furthermore, can such a solution be interpreted as ‘equitable’?

step. The smallest party proposes a coalition with the party closest to its own position, chooses y_C so that it lies exactly in the middle between both parties⁷, and offers to its potential coalition partner exactly that amount of portfolios that compensates its policy losses, i.e. that makes it indifferent between the offer and the caretaker government. This offer is the reference point for the second smallest party, which now can calculate its optimal offer one step earlier. Via backward induction, the largest party is able to anticipate all following steps and propose a triple (C, g, y_C) that rational actors should accept by majority. As a result, the largest and the smallest party are expected to form the coalition.

As already mentioned, Austen-Smith and Banks deal with three-party systems only, in which none of the parties holds an absolute majority of the seats. The game's logic can be transferred to any party system; the game's details, certainly, would change then.⁸ Furthermore, the result that a coalition of the largest and the smallest party would form does not hold for generalized games. This is, however, not a problem of the theory. It might then be more difficult to solve the game, but the equilibrium solution can be found by backward induction in a similar way. Concluding, we hold one point worth mentioning. Although minority or oversized coalition governments need not be excluded axiomatically, the game exclusively accounts for minimal winning coalitions. Proposals of oversized coalitions are not a rational strategy at any point of the game because additional partners must be compensated and the total office benefit G is fixed. Minority governments are excluded because G is assumed to be sufficiently large to make triples (C, g, y_C) possible in which all coalition parties' utilities are positive. Oppositional parties' utility, on the other hand, is always negative because these parties do not get portfolios but have to accept policy losses. Because the fallback solution is the caretaker government with zero utility, no opposition party has an incentive to accept a loss by supporting a minority government.

2.2. The Baron and Diermeier approach

Baron and Diermeier (2001; see also Diermeier and Merlo 2004; Diermeier 2006) propose a coalition theory similar to that of Austen-Smith and Banks (1988). They use the same refined utility function, embed it (explicitly) into a formateur game, and solve the game via backward induction for a three-party system. One technically minor but substantively important difference is Baron's and Diermeier's assumption of a two-dimensional policy space O . The authors also show that for multi-dimensional policy spaces equilibria of coalition formation games exist.

Further distinctions compared to the Austen-Smith and Banks approach reflect a different understanding on what is going on during the negotiations.

First, Baron and Diermeier only allow one party to be the formateur in a coalition game. This means that if this party's proposal is voted down no further party gets

⁷ This point is the only rational solution because the office utility component is linear, whereas the policy component is quadratic and thus concave.

⁸ For example, the smallest party and its closest competitor do not necessarily hold a majority in generalized games. Then, without offering portfolios to at least one further party, the proposal as described above would be voted down and thus not be a rational strategy of the smallest party.

an opportunity to become the formateur and make offers. Instead, if the first proposal fails, a caretaker government is immediately installed. Thus, the backward induction game has only two, not four (or in general: $|P|+1$) steps.

Second, it is not the largest party that is automatically chosen as (first or only, respectively) formateur. Baron and Diermeier choose a probabilistic assumption so that every party has a chance to become the formateur. The probability of being chosen as formateur depends on the party's size w_p in parliament, $Prob(p \text{ becomes the formateur}) = w_p / \sum_{j \in P} w_j$. If there is a party with an absolute majority of seats, however, this party is chosen as formateur in a deterministic way. With the help of this assumption, Baron and Diermeier are able to explain the existence of coalition governments in which the largest party in parliament is not a member.

Third, Baron and Diermeier give up the assumption that a caretaker government chooses an equitable policy and office distribution. They replace it by expecting the caretaker government to continue with the former government's policy, the status quo. Further, they assume that, in this case, no office benefits at all are divided among the parties. In consequence, the installation of a caretaker government means a negative utility for each party unless its position happens to correspond with the status quo. This means that potential coalition partners are much "cheaper" for the formateur than in the Austen-Smith and Banks approach, where zero utility is a fallback option.

This leads directly to the fourth distinction, the question of how equilibria can look like. As in the Austen-Smith and Banks model, the formateur plays an optimal strategy when he makes his coalition partner indifferent between an offer and the utility resulting from the caretaker government and then chooses the "cheapest" coalition partner. Again, the middle point of the coalition partners is the only efficient policy proposal (cf. footnote 7). Given that point y_C , a party p agrees on every proposal, for which

$$(3) \quad g_p \geq u_p^{pol}(y_C) - u_p^{pol}(q) = -\|y_C - y_p\|^2 + \|q - y_p\|^2$$

holds, whereas q denotes the status quo. p becomes indifferent in the case of equity that corresponds to the formateur's optimal offer. The formateur itself can save an office benefit of $G - g_p$.

It is worth mentioning that g_p can take negative values. This is the case if a potential coalition partner p prefers the coalition policy y_C over the status quo. Then, $G - g_p$ is larger than G , that is the formateur gets more office benefits than the provided total amount. Baron and Diermeier remain vague about what this could mean. They note that office benefits might not only imply cabinet portfolios but also "board seats on public companies or the national television system." (2001: 935.) As a consequence, a formateur could propose oversized coalition governments if there are more parties than necessary for a majority with negative g_p values. Baron and Diermeier do not explain with regard to contents why a surplus party should accept such a proposal. Intuitively, this party should reject participating in this coalition. A majority of a minimal winning coalition would still guarantee the proposal's success, thus the caretaker government would be avoided. The surplus party then gets the policy utility of y_C , but does not have to pay for it with a negative g_p . If yet the success of the proposal means that the surplus party has to pay g_p without agreeing on the proposal, the question remains open how the government should enforce this or, respectively, if a government had the power to

enforce such solutions why it does not the power to take generally negative g_p s from opposition parties.

2.3. The Bandyopadhyay and Oak approach

Bandyopadhyay's and Oak's (2008) coalition theory is a mixture of the two approaches presented above with respect to most facets. The basic game (utility function, three parties, no absolute majority, existence of a formateur, solution via backward induction) is the same as described above. Like Austen-Smith and Banks (1988), Bandyopadhyay and Oak use a one-dimensional policy space, precisely the $[0, 1]$ interval. They follow Baron and Diermeier (2001) when they assume the probabilistic choice of a formateur and let the game end with a caretaker government after the first step. Their model is outstandingly new, however, in regard to the question of how to estimate portfolio distributions and policy compromises. Whereas the approaches described above allow the formateur to propose each policy and each portfolio distribution she liked – although there is only one equilibrium solution at the end –, Bandyopadhyay and Oak consider conventions of coalition governments and limit the formateur's potency. She may not propose a triple (C, g, y_C) , but a coalition C only. g and y_C then are completely determined by C . Following Gamson's Law (Gamson 1961), portfolios are divided among the coalition parties in proportion to their size:

$$(4) \quad g_p = G w_p / \sum_{j \in C} w_j.$$

The policy is assumed as mean policy of the coalition parties' positions, weighted by their size:

$$(5) \quad y_C = \sum_{p \in C} w_p y_p / \sum_{p \in C} w_p.$$

Given these restraints, the formateur has a discrete choice between $2^{|P|}-1$ coalitions and thus $2^{|P|}-1$ combinations of policy proposals and office distributions. If the proposed coalition is voted down, a caretaker government, consisting of all three parties, comes into office. According to the formulas above, offices are shared proportionally among the parties, and a mean policy⁹ is implemented by the caretaker government.

With the help of these changed assumptions – restriction of policy bargaining and office distribution – Bandyopadhyay and Oak are not only able to explain minimal winning coalitions but also minority governments or surplus coalitions. It is crucial that the caretaker government is installed in the second step already. It is clear, that the formateur prefers her own policy position over that of a caretaker government and that she prefers G over a part of G . This means that she prefers a formateur minority coalition over the caretaker government. If she gets support of any of the other two parties, she also succeeds in installing this minority government. Let for example be all three parties of equal strength. Without loss of generality, let p_1 be the formateur and p_2 the potentially supporting party, then p_2 should support the minority government, if $-(y_1 - y_2)^2 \geq G/3 - (\frac{y_1 + y_2 + y_3}{3} - y_2)^2$. If y_1 is sufficiently close to y_2 , y_3 sufficiently far away from y_2 and G sufficiently small, the inequation

⁹ Bandyopadhyay and Oak (2008: 555) call this mean policy "status quo," but it has nothing to do with the policy implemented by the previous government.

holds, and a minority government is possible (cf. Bandyopadhyay and Oak 2008: 556-7).

Surplus coalitions occur, when coalition building fails on step one and the (surplus) caretaker government come in office. This is the case, when the formateur's policy position is located in the middle of the two other parties (of equal strength) and

again G is small. Let again p_1 be the formateur, then $\frac{y_1 + y_2 + y_3}{3} = y_1$. The

formateur prefers the surplus coalition over the minimal winning coalitions, if $G/3 \geq G/2 - (\frac{y_1 + y_2}{2} - y_1)^2$ and $G/3 \geq G/2 - (\frac{y_1 + y_3}{2} - y_1)^2$. If the distances between

y_1 and y_2 as well as between y_1 and y_3 are sufficiently large, both inequations hold. If at the same time the inequation for support of a formateur minority government (see above) is not fulfilled for both potential supporters, it is an optimal strategy for p_1 either to propose a surplus government or to propose a minority government and let the proposal fail, what results in the same surplus coalition. Bandyopadhyay and Oak (2008: 557) show that such combinations of y_1, y_2, y_3 and G exist.

2.4. The Morelli approach

Like the three hitherto presented theories, Morelli (1999) presumes a utility function similar to the one described in formula (2) and embeds it into a formateur model. First, it is worth mentioning that Morelli's model is not restricted to parliaments with three parties, but was developed for general n -player games. The most notable substantive difference, however, is that in the Morelli approach the formateurs do not make offers but proclaim demands. That means that the formateur does not propose an allocation $g = (g_p)_{p \in P}$ but only mentions her own share g_1 , which she aims to possess in a coalition. After that, the second party in the game quantifies g_2 , the third one g_3 , and so on. Beyond an office share, each party's call includes a demand for a policy y_p . It is worth mentioning that the formateur need not be the strongest party but is chosen by the head of state. The sequence of further party demands is decided by the formateur as the potential prime minister. As a consequence of these demands, a coalition C forms if *i*) C holds a majority of votes in parliament,¹⁰ *ii*) all office demands can be fulfilled for C 's members, formally: $\sum_{p \in C} g_p \leq G = 1$, and *iii*) the coalition parties can agree on a common policy, formally: $y_{p_1} = y_{p_2}$ for all $p_1, p_2 \in C$. If such a coalition does not exist, a second round of the game starts in which the head of state chooses another formateur. In the second round, all utility values are discounted by a factor $\delta \in (0, 1]$ (cf. Rubinstein 1982). The remainder is analogous to round 1. If after T rounds¹¹ no coalition has been able to form, the game is aborted and the head of state forms a caretaker government in which no private benefits g_p are distributed and the median voter's policy position is implemented.

Solving this game, Morelli finds the following equilibria: In a three-party parliament (without an absolute majority), the first two movers both get $g_p = 1/2$; in parliaments with four or more parties, the office benefits are shared about

¹⁰ Morelli (1999: 811) formally requests C to be minimal winning.

¹¹ It is the head of state's choice how many rounds will be played.

proportionally to the seat distribution of the first movers able to form a minimal winning coalition. The formateur asks for a policy in his first demand, on which all further members of the potential coalition can agree. This means that it is better for them to ask for the same policy as the formateur rather than risking not being a member of the coalition or opening another bargaining round. Thus, the formateur's policy demand is in equilibrium.

Reviewing the Morelli approach, there are two further points worth mentioning. First, Morelli is, as we know, the first who allows for a weighting parameter $\beta > 0$, which “measures the intensity of the ideological component of parties’ preferences” (Morelli 1999: 811).¹² The distance between a party's ideal point and a policy outcome is weighted by this parameter, so a large β can be interpreted as higher importance of policy, whereas a small β stands for a relatively higher relevance of office benefits. Such a weighting parameter only makes sense if the components of the utility function are normalized. For this reason, G is set to 1 and the policy space is assumed to be the $[0, 1]$ interval. Second, in contrast to the theories described above, policy utility is not necessarily negative in the Morelli approach.¹³ Morelli adds the value of 1 to the utility function, so that given the $[0, 1]$ interval as policy space, the policy component, too, is zero or positive.¹⁴ That is, given $\beta \leq 1$, negative utility cannot happen to parties; both offices and policy are evaluated positively. As an aside, we note that Morelli measures policy utility with the help of the linear distance function, whereas the other theories use squared distances.

2.5. The Sened and Schofield approach

Sened (1995, 1996; see also Schofield and Sened 2006) proposes a coalition theory that differs from the above mentioned approaches with regard to two primary aspects. One innovation is the consideration of party specific weighting parameters for the office and the policy utility part, α_p and β_p (Sened 1996: 356).¹⁵ This allows parties to be motivated to different degrees by offices and policy. The most crucial difference between Sened's approach and the other theories, however, is that Sened does not include formateurs in his model. As a consequence, his coalition formation game is completely different. While the other models assume sequential

¹² The approaches discussed above implicitly allow for a weighting parameter. Because G can take any positive value, a large G can be interpreted as higher focus of the parties on offices, whereas a small G reflects policy-motivated parties.

¹³ Austen-Smith and Banks, Baron and Diermeier, and Bandyopadhyay and Oak model offices as benefits to compensate policy losses. In coalition governments, parties have to give up their preferred policy points and find compromises. The distance between this compromise and a party's ideal point results in negative policy utility. If the share of offices is sufficiently high, the benefits from the offices compensate or exceed the policy losses. Sened (1995) calls this compensation side payments.

¹⁴ Morelli's (1999: 811) utility function is specified as $u_p = g_p + 1 - \beta \|y_C - y_p\|$. This means that our interpretation is not completely true. Regarding the '+1' as part of the policy component, the policy utility component is only then normalized between 0 and 1, if β lies between 0 and 1, too. Furthermore, the weighting parameter β does not cover the complete policy utility part. A utility function $u_p = g_p + \beta (1 - \|y_C - y_p\|)$ would completely accord to our interpretation. However, it remains unclear how to interpret the '+1' if not as part of the policy component.

¹⁵ In his earlier work, Sened assumes α and β as “constant across parties” (Sened 1995: 289).

games that start with the formateur's node and that can be solved via backward induction, Sened searches for core solutions that are in equilibrium in a freestyle bargaining game. For this purpose, he defines the IVCORE, in which all tuples (C, g) lie which include undominated proposals of invulnerable ("winning") coalitions. Hereby, the "winning" criterion deviates from standard definitions that call a coalition winning if it holds a majority in parliament ($\sum_{p \in C} w_p > 50\%$). Sened (1995: 289, definition 6) defines a coalition C as winning if it is not vulnerable, and he defines C as vulnerable, if an alternative coalition C' exists that has a majority in parliament and that all members of C' prefer over C , formally: $\sum_{p \in C'} w_p > 50\%$ and $u_p(C') > u_p(C)$ for all $p \in C'$ (Sened 1995: 289, definition 7).¹⁶ That means, according to Sened, minority coalitions might be winning, while some majority coalitions might not. We will show this at this section's end after having discussed the assumed utility function u_p .

It is worth mentioning that the policy outcome is important for the utility function of the parties and thus for the question of how they evaluate membership in a coalition. However, a policy point is not part of a proposal vector, but is externally given by the four-stage game as illustrated in Figure 1. On the legislative stage, Sened assumes the policy of a structurally stable core (see Schofield 1986) being the game's outcome. Alternatively, if no structurally stable core exists, the policy outcome is supposed to lie in the uncovered set (see McKelvey 1986). If we call the respective legislative solution set L , each $o \in L$ is a possible outcome of the legislative stage. Furthermore, let $\pi(o)$ for $o \in L$ be the probability function that o is the legislative game's outcome, then a party's utility function can be written as

$$(6) \quad u_p(C, g) = \alpha_p g_p - \beta_p \int_{o \in L} \pi(o) \|o - y_p\|^2 do \equiv \alpha_p g_p - \beta_p(L).$$

Because the uncovered set or the structurally stable core do not depend on the formed coalition, $\beta_p(L)$ is a scalar for each party p , and C and g are the only variables in the game (Sened 1996: 356). Sened (1996: 355) mentions that his model is also in accordance with other legislative solution sets such as the Pareto set (see Tullock 1967) or the cycle set (see Laver and Schofield 1990). Schofield and Sened (2006) and Shikano and Linhart (2010), among others, confirm this proposition with empirical applications.

The Sened and Schofield approach is different from the other theories with respect to a further important aspect: Whereas the approaches presented above (implicitly) model parties as intrinsically motivated by policy, Sened and Schofield treat parties as extrinsically motivated. This is reflected by the assumption that opposition parties' policy utilities equal zero, independent of the distance between y_p and y_C or $\beta_p(L)$, respectively. For an intrinsically policy motivated party, this distance is crucial, whether or not it might be made responsible for the policy output. An only extrinsically motivated party, however, need not care about the governmental policy when it is member of the opposition because it cannot be made responsible for the government's policy. From Sened's point of view, parties "that stay in the opposition [...] avoid the cost of endorsing policies that deviate from their ideal

¹⁶ Sened (1996: 357, definition 8) specifies that the evaluation of C and C' is determined by the office allocation g in C and g' in C' .

points” (Sened 1996: 356).¹⁷ For this reason, minority governments, too, can be invulnerable (in Sened’s terms “winning”) without holding a majority in parliament. This is the case, for example, when α_p is small and β_p is sufficiently high for all parties. Then, the negative policy utility component exceeds the positive office utility for all parties and all majority coalitions.¹⁸ If one party p^* forms a minority coalition, all opposition parties’ utility is zero and thus higher than in any coalition government. This means, at the same time, that the minority government is invulnerable. Surplus coalitions, however, cannot be explained with help of the Sened and Schofield approach. If C^* is surplus, $p^* \in C^*$ a surplus player, and g^* an office distribution with $g_{p^*}^* > 0$, then (C^*, g^*) is vulnerable by the coalition $C^* \setminus \{p^*\}$, in which all members get a benefit of $g_{p^*}^* + g_{p^*}^*/n$, whereas n denotes the number of parties in $C^* \setminus \{p^*\}$. In consequence, according to Sened’s definition, some minority coalitions can be winning while some majority coalitions, especially surplus coalitions, are not.

3. Assumptions and implications of the various theories

Having outlined five of the most relevant o+p coalition theories,¹⁹ it has become clear that in spite of a common frame, the theories differ remarkably. Some differences are rather technical than driven by substance, such as the assumption of a one- or multi-dimensional policy space or the restriction to a three-party system. These assumptions shall not be discussed in the following, because they are not characteristic for the theories. On the other hand, there are four variables that are substantively meaningful; three of them refer to the arrangement of the parties’ utility functions. These are the office distribution, the assumed policy outcome, and the utility function for opposition parties. The fourth variable concerns the question of how the utility function is embedded in a coalition game. Table 1 gives an overview of the theories discussed above with regard to these variables. In the following, we discuss implications of the assumptions and compare these implications with empirical findings.

- Table 1 about here -

A further variance of the theories is the inclusion of weighting parameters in the utility function. Two of the here discussed theories explicitly account for weighting parameters in order to balance varying emphases on offices or policy, respectively. Sened and Schofield weight the office part by α and the policy part by β . Morelli

¹⁷ Sened (1995: 287) denies that the “open debate in the literature on whether parties maximize their vote share, or position themselves according to their genuine preferences” could have “interesting consequences for the results of [t]his paper.” In our opinion, the opposite is true, as we argued above.

¹⁸ With regard to content, this means that the offices do not suffice to compensate the policy losses of all parties in majority coalitions.

¹⁹ Further theories and refinements of the outlined theories certainly exist. However, these five theories include a broadest possible range of concurring assumptions and thus are sufficient for the following discussion. In other words, they are the most dissimilar cases within the family of o+p theories and thus include all facets.

only weights the policy part. The further approaches do not explicitly include weighting parameters in the utility function. Implicitly, more or less emphasis of offices (and thus less or more emphasis of policy) can be expressed via the size of G . Given a normalized policy space, the total amount of offices can be set to 1 and $G = \alpha \cdot 1$ can be interpreted as a weighting parameter for office orientation. This interpretation, however, is justified only if the *relative* share of offices is important for parties, not the *absolute* number of offices. The first standpoint is in accordance with, for example, Von Neumann and Morgenstern (1947) and Riker (1962). It is relevant for parties to be as strong as possible within a coalition. This is the reason why they build smallest size coalitions and avoid surplus parties. The second point of view does not take account of intra-coalitional power balancing but presumes parties to provide as many offices as possible for their members. Assume two coalitions $C_1 = \{p_1, p_2\}$ and $C_2 = \{p_1, p_3\}$ with office distributions (4, 3, 0) and (5, 0, 5).²⁰ According to the first interpretation, party 1 would prefer C_1 over C_2 , whereas according to the second interpretation, the opposite is true. With two weighting parameters α and β , such as in the Sened and Schofield approach, this problem can be reduced. G then expresses the total amount of offices, while α and β balance out the relevance of offices and policy, respectively. The more general form can be reduced if the balance between office and policy motivation is only of interest.²¹ However, the question of whether or not weighting parameters should be included in utility functions is not a question of substance but of model simplicity. We find no theoretical argument why all parties within a political system should be motivated to the same degree by offices and policy, and empirical findings (Linhart 2009; Shikano and Linhart 2010) confirm that the motivation by offices or policy varies between parties within the same party system. For this reason we do not take this facet as a fifth variable but propose the general consideration of party-specific weighting parameters.

3.1. Office distribution

Continuing with the discussion of office allocations, four out of the five coalition theories consider each distribution among the parties as possible. Bandyopadhyay and Oak, in contrast, refer to Gamson's Law and assume coalition parties to allocate offices proportional to their seat share in parliament. Indeed, all empirical studies that deal with the allocation of offices among coalition parties confirm the norm of proportional allocation (Browne and Franklin 1973; Browne and Frendreis 1980; Browne and Dreijmanis 1982; Warwick and Druckman 2001; Warwick and Druckman 2006; Carroll and Cox 2007; Linhart, Pappi, and Schmitt 2008; Bäck, Debus, and Dumont 2010; Laver, de Marchi, and Mutlu 2011). This rule cannot be explained satisfactorily with the help of non-cooperative power bargaining games as, for example, Schofield (1978) tries to do. Nor are the non-cooperative formateur games of Austen-Smith and Banks, Baron and Diermeier, or Morelli able

²⁰ The first number in the triple denotes the amount of p_1 's offices, the second number p_2 's, the third number p_3 's.

²¹ Linhart and Shikano (2007) and Shikano and Linhart (2010) set $\alpha + \beta = 1$ in order to find out to which *degree* parties are motivated by offices and policy, respectively.

to derive the proportional distribution of offices according to party size from their models.²² In many political systems, there seems to be a common agreement to cooperatively allocate offices in proportion to party strength and not to leverage bargaining advantages such as having more options, being allowed to make the first proposal, or the like. It seems to be a common, although informal, agreement that the proportional distribution is a focal point for coalition bargaining from which major deviations are not accepted.

At the beginning of coalition building processes without formateurs, parties usually examine whether there is leeway to agree on a common policy. At the end, the distribution of offices is negotiated. At this point, the number of offices each party gets is not disputed in general; conflicts concern at most one cabinet post more or less. Given the Gamson distribution as a focal point, the coalition bargaining game can be divided into two steps. As a first step, parties search for potential coalition partners in so-called exploratory discussions. In these discussions, parties examine whether there is enough leeway for policy agreements. If all parties of such a coalition believe that the political conceptions of the potential coalition partners are sufficiently congruent, a second step is taken by starting with official coalition negotiations. This second step includes the formulation of a coalition treaty in which policy compromises are rendered more precisely or sometimes roughly outlined only. At the end, parties bargain about the office distribution and present their cabinets. At the end of step 2, each party has two options, accepting a roughly proportional office distribution or claiming more offices.²³ We believe that failed coalition bargaining because of a disproportionately high demand for offices should cause high costs for the respective parties. Voters would probably deprecate such behavior, consider the respective parties as purely interested in offices, and punish them in upcoming elections. We believe these costs to be sufficiently high to threaten parties playing this option, so they agree on proportional distribution. If this presumption holds, parties can anticipate Gamson's Law as a focal point at step 1, when they decide whether to start formal coalition negotiations. The perception of this two-step game is corroborated by the general acceptance of multilateral exploratory discussions – an equivalent of the informateur round for freestyle bargaining situations – but a limitation of formal negotiations to one coalition only at each time. On the basis of such a two-step game, in which *i*) parties first examine possible policy agreements for a specific coalition C and then negotiate the office allocation, and in which thus *ii*) alternating offers (C, g) and counteroffers (C', g') across various coalitions are excluded, parties can anticipate

²² The approaches of Austen-Smith and Banks, Baron and Diermeier, and Morelli solve the question of office allocation via the sequential formateur games in their models. They do not restrict office distribution axiomatically, but in each game only one special proposal is part of the backward induction solution. All further distributions do not play a role. In Morelli's demand model, the equilibrium distribution is similar to the proportional distribution for more than three parties. In three-party systems, the first two movers form a joint coalition and both get an office share of 50 percent. We find similar results for the Austen-Smith and Banks and for the Baron and Diermeier approaches. The exact portfolio allocation depends on details of the games, but in general the formateur is conceptualized as a mighty actor and thus supposed to gain extraordinarily high benefits.

²³ We ignore the dominated option to claim fewer offices.

a roughly proportional distribution of offices when examining a coalition. Coalition building processes with formateurs and informateurs, e.g. in the Netherlands, follow a similar logic. During the informateur round, various possible coalitions can be explored with regard to the chance of policy compromises. If the informateur detects such a coalition for which he believes the parties' policies to be sufficiently congruent, a partisan of the strongest party in this coalition is usually chosen as formateur. The informateur round is roughly equivalent to the exploratory discussions in systems without a formateur. The same logic holds for the second step: offers and counteroffers across various coalitions cannot be observed, the proportional distribution of offices might be seen as a focal point, and the breakdown of coalition negotiations in the formateur round because of exorbitantly high demands for offices could cause follow-up costs that are too high to play such a strategy.

The logic of this two-step game does not hold necessarily for formateur systems without informateurs. Without an informateur round or exploratory discussions, the breakdown of negotiations might credibly be ascribed to policy discrepancies, even if the office distribution is the reason. Then, blaming costs might not be a problem, unlike in the games outlined above. This means that focal points might lack in these systems, disproportional office allocations could be more likely, and the assumption of unlimited bargaining on offices might be more adequate.

Empirically, however, we have to note that also in formateur systems a formateur bonus for the strongest party often cannot be observed (Linhart and Pappi 2010; Laver, de Marchi, and Mutlu 2011). In the Netherlands between 1946 and 1998, for example, either the Social Democrats (PvdA) or the Christian Democrats (CDA, before 1977: KVP) were the strongest party in parliament (Timmermans and Andeweg 2000). In only two of 22 coalition governments, namely in 1952 and in 1982, the largest party KVP (or CDA, respectively) had a slightly higher share of offices than seats in the coalition. During the First Italian Republic (1948-1994), it was always the DC (Christian Democrats) that was both the strongest party in parliament and in the coalition (Verzichelli and Cotta 2000). In the numerous Italian governments, the DC's office share was always lower than its intra-coalitional seat share. In Sweden between 1945 and 1998, coalition governments were led by Social Democrats, Conservatives, or the Agrarian Centre Party as strongest party in the respective coalition (Bergman 2000). Again, we do not find any case in which the strongest party as presumed formateur gets extraordinarily high office benefits. In contrast, in each Swedish coalition government, the strongest party holds smaller office than seat shares (cf. Linhart and Pappi 2010). Summarized, we see that both Bandyopadhyay's and Oak's assumption of a proportional office allocation and the approaches presuming no restrictions can make sense, depending on the focal system. Hereby, the assumption of a proportional distribution need not be an axiomatic, instructive restriction of parties' alternatives, but can be integrated in the negotiation process as a subgame.

However, although both assumptions can be adequate, it is necessary to select the realistic one when analyzing concrete coalition building processes. Unrealistic assumptions with respect to this facet can convert a whole analysis into a purely mathematical exercise. We conclude this part with a demonstrative example. It is clear that an exclusion of non-proportional office distributions cannot be

adequate for systems in which Gamson's Law does not play a role. With this assumption, the real, disproportional distributions can never be explained. The point of view that thus, the consideration of all possible allocations would be a broader approach, which is also useful for systems in which the proportional distribution is a focal point, however, is wrong as well. Take for example the Sened and Schofield approach that includes a game with offers and counteroffers. There are no restrictions so 'unrealistic' offers can be made as well. These unrealistic offers can dominate realistic offers and eliminate them as core solutions. Assume, for example, a parliament with three parties $\{p_1, p_2, p_3\}$ and $w_1 = 45, w_2 = 35, w_3 = 20$. Assume further that the parties are equidistant to each other and let $u_p^{pol}(C) = -0.1$ for all parties p and coalitions C , that is, utility differences are only driven by offices.²⁴ Table 2 shows office utility values of parties that they can expect in all possible coalitions, given Gamson's Law.

- Table 2 about here -

Following Sened's definition of invulnerability, it is easy to see that the smallest size coalition (Gamson 1961; Riker 1962) is the only invulnerable coalition (i.e. the only core solution) in Table 2's example. Each of the minority coalitions $\{p_i\}$ is vulnerable by the minimal winning coalition $P \setminus \{p_i\}$, and the surplus coalition P is vulnerable by all minimal winning coalitions. Since the smallest size coalition $\{p_2, p_3\}$ is the winning coalition that maximizes its members' utility, it is the only minimal winning coalition that is not vulnerable. The two other minimal winning coalitions are vulnerable by the smallest size coalition. From our point of view, this game's solution is reasonable for political systems in which Gamson's Law is broadly accepted.

However, when we give up the restriction of office allocations according to Gamson's Law, the offer $(\{p_2, p_3\}, (0, 0.6364, 0.3636))$ is vulnerable to many counteroffers, e.g. $(\{p_1, p_2\}, (0.35, 0.65, 0))$. As far as we know, no coalition government ever existed in which the larger of two parties in a coalition gets 35 percent of the offices only. However, the inclusion of this presumably irrelevant alternative induces that the smallest coalition with proportional office allocation is not a core solution any longer. A further and maybe even more far-reaching implication is the possible emptiness of the core. Consider without loss of generality the offer $(C, g) = (\{p_1, p_2\}, (x, 1-x, 0))$ with $0.1 < x < 0.9$. It is easy to see that this offer is vulnerable, among others, by $(C', g') = (\{p_1, p_3\},$

$(x + \frac{1-x-0.1}{2}, 0, 0.1 + \frac{1-x-0.1}{2}))$. First, since $x < 0.9$, the term $1-x-0.1$ is

larger than zero and thus, both office utility values of p_1 and p_3 are larger than 0.1. This means that $u_3((C', g')) = u_3^{off}((C', g')) + u_3^{pol}((C', g')) = u_3^{off}((C', g')) - 0.1 > 0 = u_3((C, g))$. Since u^{pol} is constant and $1-x-0.1$ is positive, also $u_1((C', g'))$ is

²⁴ In the Sened and Schofield approach, policy utility is a constant, anyway. However, because we discuss implications of the office utility part in general, we make this assumption and show that it might be problematic in general games, too. For the sake of simplicity, assume $\alpha_p = \beta_p = 1$ for all parties p .

larger than $u_1((C, g))$. As a consequence, every (C, g) in this example is vulnerable. Because only invulnerable coalitions can be part of the core (or the IVCORE, see Sened 1996: 357, definition 11), there are no core solutions at all. Such cyclic games with empty cores should only be realistic in political systems in which Gamson's Law has no relevance.

3.2. Policy outcome

Comparing the operationalization of the policy utility part, we can differentiate the five approaches with regard to two aspects. First, policy outcomes may or may not be modeled as fully determined by coalition parties' positions. Second, the legislative stage (cf. Figure 1) can be explicitly integrated as an independent stage or assumed to be completely anticipated by the coalition game's result.

Starting the discussion with the first point, the Bandyopadhyay and Oak approach, again, is most constricting. The policy of a coalition C is not assumed to be negotiated by the coalition parties but completely determined by the parties' positions. From formula (5) we get the weighted mean position as the only policy that C is able to install by assumption. The other formateur models – Austen-Smith and Banks, Baron and Diermeier, and Morelli – abstain from such restrictions. In their theories, each policy proposal can be offered (or asked for, in Morelli's case). Solving the sequential game, however, the (non-weighted) mean position of the coalition parties is the only possible equilibrium policy. Both the weighted and the non-weighted mean position are adequate estimations of coalitions' policy outcomes. The weighted mean is in accordance with the assumption that large parties do not only get higher office shares but are also leading the coalitions in terms of policy. The non-weighted mean reflects more the smaller parties' claim to negotiate on equal terms and the fact that they are not more likely to give up their ideal positions than larger parties. Analyses show that both principles can be found in coalition treaties and the negotiated policy lies somewhere between the weighted and the non-weighted mean position in many cases (Debus 2008).

Coming to the second aspect, the main question is: Is all coalition politics of the following legislative period anticipated, negotiated and written down in a coalition treaty already during the stage of coalition bargaining? Or do treaties only mark vertices for coalitions, but challenges for governments are unforeseeable and must be negotiated at the time when they occur?²⁵ Or are coalition treaties cheap talk only, and the legislative game itself is important, independent of coalition treaties? If it can be observed that in a certain political system all relevant questions are dealt with in coalition treaties and coalition governments work off the treaties only, the first standpoint may be adequate. The theories of Austen-Smith and Banks, Diermeier, Morelli, and Bandyopadhyay and Oak imply such a point of view. The estimation of coalition politics as the parties' mean position can also be appropriate, if this is not the case, but policy compromises in the legislative game usually can be found around the mean position. However, this assumption would contradict the four-stage model (Figure 1) at least formally: If a treaty can already be fully negotiated on the coalition bargaining stage, no further legislative stage

²⁵ Some practitioners share this point of view, cf. an interview on Spiegel online (2008).

need to be anticipated.

The second and third points of view go in accordance with Sened's and Schofield's theory. They explicitly model the legislative game with the help of a legislative solution concept L and estimate policy utility of a coalition as the expected utility with respect to L (cf. formula 6). If coalition treaties do or do not play a role depends on the solution concept L . If L depends on C , formally $L = L(C)$, rather the second point of view is reflected. Such a solution concept could, for example, be the coalition parties' Pareto set (see Tullock 1967; for an application see Shikano and Linhart 2010). Other solution concepts that are proposed by Sened (1995, 1996; see also Giannetti and Sened 2004 and Schofield and Sened 2006) are completely independent of the governing coalition, for example, the structurally stable core (see Schofield 1986), the uncovered set (see McKelvey 1986), or the political heart (see Schofield 1996). It is worth mentioning that legislative solution concepts that are independent of C again are not in accordance with the four-stage model of figure 1. These concepts do not depend on a certain coalition that has formed. If there are no further assumptions included, they imply that the legislative outcomes are independent of the government, i.e. there is no influence from the formed government on the legislative game. This need not be problematic, but such a coalition theory should not be integrated into Austen-Smith's and Banks' (1988) four-stage model, in our opinion.

As we argued for the office allocation, we again advise taking account for a political system's institutional framework and established norms in political processes when modeling coalition bargaining processes. A model such as the uncovered set may be appropriate for analyses in the U.S. Congress, but not for parliamentary systems with disciplined parties. Furthermore, in Germany, for example, there is the rule – sometimes informal, sometimes formal – that governmental parties usually do not overrule their coalition partners with the help of opposition parties.²⁶ As a consequence, coalition parties must primarily negotiate with each other on a policy. If the coalition holds a majority in parliament, this policy can be implemented; if not, the coalition must consider preferences of at least parts of the opposition. Assuming Pareto optimality as a minimum requirement, the Pareto set of a coalition could be an adequate conception for the anticipation of winning coalitions' politics. Since minority governments have to involve opposition parties, outcomes within the coalitional Pareto set are not guaranteed. Here, the cycle set or the Pareto set of all parties in parliament might be more appropriate. If, on the other hand, in a political system parties are not disciplined and/or vote down their coalition partners with the help of opposition parties, then concepts that assuming such behavior like the uncovered set or the cycle set are more appropriate.

3.3. Utility of opposition parties

We continue with the discussion on implications of how opposition parties' utility

²⁶ When we focus on such countries, we then disagree with Sened (1995: 355) who states that “[c]oalition agreements about policy positions are usually not binding” and therefore, “the results of the election, not the composition of any particular coalition, determine the policy outcome that will be implemented.”

is modeled. It is commonly agreed that the office part's value is zero: in general, opposition parties are excluded from cabinet and do not get any offices. Because office utility is estimated via the amount (or share) of offices, $g_p, u_p^{off}(C)$ equals zero, when p is not a member of C and thus $g_p = 0$. The policy utility part, on the other side, depends on whether parties are assumed to be intrinsically or extrinsically motivated by policy. Parties extrinsically motivated by policy use policy platforms only as means to gain in a first step votes and in a second step cabinet posts. If they are successful in becoming members of a coalition government, they are made accountable for the government's policy y_C . The larger the distance between y_C and the promised policy y_p , the higher the risk of getting punished by the voters in future elections. If this extrinsically motivated party is not part of the government, on the other hand, it can disapprove the government's policy, refer to its own policy offer y_p , and reject accountability for the policy outcome.²⁷ Then, it need not be frightened of punishment by the voters and thus has no policy losses. A policy utility value of zero (like in the Sened and Schofield approach) seems appropriate.

A purely intrinsically policy motivated party, in contrast, does not care about voter punishment when evaluating a policy outcome. Each deviation from the ideal point is afflicted with policy losses, irrespective of accountability. Thus, the negative distance function is an appropriate policy utility function also for intrinsically motivated opposition parties (Austen-Smith and Banks, Baron and Diermeier, Bandyopadhyay and Oak, and Morelli).

As a consequence, the question of which utility function for opposition parties should be used is connected with the question of whether parties are assumed intrinsically or extrinsically motivated by policy. From a theoretical perspective, we can exclude neither an intrinsic nor an extrinsic motivation. Probably, both are relevant to understand parties' behavior. However, unlike Sened (1995: 287, cf. footnote 17), one should be aware of the assumptions' implications. From an empirical perspective, we are not aware of studies that systematically approve one assumption and reject the other. However, coming back to the intention of categorizing the assumptions of o+p coalition theories in order to better understand actors and processes by comparing the prediction power of different assumptions, here could lie potential for further research. Having identified all other relevant indicators and modeling them properly, it can be examined whether the assumption of intrinsically or extrinsically motivated parties better reflects the empirical world. Giving up simplicity, a coalition theory can be refined by parameters β_p^{ext} and β_p^{int} with $\beta_p^{ext} + \beta_p^{int} = \beta_p$, so that β_p^{ext}/β_p expresses the degree to which party p 's policy orientation is motivated extrinsically, and β_p^{int}/β_p operationalizes the degree of intrinsic policy motivation. For government parties, the utility function does not change, because

$$(7) \quad u_p(C) = \alpha_p u_p^{off}(C) + \beta_p^{ext} u_p^{pol}(C) + \beta_p^{int} u_p^{pol}(C) \\ = \alpha_p u_p^{off}(C) + (\beta_p^{ext} + \beta_p^{int}) u_p^{pol}(C)$$

²⁷ However, this is only possible if the legislative outcome depends on the formed government ($L = L(C)$, cf. section 3.3). If government and opposition parties are responsible for policy outcomes to equal parts, voters are probably aware of the opposition's role and make it responsible for policy outcomes, too.

$$= \alpha_p u_p^{off}(C) + \beta_p u_p^{pol}(C).$$

Opposition parties' utility then is refined as

$$(8) \quad u_p(C) = \alpha_p u_p^{off}(C) + \beta_p^{int} u_p^{pol}(C) = \beta_p^{int} u_p^{pol}(C).$$

Because $0 \leq \beta_p^{int} \leq \beta_p$ formula (8) includes both extreme cases of parties motivated only intrinsically ($\beta_p^{int} = \beta_p$) or only extrinsically ($\beta_p^{int} = 0$), as well as all cases in between. Thus, beyond the question of whether parties are intrinsically or extrinsically motivated concerning policy, one can deal with the question to what degree they are.

3.4. The coalition formation game

The final variable that we discuss here is how the utility functions are embedded in a coalition formation game. The primary difference is the conceptualization of a sequential formateur game that can be solved via backward induction (the approaches by Austen-Smith and Banks, Baron and Diermeier, Bandyopadhyay and Oak, and Morelli) or to assume freestyle bargaining with an unlimited number of offers and counteroffers and search for core solutions (Sened and Schofield approach). Diermeier, Eraslan, and Merlo (2007) point out that the institutional background of a coalition bargaining process is highly relevant for the course of the game. However, they unfortunately do not differentiate between systems with and without formateurs.

The question of which kind of modeling is more appropriate cannot be answered without a view on the institutional makeup of a political system. While in some countries formateurs play a formal role in coalition building processes (such as in Austria, Belgium, the Netherlands, or Luxemburg), in others they do not exist (such as in Germany, Iceland or Denmark). Moreover, it makes a difference whether or not an informateur exists besides the formateur (as in Belgium or the Netherlands) who explores different coalition options via freestyle bargaining before a formateur enters the game and is maybe already confronted with freestyle bargaining's results.

It is obvious that in systems without formateurs, formateur models do not reflect the bargaining processes in a realistic way. In political systems without a formateur, each party can send signals to other parties expressing interest in building a joint coalition. In the period of the German three-party parliament (1961-83), for example, it was not the largest party as a formateur that decided which of the other two parties should become its coalition partner. In fact, it was important which two of the three parties could agree on a triple (C, g, y_C) . The resulting coalition could include the strongest party, but did not have to. A so-called 'Grand Coalition' between the two strongest parties, the Christian Democrats and the Social Democrats, was unattractive for these two parties for office reasons. The smallest party, the Liberals, thus had the reputation to be that actor who could choose his coalition partner. Indeed, always that coalition was formed that the Liberals favored before the elections (cf. Pappi, Herzog, and Schmitt 2006: 512). Later, after the Green Party succeeded in getting parliamentary representation as a fourth party, pre-electoral coalition signals often showed an antagonism between Christian Democrats and Liberals on one side and Social Democrats and Greens on the other. Again, the coalition formation process was not driven by the question of which party was the strongest, but which of the proto-

coalitions signaled to the electorate gained a majority. The situation is similar in other political systems without formateurs, i.e. there is neither an ‘informal’ formateur rule observable.

For political systems in which formateurs play a role, however, formateur models should be adequate. But we have to take into consideration that here, as well, informal or formal (informateurs) freestyle bargaining can play a role. A first hint is given by the fact that formateur parties do not get higher office amounts than their coalition parties as most formateur models imply (cf. footnote 22, Laver, de Marchi, and Mutlu 2011). Here again, there is potential for further research. Having identified all other relevant variables and varying only the formateur vs. freestyle bargaining variable, a comparison of the results’ explanatory power can tell us, to which degree formal institutional rules coincide with informal norms. If formateurs formally and informally do play a role for the processes, we can focus on single countries in order to model the games’ sequences realistically. As mentioned above, in Italy the strongest party was always a member of the government between 1948 and 1994. Thus, the Austen-Smith and Banks or the Morelli approach seem more adequate, because they always assume the largest party as formateur in the first round. In Austria, however, we find some coalition governments in which the strongest party in parliament is excluded. Thus, the Baron and Diermeier and the Bandyopadhyay and Oak approach, which include this possibility, could be more appropriate here. We learn again details of informal norms when comparing the adequateness of various sequences.

5. A typology of o+p coalition theories

Concluding the results of section 4, categorizing o+p theories has to be based on at least four dimensions: (1) office distribution, (2) policy outcome, (3) opposition party utility, and (4) coalition formation game. A fifth dimension, weighting parameters, might be included. However, we argued that the inclusion of party specific weighting parameters makes sense for every coalition theory.

It is one thing to discuss and denominate these dimensions, but it is another to identify parameter values. Having discussed the single dimensions in section 4, we see that either very detailed or simple dichotomies are possible. The latter could look like this suggestion:

- office distribution: limited vs. unlimited
- policy outcome: limited vs. unlimited
- opposition party utility: o+p vs. o²⁸
- coalition formation game: formateur vs. freestyle bargaining
- (weighting parameters: yes vs. no).

This simplest form results in a 2x2x2x2(x2) hyper matrix with 16 (32) entries.

Without regard to the fifth dimension, for which we generally proposed to include the parameters, we see no reason why some combinations of variables should be possible while others are not. Certainly, Gamson’s Law is broadly accepted in

²⁸ o+p means that opposition parties are assumed to have the same o+p utility function as government parties; o stands for the zero utility assumption in which policy losses do not play a role for opposition parties, and only office utility that is zero is relevant for them.

many political systems, thus the respective limitation of office distribution could be generally recommended. However, policy outcome limitations or the degree of intrinsic or extrinsic policy motivation is a question that cannot be answered *a priori*. From this background, it is rather surprising that the o+p theories use a narrow set of combinations only. Ignoring the fifth dimension, Austen-Smith and Banks, Baron and Diermeier, and Morelli are typologically identical. They are of the form (unlimited, unlimited, o+p, formateur). Bandyopadhyay's and Oak's theory is (limited, limited, o+p, formateur). Schofield's and Sened's theory is (unlimited, unlimited, o, freestyle). That means that there is no appropriate coalition theory for systems without formateurs in which Gamson's Law holds, e.g., what is not an unusual case. On the other hand, this means that future researchers should feel free not to follow the theories too narrowly. If it follows the institutional settings and the empirical observations, there is no reason to forego some of the categories. Why not combine Schofield's and Sened's freestyle bargaining model with Bandyopadhyay's and Oak's assumption of Gamson's Law and Morelli's utility function for opposition parties, when this reflects reality best? We confess that this question might somehow sound silly because of its simplicity. On the other hand, we wonder why some combinations of assumptions seem to have become standard, although there are neither theoretical nor empirical reasons for that.

Going one step further, the typology's dimensions need not to be dichotomous, but can also be seen as continuous, some even multi-dimensional. This very detailed category building might be relevant for model refinements only. However, gradual nuances can also help to learn more on political systems and to model more adequately. Starting with the office distribution dimension, we might detect different political systems for which Gamson's Law roughly holds, so that coalition building should be modeled as 'limited' regarding office distribution. However, we guess that there is at least minimal leeway in any coalition bargaining, in some political systems more, in others less. Thus, the inclusion of a leeway term could refine Bandyopadhyay's and Oak's modeling. When office utility is estimated as $u_p^{off}(C) = g_p = G w_p / \sum_{j \in C} w_j \pm \varepsilon$, $\varepsilon \in [0, \varepsilon_{max}]$, and ε_{max} is the maximally accepted deviation from the proportional allocation, models can consider more or less strict handling of proportional distribution via the size of ε_{max} . At the same time, with $0 \leq \varepsilon_{max} \leq \infty$, any level between 'limited' and 'unlimited' is included.

Assumptions with regard to policy outcome can be handled in a similar way. Between a deterministic fixing on the mean position and an open policy space, a range r around the mean position can be defined as negotiation space. The magnitude of r between 0 and ∞ covers policy outcome limitations as a continuous dimension. Beyond limitation, there is a second facet: the question of whether policy outcomes can already be negotiated and fixed in coalition treaties or anticipated via the legislative game, at best. In the case of a formal anticipation of the legislative game, the policy outcome strongly depends on the solution concept L . Some solution concepts are more restrictive, others are less so; some depend on the coalition C that has formed, others do not. In order to get all implications of this subdimension, we have to take into account types of legislative solution concepts. This would go beyond this paper's scope, however, and must be postponed to

future research. We leave this topic with the hint that also implications of different legislative modeling need to be in accordance with the empirical world.

The discussion concerning the utility function of opposition parties can be held short. We already discussed in section 3.3 that the question of whether to set opposition utility to zero or to use the o+p function for them is connected with the viewpoint of the type of policy motivation (extrinsic or intrinsic). In that section, we also proposed an extended utility function including parameters β_p^{int} and β_p^{ext} , which allows us to model parties as both extrinsically and intrinsically policy motivated. Then, β_p^{int} with $0 \leq \beta_p^{int} \leq \beta_p$, is the continuous variable of this dimension.

For the coalition formation game dimension, finally, only a dichotomous variable makes sense: either there is a formateur or there is not. Even for cases in which a formateur formally exists, but informally freestyle bargaining is practiced – for example as a consequence of an informateur round before – the bargaining game is not anything vague between formateur and freestyle, but *de facto* definitively freestyle. But like the policy outcome dimension, a subdimension exists here, namely for formateur games. For systems in which formateurs do play a role formally and factually, it is necessary to look on the games' details. Who appoints the formateur? Which criteria are relevant for the appointment? Does the formateur usually make offers or ask for demands? What happens when an offer is denied or a demand not fulfilled, respectively? Can one and the same formateur make a second offer, after a first has not been accepted? How many bargaining rounds with different formateurs are possible/common? What if all offers in all rounds are voted down? Will a caretaker government be installed in that case, or does the former government remain in office? These questions give an impression that a subtypology could be helpful for this dimension. Again, we only broadly draft this subtypology by asking these questions. A detailed elaboration goes beyond this paper's scope.

Figure 2 illustrates the dimensions discussed here for an empirically relevant typology – excluding the potentially fifth dimension 'weighting parameters.'

- Figure 2 about here -

6. Conclusion

What have we learned from the construction of a typology for o+p coalition theories by comparing their underlying assumptions? What we already knew is that although third generation o+p coalition theories look very similar on first view, some of the theories' specifications implicate far-reaching diverging consequences. However, the first advantage of our endeavor was outlining the implications of important model assumptions and, thus, deriving fitting conditions between models and concrete political systems. A general discussion of what assumptions implicate could be expected to be self-evident. When going through the existing literature, however, we believe that it was a necessary step before trying to apply these theories.

Second, and this is related to the first point, our typology helps to find the appropriate theory for case studies and single country studies. When researchers

are, for example, interested in the degrees to which certain parties in a chosen country are motivated by offices and policy,²⁹ it is not useful to take any coalition theory but the one that best reflects the institutional settings with regard to the other dimensions. Seeing that existing theories fill out very few cells of our typology, researchers shall be encouraged to combine the assumptions more freely instead of strictly applying existing theories. The fact that the typology is incomplete when considering the hitherto elaborated theories only does not mean that the ‘empty’ types do not make sense theoretically.

Third, the typology is useful for single-country studies when some of the dimensions are intensively researched and common, while others are not. For those cases, it makes sense to hold the common dimensions constant and to vary the uncommon ones. Then one can learn something by comparing the models’ results with the empirical world. The distribution of offices, for example, can be observed rather easily, whereas informal norms of the legislative games might be black boxes for many systems. Varying the legislative concept L as the only dimension and matching the various results with reality shows which concept L explains the empirical world best and thus can help to learn details of the legislative game. Fourth, for cross-country studies, the most similar and the most different cases designs (m_{scd} , m_{dcd}), as well as the difference and the concordance principle, are common and useful methods (cf Keman 2008). These methods ask for a comparison of countries or – more generally – cases, which are either preferably similar or different with respect to the independent (m_{scd} , m_{dcd}) or dependent variable (difference and concordance principle). If coalition building is a crucial variable for a research question, there is a need to identify similar or dissimilar cases. Therefore, the various dimensions of the categorization proposed here can be helpful. Most similar countries are those which fall into the same categories on all dimensions; most different countries diverge on all dimensions. That is, the typology cannot only be used for theories, but also for cases.

Fifth and last, we mentioned above that for broad cross-country studies, we will never find the one and only theory that reflects the institutional frameworks in all countries. But having chosen one theory, it is possible to identify for which countries this theory is appropriate with regard to which typology dimension. Appropriateness (or not) can then be a valuable dummy variable in statistical analyses.

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²⁹ That is, they aim to estimate α_p and β_p .

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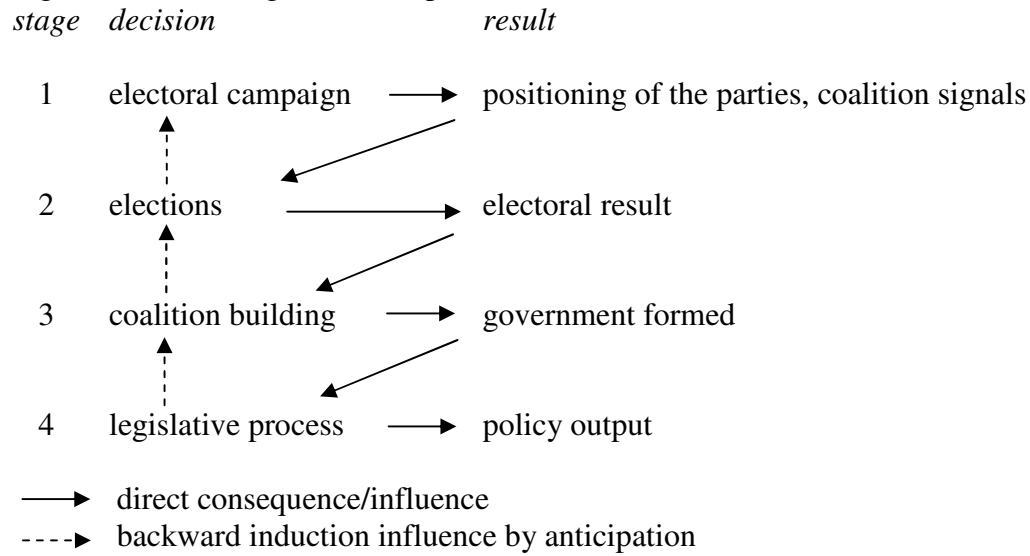
Table 1: Crucial assumptions in the discussed o+p theories

<i>Theory</i>	<i>office distribution</i>	<i>policy outcome</i>	<i>utility of opposition parties</i>	<i>formateurs</i>
Austen-Smith and Banks	no formal restrictions, determined by the formateur game	no formal restrictions, determined by the formateur game	like government parties	play a role
Baron and Diermeier	no formal restrictions, determined by the formateur game	no formal restrictions, determined by the formateur game	like government parties	play a role
Bandyopadhyay and Oak	proportional to seat distribution	weighted mean of coalition parties	like government parties	play a role
Morelli	no formal restrictions, determined by the formateur game	no formal restrictions, determined by the formateur game	like government parties	play a role
Sened and Schofield	no formal restrictions	determined by the legislative game on the following stage	zero	are not included

Table 2: Office utility values in a three-party-game

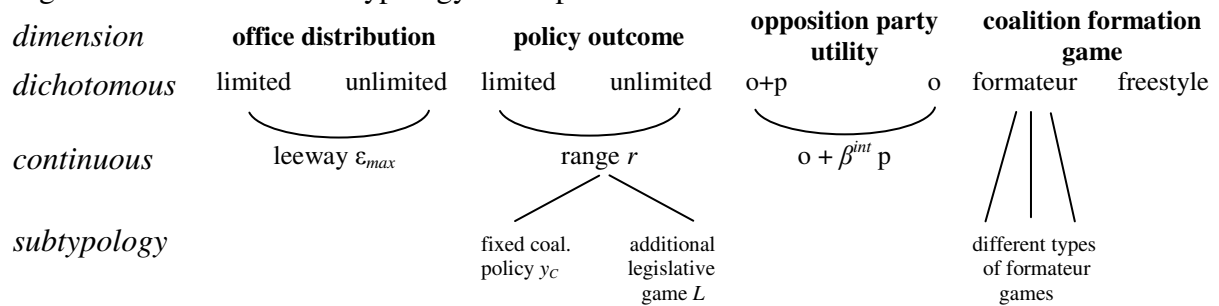
coalition	$u_{p1}^{off}(C)$	$u_{p2}^{off}(C)$	$u_{p3}^{off}(C)$
$\{p_1\}$	1	0	0
$\{p_2\}$	0	1	0
$\{p_3\}$	0	0	1
$\{p_1, p_2\}$	0.5625	0.4375	0
$\{p_1, p_3\}$	0.6923	0	0.3077
$\{p_2, p_3\}$	0	0.6364	0.3636
$\{p_1, p_2, p_3\}$	0.45	0.35	0.2

Figure 1: A four stage model of politics



source: own graphic based on Austen-Smith and Banks (1988) and Schofield and Sened (2006).

Figure 2: Dimensions of a typology for o+p theories



source: own graphic.