Live for Today, Hope for Tomorrow?
Rethinking Gamson's Law

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Abstract

The empirical phenomenon termed Gamson's Law is well known but lacks firm theoretical foundations. In fact, Gamson's Law is a real puzzle as most models of coalition bargaining suggest that bargaining strength determines the division of portfolios, which, in turn, suggests that portfolios should rarely be allocated proportionally. I propose a theory of portfolio allocation that emphasizes the need to maintain, rather than simply to form, coalitions. The desire to maintain the coalition provides the parties with radically different incentives, i.e., instead of maximizing their share in the short run they face a trade-off; taking too many portfolios means that one's coalition partner can be bought off rather easily. Forming a stable coalition requires making it expensive to buy off other coalition parties. I test hypotheses derived from the model with data on portfolio allocations in coalition cabinets across Europe.

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Gamson's Law has long been regarded as one of the best-established empirical regularities within the field of political science. Indeed, it appears that only two empirical regularities have been deemed worthy of being termed 'a law'. However, in contrast with Duverger's Law, which arguably has undergone several refinements (Riker, 1982), Gamson's Law lacks firm theoretical foundations. In fact, as Warwick and Druckman (2001) note, there is considerable discrepancy between the predictions of bargaining theories of coalition formation and the proportional allocation of ministerial portfolios among coalition parties observed empirically.

Although few would deny the strong correlation between coalition parties' seat share in the legislature and in the cabinet, Gamson's Law remains a source of debate. A part of the problem is that because of Gamson's Law lack of firm theoretical foundations — although progress has been made on that front as discussed below — proportionality is the sole empirical implication of the law. In a strict interpretation of Gamson's Law implies that seat and portfolios shares are perfectly proportional, i.e., in a simple regression framework, we would expect the intercept to equal zero and the coefficient for seat shares to equal one. Interestingly, most studies of Gamson's Law do not test whether the slope coefficient is statistically different from one. Yet, a cursory glance at the literature reveals that while there is a strong relationship, the hypothesis that slope coefficient is different from one can, more often than not, be rejected with a high degree of statistical certainty. More interestingly, deviations from Gamson's Law are not random but systematically favor smaller parties (Browne and Franklin, 1973; Browne and Frendreis, 1980).

This paper explores an intuitive idea that casts a light on the allocation of coalition payoffs. It considers a simple bargaining model that helps reconcile the large formateur advantage predicted by standard bargaining models with the relatively proportional outcome that is observed empirically by noting that the benefits of coalition membership are realized over time. In forming a coalition, the formateur will not merely be concerned with forming a coalition but, rather, with forming a *stable coalition* to be able to enjoy the benefits of office and the policymaking powers that come with coalition membership. In other words, the formateur must ensure that its coalition partners will find it in their best interest to stay in the coalition. The formateur, therefore, has an incentive to not take full advantage of her bargaining position in order to dissuade her coalition partner from terminating the coalition prematurely. Qualitative evidence suggests that formateurs face such incentives. Saalfeld (1999), e.g., argues that Chancellor Helmut Kohl sacrificed short-term gains in favor of forming a more stable government coalition between the CDU/CSU and the smaller FDP.[1] The model presented below examines how the formateur's incentives change when her coalition partners can dissolve the government coalition, yielding a novel prediction about the relationship between party size, formateur status, and portfolio shares.

The logic underlying the model also suggests that portfolio allocation in presidential systems will follow a different pattern. The parliamentary formateur's incentive to accommodate her coalition partners in the model stems from the possibility of being excluded from future government coalitions. As presidents do not rely on the confidence of the legislature in order to stay in office, they do not face the same incentives to keep their coalition partners content and, thus, are more likely to enjoy their full formateur advantage and portfolio allocation ought to be less responsive to party size.

Gamson's Law, Formateurs, & Small Parties

While there has long been a consensus that Gamson's Law represents a close approximation of the distribution of ministerial portfolios, scholars have been intrigued by two aspects of the empirical regularity. The first concerns the lack of fit between theory and empirics. Baron and Ferejohn's (1989) model, as well as many other models of coalition formation that build on their insight, generally predict that the formateur will receive a disproportionally large share of the portfolios. The early work on cabinet portfolios, such as Browne and Franklin (1973), Browne and Frendreis (1980), and Schofield and Laver (1985), that predates Baron and Ferejohn (1989) does not address the question whether formateurs enjoy an advantage in the distribution of portfolios but there is little in this work that would suggest that any deviations from proportional allocation derive from an advantage that the formateur might

[1] While Saalfeld's (1999) argument is not focused on the allocation of portfolios, the FDP received a disproportionally large number of portfolios. The FDP's share of the government's parliamentary majority was on average 16.3% across the Kohl cabinets but the FDP received on average one-third more portfolios than suggested by proportional allocation.

enjoy in the bargaining. Warwick and Druckman (2001) address the formateur advantage hypothesis directly but conclude that formateurs, instead, face a disadvantage.[2]

Others, notably Ansolabehere et al. (2005), have countered that the absence of formateur advantage may be due to an empirical misspecification. Coalition payoffs in bargaining models may be determined by the parties' voting weights rather than their seat shares. Empirical work generally focuses on the latter, which may obscure the benefits that stem from being the formateur as Ansolabehere et al. (2005) claim.[3] However, as Warwick and Druckman (2006) note, the large formateur advantage found in Ansolabehere et al. (2005) all but vanishes when party size, an important determinant of which party becomes a formateur (Diermeier and Merlo, 2004), is included in the model.[4] Laver, de Marchi and Mutlu (2011) and Cutler et al. (2016) offer a more critical theoretical and empirical assessment of Ansolabehere et al. (2005) and, more generally, approaches to modeling coalition formation that assume formateurs exercise exclusive proposal rights. Cutler et al. (2016) go on to offer a model that jointly estimates the probability of joining a government coalition and, conditional on membership, the number of cabinet portfolios. Cutler et al.'s (2016) don't speak to the question of whether there is a formateur advantage as they dismiss the formateur advantage on theoretical grounds, but they find that while voting weights affect cabinet membership, they don't appear to influence the allocation of cabinet portfolios whereas the coalition parties' seat share does. Cutler et al. (2016) furthermore argue that scholars should come terms with the fact that seat share is a better predictor of portfolio allocation than voting weights and that the emphasis ought to be on developing theories that explain Gamson's Law.

A few scholars have taken this line of attack. In an innovative article, Bassi (2013) offers a model in which the identity of the formateur is determined endogenously and where, in equilibrium, the allocation of portfolios is proportional to party size if the parties' preferences for cabinet portfolios are similar. Morelli (1999) takes a step further away from

[2] Warwick and Druckman's (2001) results must be interpreted with caution as they do not include both constituent terms of the interaction between formateur status and seat share.

[3] It should, however, be noted that Ansolabehere et al. (2005) don't consider the possibility that different portfolios carry different weight with the exception of the prime minister's portfolio.

[4] Warwick and Druckman (2006) also deviate from Ansolabehere et al. (2005) in that they also account for the salience of different portfolios. However, the models that only consider voting weights produce similar results as Ansolabehere et al. (2005) and, more generally, they conclude that the substantive findings w.r.t. proportionality are similar regardless of whether the portfolios are weighted by their salience or not.

formateur-centered bargaining by proposing a demand bargaining model in which the parties sequentially field demands and a coalition forms if the demands of a subset of parties that constitute a majority are compatible. The form of bargaining in Morelli's model is an attractive feature as, on the face of it, it may resemble more closely how coalition bargaining takes place in reality. The data in Müller and Strøm (2001), for example, suggests that formateurs don't make a single take-it-or-leave offer as the Baron-Ferejohn type models assume but rather that the parties shop around.[5] The equilibrium outcome of the demand bargaining model is consistent with Gamson's Law, at least to the extent that the parties' seat shares approximate the parties' ex ante distribution of bargaining power.

Carroll and Cox (2007) offer a different perspective, arguing that the formation of electoral coalitions plays an important role. Carroll and Cox argue that the effort exerted by each party in the electoral coalition is influenced by its expected payoff from winning the election and that a proportional allocation of portfolios will elicit the greatest campaign effort by members of the electoral coalition.[6] Falcó-Gimeno and Indridason (2013) argue that bargaining partners are more likely to rely on (proportional) norms of fairness when the parties find themselves in complex bargaining situations and face greater uncertainty. Bucur and Rasch (2015) suggest that legislative institutions governing investitures and votes of no-confidence increase the proportionality of coalition payoffs.

While exploring theoretical explanations for the close fit between party seat share and portfolio share is clearly an important task, this focus should also take note of the second notable aspect of the empirical distribution of cabinet portfolios; the fact that the fit is not perfect. As some of the earlier contributions on portfolio allocation, e.g., Browne and Franklin (1973) and Browne and Frendreis (1980) noted, small parties tend to be overcompensated.[7] While the small-party bias is usually not large in magnitude, it appears to be quite robust, both at the national level (Bäck, Meier and Person, 2009; Debus, 2011) and sub-nationally (Däubler and Debus, 2009).

[5]This is suggested by both formateurs talking with multiple parties and, perhaps less directly, by the fact that in many instances multiple actors get a turn in occupying the role of the formateur.

[6]Bassi (2013) notes that Carroll and Cox's (2007) approach bears some similarity to models of endogenous formateur selection.

[7]Morelli (1999) can account for this empirical regularity when the number of parties needed to form a coalition is small.

As noted above, I present a simple model that helps account for the lack of a clear formateur advantage and the presence of small-party bias by recognizing that the benefits of coalition membership accrue over time, which provides the formateur party with an incentive to over-compensate smaller coalition parties that otherwise are susceptible to overtures from parties in the opposition. Thus, the model emphasizes the dynamic elements of coalition governance. Others, e.g., Baron and Herron (2003), Kalandrakis (2004), Fong (2005), Penn (2009), Cho (2014), and Baron (2018) have considered coalition bargaining in a dynamic setting. A common feature of these models is that current policy choices become the status quo that must be overturned in the subsequent bargaining round. Each of these models considers bargaining over policy with the exception of Kalandrakis's (2004) whose model, as the model presented below, examines a divide-the-dollar game in the mold of Baron and Ferejohn (1989). While an endogenous status quo is a feature of the model presented here, it differs from the above models as, instead of a player being selected at random to make a proposal, the proposal right is allocated to the non-formateur coalition party.

The focus on the role of an endogenous status quo also implies that the concern is with policymaking across coalitions whereas the model presented below is more closely relate to a subset of the coalition literature that is concerned with the interdependency of different aspects of the 'coalition lifecycle'. That concern can, for example, be seen in Müller and Strøm (2001) whose volume examines the various aspects of the coalition lifecycle and in Laver and Shepsle (1996) who consider, e.g., the susceptibility of different types of coalitions to destabilizing shocks. The model examined here builds on these intuitions and is in line with, e.g., Indridason (2008) and Chiba, Martin and Stevenson (2015) who also take a cue from this literature by explicitly considering how considerations of government stability influences which coalitions form.

A Simple Model of Coalition Bargaining

A common feature of coalition bargaining models is that the formation of a coalition is treated as the be-all and end-all of coalition governance. That is, after a bargain is struck and a coalition is formed, the game ends and the parties realize their payoffs. In reality, the formation of a coalition is not the end of the game but rather its beginning. Most importantly, the benefits of coalition membership are realized over the life of the coalition. To obtain the benefits of office (whether they consist of simply being in office or derive from the ability to influence policy), the coalition must be maintained. That is, the benefits of office accrue over time rather than being realized at the time of the coalition's formation. A defining feature of parliamentary systems is that the government can fall at any time — either by losing the confidence of the legislature or by the desertion of one or more members of the coalition.

A coalition that contains an unhappy coalition partner that suspects that they might improve their lot by forming another coalition will be unstable.[8] Thus, even if the bargaining is structured along the lines of Baron and Ferejohn's model, with take-it-or-leave-it offers and an exogenous recognition rule, the formateur may prefer the moderate payoff from a stable coalition of content coalition partners to the higher, but uncertain, payoff from an unstable coalition in which she receives the full formateur advantage. Thus, the need to maintain the coalition may introduce moderation on part of the formateur as she has an incentive to make her coalition partners more expensive to buy off by parties in the opposition.

To clarify the logic of the argument, consider a simple, highly stylized, two-period model of coalition bargaining. The bargaining takes place between three parties and each party's share of legislative seats is denoted s_i with $s_i < \frac{1}{2}$ for all $i \in N = \{1, 2, 3\}$. That is, no party has sufficient support in the legislature to form a single-party government but any two parties can form a majority coalition. The parties bargain over a division of government portfolios. The bargaining protocol is the simplest possible — one party is recognized as the formateur in each period. The formateur proposes a division of the portfolios among the three parties. A proposal in period t is a triple $m^t = (m_1^t, m_2^t, m_3^t)$ such that $m_i^t \in [0, 1], \forall i \in N$ and $\sum_{i \in N} m_i^t = 1$, for $t = 1, 2$. The set of feasible proposals is denoted $\mathbf{M}$. Once a proposal is on the table, each party votes to accept or reject the proposal, $v_i^t = \{A, R\}$. Let $V^t = (v_1^t, v_2^t, v_3^t)$ denote the vector of the parties' acceptance decisions in period t. If two parties accept, a coalition is formed and the parties realize their payoff in that period. If the proposal is

[8] Bäck, Dumont and Saalfeld (2017) consider the effects of the proportionality of the portfolio allocation on government duration and find that deviations from proportionality increase the probability of government dissolution.

rejected the portfolios are divided equally and the game moves on to the next period (or if in the second period, the portfolios are divided equally and the game ends).[9] Let x_i^t denote party i's realized payoff in period t.

If a coalition forms in the first period and doesn't dissolve before the second period then the terms of the coalition agreement, i.e., the division of the portfolios, remains unaltered in the second period. That is, it is assumed that the terms of the coalition agreement cannot be renegotiated. At the end of the first period the 'minor' coalition partner, i.e., the non-formateur party can opt to leave the coalition and bargain with the opposition party.[10] It bears emphasizing that the assumption that the initial formateur is excluded from the coalition negotiations following a government dissolution is what drives the main result. This is, of course, a restrictive assumption but it highlights that the results are driven by coalition dissolution being costly to the formateur. Complete exclusion from the bargaining represents an extreme form of a cost to the formateur but the assumption could be weakened, e.g., by assuming that the initial formateur's recognition probability is reduced rather than eliminated, without affecting the substantive results.[11] In the bargaining between the minor party and the opposition party, the parties' probabilities of being recognized are assumed to be proportional to the parties' legislative seat shares. Thus, if the bargaining takes place between party 2 and party 3, party 2's recognition probability equals $\frac{s_2}{s_2+s_3}$ and party 3's recognition probability equals $\frac{s_3}{s_2+s_3}$. After a party has been recognized as formateur it proposes a division of the portfolios, m^2, and a vote is taken on the new coalition.

I follow Baron and Ferejohn (1989) in assuming that the recognition probability is proportional to seat share, but this assumption can be questioned as one might expect bargaining power, and not seat share, to determine the recognition probability as the literature has noted (e.g., Ansolabehere et al., 2005; Laver, de Marchi and Mutlu, 2011).

[9] Online appendix A considers the alternative assumption that portfolios are divided in proportion to the parties' seat shares if a proposal is rejected and in appendix B it is assumed that all the parties receive a payoff of zero in the event of a caretaker cabinet.

[10] It bears noting that the non-formateur party is assumed to incur no costs in dissolving the coalition but Tavits (2008) argues that parties that break coalitions face reputational costs. If such reputational costs were assumed, they reduce the value of forming a new coalition and the concessions the initial formateur would have to make. Thus, reputational costs don't alter the basic results of the model as long as they are not prohibitively large.

[11] The assumption could also be understood in terms of the particular form of government dissolution being considered, where the minor coalition partner or the opposition party 'put out feelers' to see if a new coalition is feasible before the current coalition is dissolved.

However, Diermeier and Merlo (2004) examine formateur selection empirically and find that assuming that formateur selection is proportional to seat share provides a good fit. Moreover, Cutler et al. (2016) find that seat share, and not bargaining power, is a better predictor of portfolio allocation than bargaining power.[12] That said, the literature — perhaps with the exception of Bassi (2013) who provides a model where the selection of formateur is endogenous — offers fairly little in terms of a discussion why formateur selection should be driven by seat shares or bargaining power. In terms of the model considered here, it bears noting that the main results here do not depend on the specific recognition rule as long as each party has a positive probability of being recognized — given the prominence of Gamson's Law in the literature it is convenient to let s_i denote seat share but more generally it can simple be interpreted as party i's probability of being recognized.[13]

To sum up, the sequence of the game and the parties' strategies are as follows. Without loss of generality, party 1 is assumed to be the formateur in period 1 and its strategy is a mapping $P : S \to M$.[14] Following party 1's proposal each party votes to accept or reject the proposal. Each party's strategy is a mapping $v_i^1 : S \times M \to \{A, R\}$ and the vector of the three parties' votes is denoted V^t. If party 1's proposal is accepted, then party 1's coalition partner chooses whether to dissolve the coalition or to continue the coalition. The minor party's strategy is then a mapping $D : m_j^1 \times s_2 \times s_3 \to \{d, c\}$, where $j \in \{2, 3\}$ denotes the minor coalition partner. Note that since only the minor partner and the opposition party bargain in the case of dissolution, the minor partner's strategy only depends on the vote shares of the parties involved in the bargaining and its current portfolio share. If the minor party chooses to continue the coalition, the same division of the portfolios is maintained in the second period. If the coalition is dissolved, the formateur is selected in the manner detailed above. The formateur's strategy is a proposal $m^2 \in M$, which the parties vote to accept or reject: $v_i^2 : S \times M \to \{A, R\}$.

[12]That, of course, does not tell the whole story as Cutler et al. (2016) find that bargaining power is important in predicting which coalition forms.

[13]A necessary caveat here is that with in minority situations with only three parties, each party has the same bargaining power. Examining the incentive to form durable coalitions with respect to bargaining power would, thus, require considering bargaining between four or more parties but that does not alter the formateur's basic incentives. The empirical analysis in online appendix E.4 considers minimum integer weights in places of seat shares.

[14]The simple bargaining protocol implies that the formateur advantage in each period does not depend on the identity of the party.

The parties' payoffs are the sum of the parties' share of the portfolios in each period with the second period payoff discounted by δ:[15]

$$u_i(m^1, m^2, V^1, V^2) = x_i^1 + \delta x_i^2. \tag{1}$$

In the subgame perfect equilibrium of the game, the possibility of dissolution can induce moderation on part of the formateur in the first period of the game and the formation of a stable coalition. Consider first the second period of the game. If a coalition was formed in the first period and the minor party has chosen to maintain the coalition then the coalition payoffs are simply distributed in the same manner as in the first stage of the game. If the coalition has been dissolved and party i is the formateur then each party's optimal acceptance strategy is to accept a proposal if the proposal allocates it one-third or more of the portfolios, i.e., the amount the party will receive if the offer is rejected. Moving up to the proposal stage in the second period, party i's optimal strategy is to propose $m_i^2 = \frac{2}{3}$, $m_1^2 = 0$, and $m_j^2 = \frac{1}{3}$, $j \neq 1, i$, which is accepted. The expected payoff to party $i \in \{2, 3\}$ (i.e., the minor party and the opposition party) in the subgame following dissolution equals $\frac{2}{3}\frac{s_i}{s_2+s_3} + \frac{1}{3}\frac{s_j}{s_2+s_3} = \frac{2s_i+s_j}{3(s_2+s_3)}$.

Following a history in which the first-period proposal was rejected each party is selected formateur with probability equal to its legislative seat share. If a party is recognized its optimal proposal allocates two-thirds to itself and one-third to one of the other parties. Assuming that the formateur simply flips a coin in deciding which party to include in its proposal, party i's expected payoff in the subgame following a rejected proposal equals $\frac{2s_i}{3} + \frac{1}{2}\frac{1-s_i}{3}$.

Now consider the minor party's decision to dissolve the coalition. The minor party's expected payoff from dissolving the coalition equals $\frac{2s_i+s_j}{3(s_2+s_3)}$ (where i is the minor party). As long as the party's share of the portfolios in the first stage is greater or equal to the expected share in the second period the minor party will opt to stay in the coalition.

The voting strategies in the first period are slightly more complicated than in the second stage as minor party status in a coalition creates a possibility for obtaining greater benefits

[15]For simplicity, I suppress the dependence of the payoffs on m^t and V^t below.

in the future — it gives the minor party the opportunity to dissolve the coalition, which leads to a bargaining round between only the minor party and the opposition party in which the minor party's probability of becoming the formateur is greater than when the bargaining round involves all three parties. Thus, a party might accept a coalition offer even if it is offered less than the reservation value ($\frac{1}{3}$) but it would only do so because it was intent on dissolving the coalition in order to reap a higher payoff in the second period.[16] It is optimal for party i to accept a proposal if:

$$\frac{1}{3} + \delta\left(\frac{2s_i}{3} + \frac{1-s_i}{6}\right) \leq m_i^1 + \delta\frac{2s_i + s_j}{3(si+sj)} \tag{2}$$

or

$$m_i^1 \geq \frac{2s_i + 2s_j + 3\delta(s_i^2 + s_i s_j - s_i) - \delta s_j}{6(s_i + s_j)}. \tag{3}$$

Now consider the first-period proposal. The formateur's action can lead to three types of outcomes. First, a proposal may be rejected, causing the government formation process to start over in the second period. Second, the formateur offers a proposal that leads to the formation of a stable coalition that stays in office in the second period. This requires offering the minor party a share of the portfolios greater than what it obtains if it chooses to dissolve the coalition in the second period to enter into negotiations with the opposition party. It has been shown above that the minor party must receive $\frac{2s_i+s_j}{3(si+sj)}$ for this to be the case. Third, the formateur can make a proposal that leads to the formation of a coalition that is 'doomed', i.e., the minor coalition partner will accept the proposal but only in order to dissolve the coalition in order to enter into negotiations with the opposition in the second period. The lower bound of a proposal that is acceptable to a minor party is given by equation (3).

The first option facing the formateur is clearly suboptimal as she can construct a proposal that allocates slightly more than one-third of the dollar to one of the parties and the rest to herself, which would be accepted. Thus, the formateur's action depends on which of the two

[16]To see why this is the case, note that if the minor coalition partner and the opposition parties have the same number of legislative seats then the minor party's expected payoff equals $\frac{1}{2}$.

remaining options is more attractive. That is, if

$$(1+\delta)\left(1-\frac{2s_i+s_j}{3(s_i+s_j)}\right) > 1-\frac{2s_i+2s_j+3\delta(s_i^2+s_is_j-s_i)-\delta s_j}{6(s_i+s_j)} \tag{4}$$

then the formateur will prefer to compromise and form a coalition that will stay in place in the second period. Whether this condition holds depends on the discount factor and the legislative seat shares of the non-formateur parties. The importance of the discount factor can easily be seen by considering the payoff from forming a stable coalition (the LHS of equation 4). At the extreme, if the formateur doesn't value the future at all, $\delta = 0$, there is clearly no incentive to form a stable coalition. On the other hand, if the formateur doesn't discount future payoffs, building a stable coalition results in a higher payoff. To see why that is the case, note that the offer required to form a stable coalition, $\frac{2s_i+s_j}{3(s_i+s_j)}$, is at most $\frac{1}{2}$ (when $s_i = s_j$), which implies that the formateur's total payoff is at least 1.[17] The payoff from extracting the maximum formateur advantage and forming a 'doomed' coalition can obviously not exceed 1. Equation (4) can be rearranged to reflect the minimum value of the discount factor that leads to a stable coalition and moderation on part of the formateur's demands:

$$\delta > \frac{2s_i}{3s_i^2 - s_i + 3s_j + 3s_is_j} \tag{5}$$

As the formateur can choose which party to include in her coalition, and smaller parties are 'cheaper', i.e., their expected value from dissolving a coalition is smaller, the actors must discount the future rather heavily for the formateur to forego the opportunity to form a stable coalition.[18]

To sum up, if the condition on the discount factor above is satisfied then there exists an equilibrium in which the formateur proposes a coalition that allocates a greater share of the spoils of office to its coalition partner than is necessary to form the coalition. In other words, the allocation of portfolios in the present model will be more proportional than

[17] If the parties' legislative seat shares are unequal, the formateur forms a coalition with the smaller party and receives a higher payoff.

[18] The condition on the discount factor is most restrictive when the non-formateur parties are of similar size and have just enough seats to form a majority coalition. In such circumstance the discount factor must be greater than approximately .57.

predicted by the standard bargaining models that predict a large formateur advantage.[19] For sufficiently high discount factors, the formateur proposes $m_i^1 = \frac{2s_i+s_j}{3(s_i+s_j)}$ to the smaller non-formateur party (i) and keeps the rest to herself. Thus, the size of the formateur's 'compromise' depends on the size of the non-formateur parties. Differentiating m_i^1 with respect to party i's seat share shows that party i's coalition payoff is increasing, conditional on it being the smaller non-formateur party, in its seat share:

$$\left.\frac{\partial m_i^1}{\partial s_i}\right|_{s_i<s_j} = \frac{s_j}{3(s_i+s_j)^2} > 0. \tag{6}$$

Considering how party size influences the proportionality of coalition payoffs is not straightforward because the parties' seat shares must sum to one. That is, an increase in party i's seat share must come at some other party's expense. To examine the proportionality of coalition payoffs, Table 1A shows the proportionality of the formateur party's payoffs $\left(\frac{\text{share of portfolios}}{\text{share of seats}}\right)$ for different distributions of seats.[20] The empty cells correspond to cases in which the formateur party holds a majority of seats or the 'coalition partner' is smaller than the 'opposition' party (in which the forming a coalition with the 'coalition partner' is not an optimal strategy).

Table 1: The Proportionality of the Formateur's Share of Portfolios

Boldface = Formateur party is larger than coalition partner

(A) With Possibility of Dissolution

Seat Share of Coalition Partner \ Seat Share of Opposition Party	0.28	0.31	0.34	0.37	0.40	0.43	0.46	0.49
0.01								
0.04								**0.70**
0.07							**0.72**	**0.72**
0.10						**0.73**	**0.75**	**0.76**
0.13					**0.75**	**0.76**	**0.78**	**0.80**
0.16				**0.76**	**0.78**	**0.80**	**0.83**	**0.85**
0.19			**0.77**	**0.79**	**0.82**	**0.85**	**0.88**	**0.91**
0.22		**0.78**	**0.80**	**0.83**	**0.87**	**0.90**	**0.94**	**0.99**
0.25	**0.78**	**0.81**	**0.85**	**0.88**	**0.92**	**0.97**	**1.02**	**1.09**
0.28		**0.86**	**0.90**	**0.94**	**0.99**	**1.05**	1.12	1.21
0.31			**0.96**	**1.01**	1.08	1.16	1.25	1.37
0.34				1.10	1.19	1.29	1.42	1.59
0.37					1.32	1.46	1.65	1.91
0.40						1.70	1.97	2.40
0.43							2.48	3.26
0.46								5.15

(B) Without Possibility of Dissolution

Seat Share of Coalition Partner \ Seat Share of Opposition Party	0.28	0.31	0.34	0.37	0.40	0.43	0.46	0.49
0.01								
0.04								**0.72**
0.07							**0.77**	**0.77**
0.10						**0.81**	**0.82**	**0.83**
0.13					**0.85**	**0.86**	**0.88**	**0.89**
0.16				**0.89**	**0.91**	**0.93**	**0.95**	**0.97**
0.19			**0.94**	**0.95**	**0.98**	**1.00**	**1.03**	**1.06**
0.22		**0.98**	**1.00**	**1.02**	**1.05**	**1.09**	**1.13**	**1.17**
0.25	**1.02**	**1.05**	**1.07**	**1.11**	**1.14**	**1.19**	**1.24**	**1.31**
0.28		**1.12**	**1.16**	**1.20**	**1.25**	**1.31**	1.38	1.48
0.31			**1.26**	**1.31**	1.38	1.46	1.57	1.70
0.34				1.45	1.54	1.65	1.80	2.00
0.37					1.74	1.90	2.12	2.43
0.40						2.24	2.57	3.09
0.43							3.27	4.25
0.46								6.80

[19] It is important to note, however, that the results are not directly comparable as the standard bargaining model assumes a more involved bargaining protocol and the equilibria are generally not unique.

[20] 'Share of seats' refers to the formateurs' share of the legislative seats held by the cabinet parties.

Table 1A highlights four interesting aspects of the distribution of coalition payoffs. First, an increase in the seat share of the coalition partner at the expense of the formateur party (moving down the columns) results in more portfolios for the minor coalition partner and fewer portfolios for the formateur. However, the effect on the proportionality of the outcome is the opposite. While larger minor coalition partners receive a larger share of the portfolios, the change in the number of portfolios doesn't keep pace with the increase in the size of the coalition in terms of its legislative majority and, thus, smaller coalition partners receive a proportionally larger share of portfolios. As Table 1A shows, that is also true of the formateur party. The smaller the formateur party is, the larger its share of portfolios is in proportion to its size.

Second, an increase in the seat share of the coalition partner at the expense of the opposition party (moving diagonally from top right to bottom left) results in relatively greater representation for the formateur party and, thus, a less favorable outcome to the coalition partner in terms of proportionality. The reason is that although the coalition partner's share of the portfolios increases as it becomes larger, its share doesn't increase fast enough in relation to the total number of legislative seats behind the coalition to maintain the more disproportional outcomes that occur when the party is smaller.

Third, the formateur is disadvantaged in a number of seat distributions. In particular, the formateur tends to receive fewer portfolios than proportional allocation would imply when the formateur party is the largest party.[21] When the formateur party is the largest party (i.e., closer to the top left corner), its share is generally smaller than proportional allocation produces. Thus, the results suggest a small party bias consistent with the findings in the literature, see, e.g., Browne and Frendreis (1980).

Finally, the table shows that the distribution of payoffs is influenced by the relative seat shares of the non-formateur parties. This can be seen most clearly as we move from left to right in the table (whether we hold the formateur's size constant or not).

To get a sense of how the possibility of dissolution influences portfolio allocation, Table 1A can be compared with what the portfolio allocation would be if dissolution was not possible, i.e., as in the standard bargaining models where the game ends immediately after a

[21] Point predictions, as suggested above, ought to be taken with a grain of salt.

bargain has been struck. Table 1B shows the proportionality of the formateur's payoff in such a 'one shot' bargaining model. That is, we consider the outcomes in the model presented above when there is only one time period. Comparison of the two tables shows clearly how the possibility of dissolution influences the allocation of portfolios. The formateur's share of portfolios is larger when dissolution is not possible (Table 1B) for any distribution of legislative seats (compared with Table 1A). The possibility of dissolution clearly disadvantages the formateur. Whether or not the results suggest that we should find a formateur advantage, or disadvantage, empirically is difficult to say. As can be seen in the table, the predicted proportionality varies greatly — the question is whether all the seat distributions can be considered equally plausible. The likelihood of becoming a formateur is a function of party size (Diermeier and Merlo, 2004) so the cases in which the formateur is the largest party are perhaps the natural focus of attention. Restricting our attention to those cases, it can be seen that a formateur advantage hardly ever occurs when dissolution is possible whereas there are many instances in which the formateur gains from her position when no dissolution can occur.

The robustness of the results to alternative assumptions is examined in an online appendix. The model above assumes that coalition payoffs are distributed equally among the parties when a caretaker cabinet forms. Online appendices A and B substitute this assumption the assumptions, respectively, that coalition payoffs in caretaker cabinets are proportional to party size and, as is more common in the literature, that each party receives a payoff of zero. While the equilibrium payoffs, naturally, change under each of these assumptions, the main result that a concern with the durability of coalition induces moderation on part of the formateur. A limitation of the model above is that coalitions are not subject to the possibility of dissolution in the second period. This is a concern as if the second period formateur must worry about stability, it will have to be more generous, which in turn reduces the first period formateur's need to compromise (as dissolution is now a less attractive option). Online appendix C explores these dynamics in a three-period model. While the formateur's generosity in the first period is now reduced, the equilibrium offers remain larger than in a model without dissolution. In part, the effect of allowing the 'new' coalition to be dissolved is not as significant as one might expect. While the value of becoming the second period formateur is now smaller than before, the value of being on the receiving end of an offer following a dissolution is now more attractive.

Empirical Analysis

The consensus in the literature appears to be that Gamson's Law holds and that portfolios are distributed proportionally among coalition partners. The standard method of testing Gamson's Law is to run a simple regression of the parties' seat share (within the coalition) on their share of portfolios but the conclusion that Gamson's Law holds is, at least in part, based on imprecise interpretation of the results. Before testing the implications of the model presented above, I demonstrate that Gamson's Law in its strict interpretation, i.e., that the allocation of portfolios is strictly proportional to the cabinet parties' legislative seat shares, must be rejected when using the standard approach to evaluate Gamson's Law. More importantly, I show that the observed deviations from Gamson's Law are systematic across countries and that cabinet portfolios could have been allocated in a more proportional manner in the great majority of cases.

Does Gamson's Law Really Hold?

Before testing the implications of the model, I briefly reexamine the data on portfolio allocation to i) show that while seat and portfolio shares are highly correlated, Gamson's Law, strictly speaking, does not hold, ii) that the deviations from Gamson's Law are systematic, and iii) the deviations cannot be explained by the difficulty of perfectly approximating the party seat shares that stems from portfolios being discrete.

I analyze data on coalition formation in West European parliamentary systems in the period from 1945 to 2014.[22] The results of a simple regression of seat shares on portfolio

[22] The data for 1945-2000 comes from Warwick and Druckman (2006) while Seki and Williams (2014) provide the data for 2001-2014. For sake of comparability the analysis is restricted to the countries included in Warwick and Druckman (2006) but the results using the full set of countries are in an online appendix E.3 (table E.10). The countries are Austria, Belgium, Denmark, Germany, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, and Sweden. I have excluded two countries, Finland and France, as they are semi-presidential systems. Including these countries doesn't change the results in any appreciable fashion.

shares are shown in Table 2. Gamson's Law implies specific coefficient values in this model, i.e., a perfect proportionality of payoffs implies that the seat share coefficient should equal one and the intercept should equal zero.

Table 2: REGRESSING SEAT SHARE ON PORTFOLIO SHARE

	ALL COUNTRIES
SEAT SHARE	0.76**
	(0.009)
CONSTANT	0.081**
	(0.004)
OBS.	794
R^2	0.89
$H_0 : \beta_{SS} = 1$	1.4E-103

As Table 2 shows, the estimated intercept is .081 with a standard error of .004 and can, therefore, be considered to be highly unlikely to equal zero. The coefficient for seat share indicates a strong positive relationship with portfolio share but it falls somewhat short of unity (.76). There is a tendency in the literature to simply note that the relationship is strong and that the coefficient is 'statistically significant'. The reported tests generally assume that the null hypothesis is that the coefficient equals zero, which may not be of particular interest. If our interest is in verifying whether Gamson's Law holds or not, then the question to ask is whether estimating a coefficient this low is likely if its true value equals 1. A quick glance at the standard error of the slope coefficient in Table 2 should suffice to verify that the probability of observing this result when the true value of the coefficient equals one is vanishingly small.[23] Setting the question of the appropriateness of the model aside for the moment, it is difficult to conclude from this that Gamson's Law holds. This, however, does not obviate the fact that there is a strong positive relationship between seat and portfolio shares.

Another question of interest concerns the cross-national variation in how well Gamson's Law describes the allocation of portfolios. A *law* implies an absolute description of a relationship. If Gamson's Law is a *law* it would imply that there is minimal cross-national variation — other than, perhaps, what stems from the size of the cabinet placing limitations on

[23]The F-statistic for the null hypothesis that the seat share coefficient equals one is 636.74 and the associated p-value is less than .0001. Warwick and Druckman (2006) and others report coefficients that are closer to one but not sufficiently so to avoid the conclusion that the allocation of portfolios is not strictly proportional. Carroll and Cox's (2007) results for parties that have formed electoral alliances may prove an exception but their model contains an interaction term and the standard error for the effect of seat share for this subset of parties is not reported.

how proportional a division of portfolios can be attained. Moreover, cross-national differences would suggest that institutional differences play a role in determining the allocation of portfolios. If nothing else, the presence of cross-national differences would suggest that we should be looking for a theory of portfolio allocation that explains such variation rather than a theory that rationalizes the point predictions implied by Gamson's Law.

Table 3 and Figure 1 show the results of regressing seat shares on portfolio shares separately for each of country in the sample. There is clearly some variation across the countries and, as the standard errors are generally fairly small, it is unlikely that portfolio allocation is determined by the same process in each of the countries. Note, however, that we reach the same conclusion for each country as when all the countries were pooled — even though the small sample size makes it more difficult to reject the null hypotheses implied by Gamson's Law. The estimated intercepts are unlikely to obtain if the true value of the intercept is zero, the estimated slope is always less than one, and the probability of obtaining the slope coefficients this small is very low if the true slope is equal to one.[24] The range of the estimated coefficients is non-negligible. The intercept ranges from .05 to .23 and the slope coefficient from .50 to .84. However, the most intriguing aspect of the results is that the deviations from proportionality are consistent across countries. The nature of the discrepancy between the data and Gamson's Law is evident in Figure 1. Small coalition parties tend to be over-represented while large parties are under-represented. If the true underlying parameters are those described by Gamson's Law, then such consistency in the deviations from proportionality would not be expected.

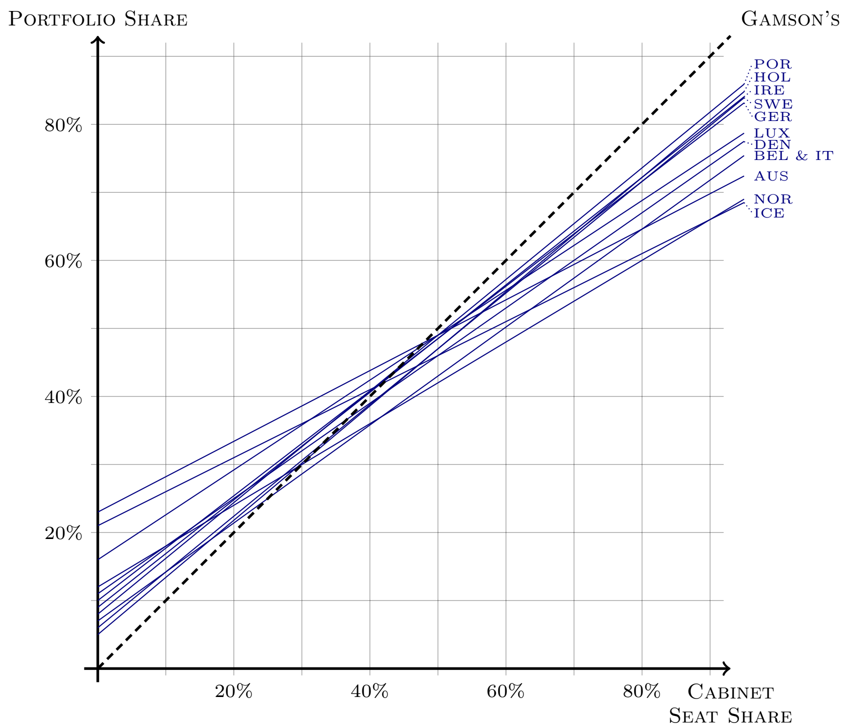
Table 3: Gamson's Law by Country

	AUT	BEL	DEN	ICE	IRE	ITA	LUX	HOL	NOR	POR	SWE	GER
Seat Share	0.52**	0.72**	0.70**	0.50**	0.79**	0.73**	0.68**	0.84**	0.63**	0.82**	0.82**	0.78**
	(0.06)	(0.04)	(0.03)	(0.07)	(0.03)	(0.01)	(0.07)	(0.03)	(0.04)	(0.06)	(0.03)	(0.02)
Constant	0.23**	0.071**	0.11**	0.21**	0.091**	0.068**	0.15**	0.051**	0.12**	0.080*	0.064**	0.099**
	(0.03)	(0.01)	(0.01)	(0.03)	(0.02)	(0.005)	(0.03)	(0.01)	(0.02)	(0.03)	(0.01)	(0.01)
N	49	145	62	63	30	166	45	90	35	20	28	61
R^2	0.65	0.72	0.92	0.48	0.97	0.96	0.69	0.89	0.87	0.91	0.97	0.97
$\beta_{SS} = 1$	4.6e-11	1.4e-11	5.9e-16	3.4e-10	0.000000027	1.7e-50	0.000048	0.0000023	2.0e-10	0.0088	0.00000055	9.1e-18

Standard errors in parentheses. * p<0.10 ** p<0.05 *** p<0.01.

[24] The coefficients for the Netherlands (.05 and .84) come closest to Gamson's Law. Another way to look at these results is to note that if the true value of the slope coefficient is one then the probability of obtaining an estimate of the slope coefficient that is smaller than one in the twelve countries is $.5^{12}$.

Figure 1: Gamson's Law by Country



The degree of proportionality that can be achieved is limited by the fact that each portfolio can only be allocated to a single party. There is generally more disproportionality when there are few portfolios to allocate. To see why, simply note that doubling the size of the cabinet can never decrease, but may increase, the proportionality of the outcome. Thus, if discreteness is the source of the observed deviations from Gamson's Law, larger cabinets ought to come closer to Gamson's Law. To examine whether the discrete nature of ministerial portfolios can account for deviations from proportional allocation, Table 4 displays the results of regressions for subsamples of 'small' and 'large' cabinets. Cabinets that contain fewer than 20 portfolios are considered small. The coefficients are somewhat closer to the expectations established by Gamson's Law in the subsample of larger cabinets, but the difference is not big.[25] More importantly, we reach the same conclusion as before

[25]When the model is estimated with an interaction between large cabinets and seat shares instead of splitting the sample, the coefficient of the interaction term (.034) has a *p*-value of .067. Considering a subsample of even larger cabinets, with 30 or more portfolios, we move still closer to Gamson's Law but are still fairly far off with a slope coefficient of .81 and standard error of .024.

even when we only consider large cabinets: Gamson's Law is not an accurate description of the actual distribution of portfolios.

Table 4: GAMSON'S LAW BY CABINET SIZE

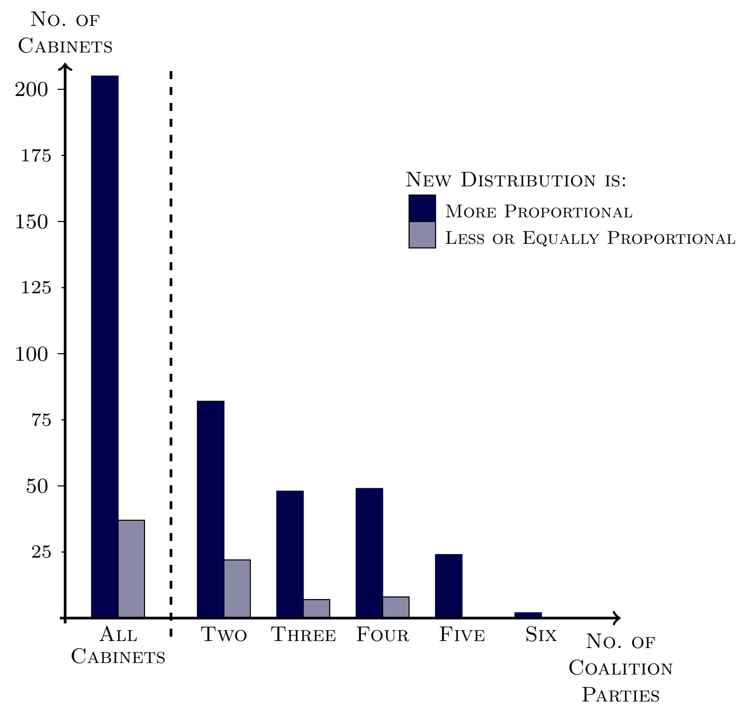
	SMALL	LARGE
	(1)	(2)
CONST.	.101***	.066***
	(.006)	(.004)
SEAT SHARE	.740***	.774***
	(.014)	(.012)
OBS.	434	360
R^2	.862	.926

That the size of the cabinet does not make that much difference does, of course, not rule discreteness of portfolios out as a source of the discrepancies between reality and Gamson's Law. It could simply the case that cabinets need to be even bigger in order for proportionality to be feasible. A more direct way of considering whether discreteness is at fault is to consider whether there exists an alternative portfolio distribution that achieves a greater level of proportionality. If Gamson's Law is indeed true, and portfolios are allocated in proportion to seat shares, then the observed distribution of portfolios should minimize the disproportionality of the outcome.

Checking whether the observed distribution of portfolios maximizes proportionality is a simple matter. For each coalition, the degree of over-/under-representation was calculated for each party. Using this information, a single portfolio was transferred from the most over-represented party to the most under-represented party in the cabinet and the disproportionality in the 'new' cabinet was compared with the disproportionality in the original cabinet.

The results, shown in Figure 2, show that a more proportional distribution of portfolios was possible for an overwhelming majority (84.7%) of the cabinets. This is a fairly clear indication that the discreteness of the portfolio distribution is not responsible for the observed deviations from perfect proportionality. Of course, smaller parties tend to be over-represented and minimizing disproportionality may demand that very small parties receive no portfolios. Thus, instances in which small government parties receive a single portfolio would appear 'reasonable' deviations from proportionality — parties may be reluctant to join a coalition if they receive no government portfolios.[26] One might even argue that party leaders would find it difficult to convince its members to join a coalition if they are the only ones who stand to take a seat in the cabinet. It turns out that neither of these exceptions is particularly relevant. Out of the 242 cabinets in the dataset, in only three cases did the most over-represented party only hold one portfolio and in 16 cases did it hold two portfolios. In only four of these 19 cases did the reallocation of a portfolio not result in less disproportionality. Even allowing for these exceptions, a more proportional outcome could be obtained in 78.5% of the cases.[27]

Figure 2: Redistributing Portfolios to Achieve Greater Proportionality



Estimating Models of Cabinet Composition

Gamson's Law was examined above using ordinary least squares models in line with common practices in the literature. This served to demonstrate that the failure to reject Gamson's

[26]There are, of course, plenty of examples in which parties outside the governing coalition lend the government its support.

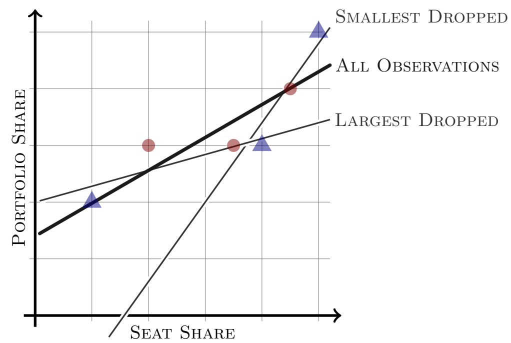
[27]Note that there might still exist a reallocation of portfolios, i.e., from the second most over-represented party to the most under-represented party, in those 15 cases that reduced disproportionality.

Law is due to imprecise interpretation of the results (and not choice of modeling technique). There are, however, certain methodological problems associated with using simple OLS models to evaluate Gamson's Law as portfolio allocation data is *compositional* (Aitchison, 1982). The statistical analysis of how portfolios are divided between coalition parties is complicated by two factors. First, the data are bounded, i.e., no party can hold less than 0% or more than 100% of the portfolios (or, alternatively, less than zero portfolios or more than k portfolios where k is the total number of portfolios). Using OLS regression to estimate models of portfolio allocation data can result in estimates that predict portfolio shares that lie outside the bounds of possible values.[28] Second, as the number of portfolios is fixed, an increase in the number of portfolios allocated to one party necessarily reduces the number of portfolios allocated to some other party. This implies that the errors for coalition partners are correlated.

While the literature on Gamson's Law has not ignored the compositional nature of portfolio data, the problems have not been addressed comprehensively. Fréchette, Kagel and Morelli (2005) and Carroll and Cox (2007), e.g., drop one party from each cabinet in recognition of the data's compositional nature. This addresses the problem that including all the parties inflates the number of observations without adding any information but neither solves the problem of correlated errors (except in the case of two-party cabinets) nor the problem of the data being bounded. While dropping a party may appear to be a step in the right direction, the consequences of doing so have not been considered. A simple example suffices to demonstrate that the choice of which party to drop affects the estimated coefficients. Figure 3 displays hypothetical data for two three-party coalitions (red circles and blue triangles). The thick line represents the regression line estimated using information about the portfolio shares of all six parties. The two thinner lines represent the regression lines when, respectively, i) the smallest party and ii) the largest party from each coalition is dropped from the analysis. As can be seen, the effect can be quite substantial. In this hypothetical example, the estimated slope when the smallest party is dropped from each

[28] The problem of bounded dependent variables is often described as a mere annoyance, i.e., that the predicted values may lie outside the bounds of the variable, while the fact that it can result in biased estimates is rarely noted.

Figure 3: THE EFFECT OF DROPPING OBSERVATIONS



cabinet is 1.00 whereas it is only .37 when the largest party is dropped.[29]

In contrast, Warwick and Druckman (2006) seek to account for the compositional data by allowing for clustered standard errors by cabinet. Doing so goes some way towards addressing the problem of correlated errors but the estimated standard errors remain incorrect as the number of observations is greater than the pieces of information contained in it. Again, the problem of the dependent variable being bounded is not solved.

Another approach to modeling the allocation of portfolios is to use a Dirichlet-multinomial regression. The support of the Dirichlet distribution is the set of allocations that respect the bounds imposed by the compositional nature of the data. Guimarães and Lindrooth (2007, p. 444) show that a Dirichlet-multinomial regression can be estimated using fixed effects count models with a Poisson or a negative binomial specification.[30] Modeling the allocation of portfolios as a Poisson regression with fixed effects also makes certain intuitive sense, i.e., the dependent variable is the number of portfolios allocated to a given party. Treating the number of portfolios allocated to a party as count data takes account of the fact that the data is bounded below. When viewed as count data, rather than compositional data, it is not clear that the data is bounded above since the number of portfolios varies from cabinet

[29] Another approach to account for the compositional nature of the data is to transform the date using the additive logratio transformation, i.e., the log of the ratio of each parties' size relative to the size of a 'baseline party' (e.g., $\log(\frac{s_i}{s_n})$). However, as the choice of a baseline party has similar effects on the coefficient estimates, I relegate discussion of the additive logratio transformation to online appendix E along with the estimation results using that modeling approach.

[30] More generally, Guimarães and Lindrooth (2007) show the connection between the grouped conditional logit model, the Poisson count model, and the Dirichlet-multinomial model. They also point out that the negative binomial specification suffers from an incidental parameters problem.

to cabinet within and across countries. However, the inclusion of fixed effects for cabinets accounts for the fact that cabinets vary in size and, thus, the coefficients for parliamentary seat share and formateur status are estimated from the differences in party characteristics, such as party size, within each coalition.

It bears noting that this approach comes at a cost when the objective is to evaluate Gamson's Law. Gamson's Law posits a linear relationship between seat and portfolio share whereas the marginal effects obtained from the Poisson regression models are not constant and are, thus, not directly interpretable as evidence for, or against, Gamson's Law. Thus, adopting a model that accounts for the compositional structure of the data implies a sacrifice in terms of ease of interpretation. For this reason, I estimate models using both i) OLS, dropping one party per cabinet at random while clustering standard errors by cabinet, and ii) Poisson regressions with cabinet fixed effects.[31]

Instead of modeling the portfolio shares or the count of portfolios, one can also model the deviations from proportional allocation as Bucur and Rasch (2015) do. Bucur and Rasch (2015) calculate the proportional allocation of portfolios based on the cabinet parties' parliamentary seat shares using St. Lagüe's formula and then use the difference between the proportional allocation and the observed allocation as the dependent variable. This represents a straightforward way to assess deviations from proportionality. However, the models can only be estimated using ordinary least squares as the data involves both positive and negative counts of portfolios. Moreover, it is of some substantive interest to see how closely the estimates approximate the prediction of Gamson's Law in terms of the proximity of the estimated coefficient to unity and, therefore, I present the results obtained following Bucur and Rasch's (2015) approach in online appendix E.5.

The results in the previous section only considered the effect of seat share on portfolio allocation but the formal model offers a novel prediction about the allocation of cabinet portfolios. In line with the literature, the share of portfolios is expected to increase with the size of the party's legislative representation. Showing that this is the case empirically would

[31]As noted above, the results of the OLS estimation depend on which party is dropped from the analysis and have to be taken with a grain of salt. The robustness of the results is examined in online appendix E. The online appendix similarly presents the results obtained using the log-ratio transformation with standard errors clustered by cabinet.

be consistent with the formal model but also with most other theoretical arguments about portfolio allocation. The model does, however, suggest a hypothesis that is not implied by other theories. As shown above, e.g., in Table 1, the proportionality of the formateur party's share of the portfolios depends on its size. When the size of the formateur party decreases (moving right or down the table) the formateur party's relative portfolio share increases. Thus, while formateurs can be either over- or under-represented in the cabinet, the model predicts that larger formateur parties should receive a proportionally smaller share of portfolios. To test the hypotheses, the model specifications include parliamentary seat share, formateur status, as well as an interaction between the two variables to capture the fact that the marginal effect of being the formateur party depends on the party's seat share.

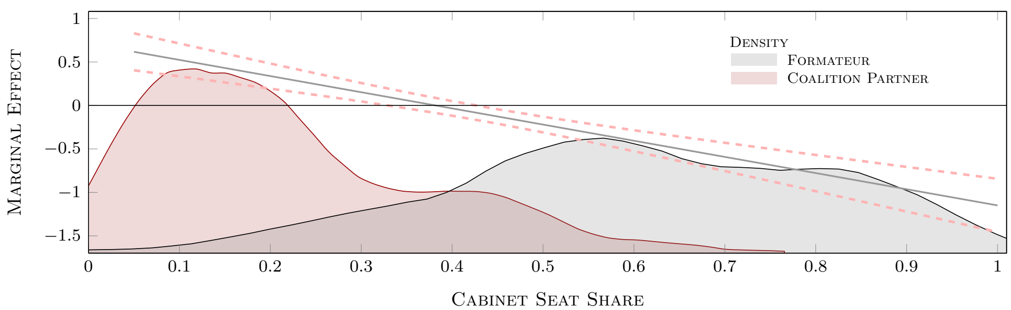
Table 5: Portfolio Allocation
—OLS & Poisson Regression w/Fixed Effects—

	OLS		Poisson	
	(1)	(2)	(3)	(4)
Seat Share	0.81***	0.83***	2.14***	3.01***
	(0.02)	(0.03)	(0.09)	(0.2)
Formateur	−0.030***	−0.0062	−0.098**	0.71***
	(0.009)	(0.01)	(0.04)	(0.1)
Formateur×Seat Share		−0.060*		−1.86***
		(0.03)		(0.3)
Constant	0.073***	0.067***		
	(0.004)	(0.005)		
Observations	521	521	794	794
R^2	0.89	0.89	—	—
Log likelihood	—	—	−894.6	−869.5

OLS models: One party dropped from each cabinet.
Standard errors in parentheses. * p<0.10, ** p<0.05, *** p<0.01.

The results of the OLS and Poisson regressions, employing the same data as above, are reported in Table 5. The first thing to note is that, as one might expect, party seat share exerts a strong influence on portfolio shares. The first and the third model suggest that there is no formateur advantage — in fact, the results suggest a statistically significant formateur *disadvantage*. However, the key implication of the formal model is that the size of the formateur advantage depends on the size of the party. Models (2) and (4) offer evidence in support of that implication — the negative coefficient of the interaction terms indicates that

Figure 4: Marginal Effect of Formateur Status
—Conditional On Seat Share—
—Table 6, Model 4, 95% Confidence Intervals—



the formateur advantage declines in party size. Figure 4 graphs the formateur advantage at different seat shares in model (4) — small formateur parties, holding less than about 40% of the cabinet's seats in the legislature, reap benefits from their position while larger formateur parties are disadvantaged.[32] Another way to look at the result is to note that the marginal effect of seat share in model (4) is more than twice as large for non-formateur parties as for formateur parties (3.01 vs. 1.15). Thus, larger formateur parties are less advantaged, in proportional terms, in the coalition negotiations than small formateur parties. Other things equal, larger formateur parties have smaller coalition partners, which can be bought off cheaply by the opposition if they are only allocated portfolios in proportion to their seat share. That is, the larger the formateur and the smaller its coalition partner, the strong the incentives to over-compensate the minor coalition partner in order to make it a less attractive coalition partner for the opposition parties.

As Warwick and Druckman (2001) and others have noted, not every portfolio is considered equally important and it may, therefore, be important to account for differences in portfolio salience — even if they later noted that "[b]ecause of this close correspondence between weighted and unweighted portfolio shares, substituting the weighted measure for its unweighted version scarcely affects the regression results" (Druckman and Warwick, 2005, 644). There conclusions are in line with my findings when examining salience weighted portfolio data, using Druckman and Warwick's (2005) data — there is little evidence of

[32] As the model includes fixed effects, the figure graphs the marginal effect on the linear component, $X\beta$, of the model.

substantively meaningful differences (see online appendix E.3).

Others, e.g., Snyder, Ting and Ansolabehere (2005) have noted that it is not clear why seat share ought to determine bargaining weight and that, instead, the focus ought to be on voting weights. In order to examine this possibility, I estimated the models replacing seat share with minimum integer weights (obtained from Cutler et al. (2016)). A discussion of voting weights in the context of models of government formation and the results of the analysis can be found in online appendix E.4 but, in short, the results are substantively similar regardless of whether the focus is on seat shares or minimum integer weights. Including both proxies for bargaining weight slightly improves the fit of the models but the fit of the seat share models is significantly better than when only minimum integer weights are considered. This is in line with Cutler et al.'s (2016) findings and their conclusion that scholars should turn their attention to developing theoretical accounts that explain the close relationship between seats shares and portfolios.

The Threat of Dissolution

The theoretical model considered how the threat of early coalition dissolution shapes the incentives to form stable coalitions and induces formateurs to make more generous offers to their coalition partners. The most direct test of the theory would, therefore, involve comparing parliamentary systems that allow early coalition dissolution with parliamentary systems where such dissolution is not possible. This, of course, is impossible as parliamentary systems are characterized by the dependence of the executive on the confidence of the legislature and the possibility of dissolution is, therefore, a defining feature of any parliamentary system. It is important to note, however, that the formal results are not driven by government dissolution being costly in itself. Rather, dissolution is costly because of the risk of being excluded from the new government coalition. The source of the parties' aversion to dissolution suggests that patterns of coalition formation ought to differ across parliamentary and presidential systems as there is never any question as to the identity of the presidential formateur.

While presidential systems are a constitutional form in which the position of the executive does not depend on the confidence of the legislature, scholars have noted that presidential executives are far from immune from coalition politics (Cheibub and Limongi, 2002; Cheibub, Przeworski and Saiegh, 2004; Amorim Neto, 2006; Amorim Neto and Samuels, 2010; Martinez-Gallardo, 2012; Kellam, 2015; Meireles, 2016; Freudenreich, 2016). Presidents depend on the legislature, much like parliamentary executives, to enact legislation and, therefore, face incentives to build legislative coalitions not dissimilar to those present in parliamentary systems. Thus, coalition cabinets are not uncommon in presidential systems when the president's party does not control a legislative majority. While presidents face incentives to build coalitions, it does not follow that they result in outcomes similar to those in parliamentary systems. Indeed, presidential systems differ in one significant regard — in contrast with parliamentary systems, the membership of the cabinet is not fully endogenous to legislative and party politics, i.e., the cabinet is always the president's cabinet. In the context of the theory presented above, this implies that while cabinet dissolution may be costly or inconvenient in many ways, it poses a more limited threat to the presidential executive than it does in parliamentary systems where dissolution means that any cabinet party may find itself on the opposition benches. In contrast, when a president's coalition dissolves, the president retains her position as a formateur and can form a new coalition. An amended version of the model that grants the president a permanent formateur role (see appendix D) demonstrates that the president enjoys a sizeable formateur advantage and the allocation of portfolios is independent of party size (conditional on each party being pivotal to the coalition). Coalition formation in presidential systems, therefore, resembles the model without dissolution in which the composition of the cabinet is less responsive to the size of the parties and, in particular, the size of the formateur advantage should be larger and not depend on the legislative support of the president's party to the same degree.

While parliamentary coalitions are the main focus of this article, it is, nevertheless, informative to examine whether cabinet formation in presidential systems is consistent with the theoretical intuition. I examine presidential cabinets in the Americas, covering coalition cabinets in eleven countries over roughly a 30-year period.[33] A new cabinet is defined by an election or a change in the partisan composition of the cabinet and the dataset consists of 101 cabinets and 315 cabinet parties. The independent variables considered here are the

[33] The data come from Amorim Neto (2006) and Martínez-Gallardo (2014). The countries are Argentina, Bolivia, Brazil, Chile, Colombia, Ecuador, Panama, Paraguay, Peru, Uruguay, and Venezuela.

same as above but where, by definition, the FORMATEUR PARTY is always the president's party.

Table 6: PORTFOLIO ALLOCATION: PRESIDENTIAL SYSTEMS
—OLS & POISSON REGRESSION MODELS—

	OLS		POISSON	
	(1)	(2)	(3)	(4)
SEAT SHARE	0.64***	0.62***	1.69***	2.53***
	(0.05)	(0.08)	(0.22)	(0.33)
FORMATEUR	0.25***	0.23***	0.81***	1.51***
	(0.03)	(0.04)	(0.09)	(0.22)
FORMATEUR×SEAT SHARE		0.06		−1.79***
		(0.09)		(0.51)
CONSTANT	0.04***	0.05***		
	(0.01)	(0.01)		
OBSERVATIONS	214	214	315	315
R^2	0.85	0.85	—	—
LOG LIKELIHOOD	—	—	−313.36	−307.23

Standard errors in parentheses. *p < 0.10, **p < 0.05, ***p < 0.01.
OLS: One party dropped per cabinet, SEs clustered by cabinet.

Table 6 presents the results of the OLS and Poisson regression models for presidential systems.[34] The results are largely in line with expectations. Comparison of the OLS models in Table 6 with the results for parliamentary systems (Table 5) shows clearly that portfolio allocation in presidential cabinets is less sensitive to the size of the cabinet parties while there is a significant formateur advantage. The logic of the formal model also suggested that the formateur's seat share should have less effect on the formateur's share of the portfolios. There is some evidence in support of this conjecture. As shown in Figure 5, the marginal effect of seat share is substantially and significantly lower for the president than her coalition partners and only just statistically significant (at $\alpha = .05$).[35]

[34]Online appendix F, Table F.14, presents the results for presidential and parliamentary systems where the constitutional form is interacted with the other variables in the model. The results in Table F.14 tell them same story but allow us to see clearly that formateur advantage is conditional on constitutional form, i.e., there is only evidence for a formateur advantage for small formateur parties in parliamentary systems while formateur advantage is almost always positive in parliamentary systems.

[35]The result for the OLS model presented in Table 6 are less supportive but, as noted above, the OLS results have to be taken with a grain of salt as the estimated coefficients depend on which party is dropped from each cabinet.

Figure 5: Marginal Effect of Seat Share
—Conditional On Formateur Status—
—Table 6, Model 4, 95% Confidence Intervals—

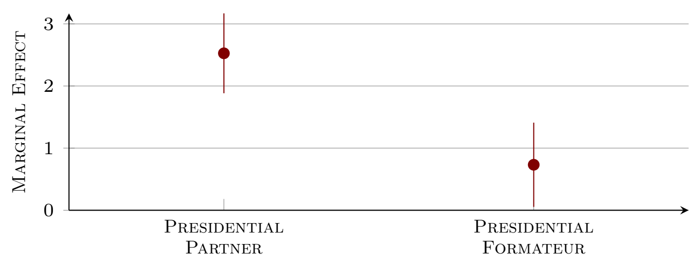
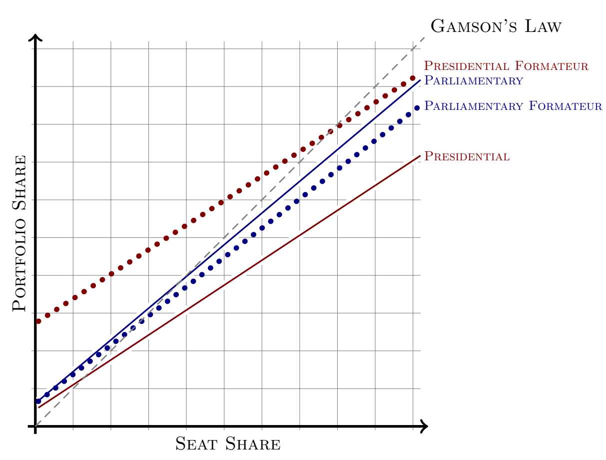


Figure 6: Gamson's Law in Parliamentary & Presidential Systems*



*Based on OLS Results in Table F.14, column 2.

To facilitate comparison of portfolio allocation in parliamentary and presidential systems, the results are summarized in Figure 6. The figure shows the estimated relationship between seat share and portfolio share for formateurs and coalition partners in parliamentary and presidential systems (based on an OLS model in which constitutional form is interacted with seat share and formateur status, see Table F.14 in the online appendix).[36] A few things are worth noting. First, while not providing a perfect fit with Gamson's Law, portfolio allocation in parliamentary systems are significantly closer to Gamson's Law than it is in presidential systems. Second, presidents obtain a substantial 'formateur advantage'.[37] Third, and in contrast with presidential system, there is evidence of a formateur disadvantage in parliamentary systems that, in line with the theoretical expectations, increases as the formateur's seat share becomes larger.

Conclusion

The simple model of government formation considered above casts a light on why empirical studies of portfolio allocation have had a difficult time finding the formateur advantage predicted by the standard bargaining models of coalition formation. The model departs from the standard bargaining model in that it takes into account that coalitions must be maintained, i.e., the benefits of forming a coalition are not all realized at the moment of its formation.[38] The implication of this is that taking a full advantage of one's position as a formateur can lead to the formation of an unstable coalition. If formateur parties value the future enough, they will be willing to pay a premium, in the form of ceding more portfolios to its coalition partner, for forming a *stable* coalition. A coalition partner that receives a substantial share of the government portfolios is less likely to take the initiative to leave the coalition or be susceptible to being bought off by opposition partners. In equilibrium, the formateur, therefore, deliberately resists extracting the maximum formateur advantage

[36] The caveats regarding the use of OLS model for compositional data apply but the results of the Poisson count models are substantively similar and are also presented in Table F.14.

[37] Note, that the formateur advantage is largely invariant to the formateur's party seat share according to the OLS model (shown in the figure) but the Poisson regression models suggest that while the formateur advantage is present, it declines in the formateur's seat share

[38] Penn (2009) analyzes a model that is similar in spirit and finds that farsighted voters may sacrifice short-term benefits if they lead to more favorable outcomes in the long run.

possible and selects a more moderate allocation. For a number of possible seat distributions, this has the effect of wiping out the formateur advantage and biasing the results in favor of its (smaller) coalition partner.

The model offers additional predictions about the allocation of portfolios. Perhaps most importantly, it shows that the allocation of portfolios is not simply a matter of the legislative seat shares of the government parties (except to the extent that they are a sufficient statistic for the seat distribution) but depend on the relative seat shares of the coalition partner and the opposition party. That is, the model suggests that the formateur advantage depends on the size of the formateur party and, in particular, that it should decline with its size. This helps explain the difficulty of finding evidence of a formateur advantage as larger parties are typically more likely to be selected as formateurs (Bäck, Debus and Dumont, 2011).

Further evidence supporting the idea that the shadow of the future affects portfolio allocation is provided by Golder and Thomas (2014) who examine coalition formation in the French regions where there is no vote of no confidence. They find that with the threat of early government termination eliminated, the allocation of portfolios departs further away from proportionality and that there is a significant formateur advantage. Even more closely related to the work presented here, Ariotti and Golder (2018) compare portfolio allocation in Europe and Africa, where their data contains a mixture of parliamentary and presidential systems, and find, e.g., that the formateur advantage is larger in African presidential systems.

The second half of the paper re-examines the evidence in support of Gamson's Law and the methods used to analyze portfolio allocation data. My conclusion is that Gamson's Law — as a *law* — is a myth. Examining the data, I find that Gamson's Law is highly unlikely to be true. This is in line with the results in the existing literature — but perhaps not the interpretation of the evidence. I also consider the possibility that deviations from a perfectly proportional division of portfolios are due to the discrete nature, or the lumpiness, of the data and find that while disproportionality decreases as the size of the cabinet increases, more proportional outcomes were possible in an overwhelming majority of the cases.

None of this is to suggest that there is not a strong relationship between seat shares and portfolio shares. There clearly is. It suggests, however, that the focus on proportionality is misplaced and that there should be greater emphasis on the development of theories that offer an insight into what factors, besides seat shares, influence portfolio allocation. The emphasis on perfect proportionality also places too much emphasis on evaluating theories in terms of their point predictions. While we would, of course, like our theories to provide such predictions, most non-formal theories in political science do not offer point predictions but simply statements about comparative statics. By their nature, formal theories often produce point predictions but that is not necessarily where their value lies. Formal models are also, necessarily, abstractions of reality, centering on the aspects of a given subject that we consider the most relevant. While the models may be abstractions, they may provide useful insights in terms of comparative statics — even if the needed abstraction renders the point prediction implausible. Thus, in evaluating theories we ought to pay attention to all of their implications — the failure to provide an accurate point prediction suggests that there is room for improvement but that doesn't necessitate throwing the baby out with the bathwater. In the context of portfolio allocation, this means that one should not dismiss bargaining models too easily. After all, the standard bargaining model suggests that a party's share of portfolios will depend on it seat share (or voting weight) — which is what the data shows.

In addition to confirming, yet again, the strong relationship between party size and success in securing cabinet portfolios, the empirical analysis shows that the size of the formateur advantage depends on the size of the formateur's party as predicted by the model. Formateurs coming from large parties receive a less proportional share of the cabinet portfolios — indeed, the results suggest that most formateurs are disadvantaged. The logic laid out in the formal model suggested that the formateurs' apparent generosity is instrumental, i.e., that they strategically agree to a distribution of government portfolios that favor their coalition partners in order to increase the coalition's stability.

References

Aitchison, John. 1982. "A Statistical Analysis of Compositional Data." *Journal of the Royal Statistical Society* 44(2):139–177.

Amorim Neto, Octavio. 2006. "The Presidential Calculus: Executive Policy Making and Cabinet Formation in the Americas." *Comparative Political Studies* 39(4):415–440.

Amorim Neto, Octavio and David Samuels. 2010. "Democratic Regimes and Cabinet Politics: A Global Perspective." *Revista Ibero-Americana de Estudos Legislativos* 1(1):10–23.

Ansolabehere, Stephen, James M. Snyder, Aaron B. Strauss and Michael M. Ting. 2005. "Voting Weights and Formateur Advantages in the Formation of Coalition Governments." *American Journal of Political Science* 49(3):550–563.

Ariotti, Margaret H. and Sona N. Golder. 2018. "Partisan Portfolio Allocation in African Democracies." *Comparative Political Studies* 51(3):341–379.

Bäck, Hanna, Henk Erik Meier and Thomas Person. 2009. "Party Size and Portfolio Payoffs: The Proportional Allocation of Ministerial Posts in Coalition Governments." *Journal of Legislative Studies* 15(1):10–34.

Bäck, Hanna, Marc Debus and Patrick Dumont. 2011. "Who Gets What in Coalition Governments? Predictors of Portfolio Allocation in Parliamentary Democracies." *European Journal of Political Research* 50(4):441–478.

Bäck, Hanna and Patrick Dumont. 2008. "Making the first move." *Public Choice* 135(3-4):353–373.

Bäck, Hanna, Patrick Dumont and Thomas Saalfeld. 2017. "Portfolio Allocation and Cabinet Survival in Parliamentary Democracies." Presented at the 2017 MPSA Conference.

Baron, David P. 2018. "Elections and durable governments in parliamentary governments." *Journal of Theoretical Politics* 30(1):74–118.

Baron, David P. and John A. Ferejohn. 1989. "Bargaining in Legislatures." *American Political Science Review* 83(4):1181–1206.

Baron, David P and Michael C Herron. 2003. A Dynamic Model of Multidimensional Collective Choice. In *Computational Models in Political Economy*, ed. Ken Kollman, John H. Miller and Scott E. Page. Cambridge: MIT Press pp. 13–48.

Bassi, Anna. 2013. "A Model of Endogenous Government Formation." *American Journal of Political Science* 57(4):777–793.

Browne, Eric C. and John P. Frendreis. 1980. "Allocating Coalition Payoffs by Conventional Norms: Assessment of the Evidence for Cabinet Coalition Situations." *American Journal of Political Science* 24:753–768.

Browne, Eric C. and Mark Franklin. 1973. "Aspects of Coalition Payoffs in European Parliamentary Democracies." *American Political Science Review* 24(4):453–469.

Bucur, Cristina and Bjørn Erik Rasch. 2015. "Parliamentary Institutions and Portfolio Allocation in Coalition Governments." Manuscript.

Carroll, Royce and Gary W. Cox. 2007. "The Logic of Gamson's Law: Pre-election Coalitions and Portfolio Allocations." *American Journal of Political Science* 51(2):300–313.

Cheibub, José Antonio, Adam Przeworski and Sebastian M. Saiegh. 2004. "Government Coalitions and Legislative Success Under Presidentialism and Parliamentarism." *British Journal of Political Science* 34(4):565–587.

Cheibub, José Antonio and Fernando Limongi. 2002. "Democratic Institutions and Regime Survival: Parliamentary and Presidential Democracies Reconsidered." *Annual Review of Political Science* 5:151–179.

Chiba, Daina, Lanny W Martin and Randolph T Stevenson. 2015. "A copula approach to the problem of selection bias in models of government survival." *Political Analysis* 23(1):42–58.

Cho, Seok-ju. 2014. "Three-party competition in parliamentary democracy with proportional representation." *Public Choice* 161(3-4):407–426.

Cutler, Josh, Scott De Marchi, Max Gallop, Florian M Hollenbach, Michael Laver and Matthias Orlowski. 2016. "Cabinet formation and portfolio distribution in European multiparty systems." *British Journal of Political Science* 46(1):31–43.

Däubler, Thomas and Marc Debus. 2009. "Government formation and policy formulation in the German states." *Regional and Federal Studies* 19(1):73–95.

Debus, Marc. 2011. "Portfolio allocation and policy compromises: How and why the Conservatives and the Liberal Democrats formed a coalition government." *The Political Quarterly* 82(2):293–304.

Diermeier, Daniel and Antonio Merlo. 2004. "An Empirical Investigation of Coalition Bargaining Procedures." *Journal of Public Economics* 88(3):783–797.

Druckman, James N. and Paul V. Warwick. 2005. "The missing piece: Measuring portfolio salience in Western European parliamentary democracies." *European Journal of Political Research* 44(1):17–42.

Falcó-Gimeno, Albert and Indridi H. Indridason. 2013. "Uncertainty, Complexity, and Gamson's Law." *West European Politics* 36(1):221–247.

Fong, Pohan. 2005. "Dynamics of Government and Policy Choice." Unpublished Manuscript.

Fréchette, Guillaume R., John H. Kagel and Massimo Morelli. 2005. "Nominal bargaining power, selection protocol, and discounting in legislative bargaining." *Journal of Public Economics* 89(8):1497–1517.

Freudenreich, Johannes. 2016. "The Formation of Cabinet Coalitions in Presidential Systems." *Latin American Politics and Society* 58(4):80–102.

Golder, Sona N. and Jacquelyn A. Thomas. 2014. "Portfolio Allocation and the Vote of No Confidence." *British Journal of Political Science* 44(1):29–39.

Guimarães, Paulo and Richard C. Lindrooth. 2007. "Controlling for overdispersion in grouped conditional logit models: A computationally simple application of Dirichlet-multinomial regression." *Econometrics Journal* 10:439–452.

Indridason, Indridi H. 2008. "Does Terrorism Influence Domestic Politics? Coalition Formation and Terrorist Incidents." *Journal of Peace Research* 45(2):241–260.

Kalandrakis, Anastassios. 2004. "A three-player dynamic majoritarian bargaining game." *Journal of Economic Theory* 116(2):294–314.

Katz, Jonathan N. and Gary King. 1999. "A Statistical Model for Multiparty Electoral Data." *American Political Science Review* 93(1):15–32.

Kellam, Marisa. 2015. "Parties for hire: How particularistic parties influence presidents' governing strategies." *Party Politics* 21(4):515–526.

Laver, Michael J. and Kenneth A. Shepsle. 1996. *Making and Breaking Governments: Cabinets and Legislatures in Parliamentary Democracies.* Cambridge: Cambridge University Press.

Laver, Michael, Scott de Marchi and Hande Mutlu. 2011. "Negotiation in Legislatures over Government Formation." *Public Choice* 147(3-4):285–304.

Martinez-Gallardo, Cecilia. 2012. "Out of the cabinet what drives defections from the government in presidential systems?" *Comparative Political Studies* 45(1):62–90.

Martínez-Gallardo, Cecilia. 2014. "Designing Cabinets: Presidential Politics and Ministerial Instability." *Journal of Politics in Latin America* 6(2):3–38.

Meireles, Fernando. 2016. "Oversized Government Coalitions in Latin America." *Brazilian Political Science Review* 10(1-31).

Morelli, Massimo. 1999. "Demand Competition and Policy Compromise in Legislative Bargaining." *American Political Science Review* 93(4):809–820.

Müller, Wolfgang C. and Kaare Strøm. 2001. Coalition Governance in Western Europe: An Introduction. In *Coalition Governments in Western Europe*, ed. Wolfgang C. Müller and Kaare Strøm. Oxford: Oxford University Press pp. 1–32.

Penn, Elizabeth Maggie. 2009. "A Model of Farsighted Voting." *American Journal of Political Science* 53(1):36–54.

Philips, Andrew Q, Amanda Rutherford and Guy D Whitten. 2016. "Dynamic Pie: A Strategy for Modeling Trade-Offs in Compositional Variables over Time." *American Journal of Political Science* 60(1):268–283.

Riker, William H. 1982. "The Two-Party System and Duverger's Law: An Essay on the History of Political Science." *American Political Science Review* 76:754–766.

Saalfeld, Thomas. 1999. "Coalition politics and management in the Kohl era, 1982-98." *German Politics* 8(2):141–173.

Schofield, Norman and Michael Laver. 1985. "Bargaining Theory and Portfolio Payoffs in European Coalition Governments, 1945-1983." *British Journal of Political Science* 15(2):143–164.

Seki, Katsunori and Laron K Williams. 2014. "Updating the Party Government Data Set." *Electoral Studies* 34:270–279.

Snyder, James M., Michael M. Ting and Stephen Ansolabehere. 2005. "Legislative bargaining under weighted voting." *American Economic Review* 95(4):981–1004.

Tavits, Margit. 2008. "The Role of Parties' Past Behavior in Coalition Formation." *American Political Science Review* 102(4):495–507.

Tomz, Michael, Joshua A. Tucker and Jason Wittenberg. 2002. "An Easy and Accurate Regression Model for Multiparty Electoral Data." *Political Analysis* 10(1):66–83.

Warwick, Paul V. and James N. Druckman. 2001. "Portfolio Salience and the Proportionality of Payoffs in Coalition Governments." *British Journal of Political Science* 31(4):627–649.

Warwick, Paul V. and James N. Druckman. 2006. "The portfolio allocation paradox: An investigation into the nature of a very strong but puzzling relationship." *European Journal of Political Research* 45(4):635–665.

Online Appendices

Live for Today, Hope for Tomorrow? Rethinking Gamson's Law

Table of Contents

A Caretaker Government: Proportional Allocation

In the model in the body of the paper it was assumed that the spoils are divided equally among the parties when they fail to form a government and a caretaker government takes office. Another possibility is that a caretaker government divides the spoils in proportion to the parties' seat shares. That is, the allocation of spoils equals $m^1 = \{s_1, s_2, s_3\}$ if a caretaker government takes office.

Assuming proportional allocation of spoils complicates the analysis slightly because the formateur is no longer indifferent about which party it forms a coalition with in the second time period following a failed bargaining attempt in the first period. One must, therefore, pay closer attention to the parties' sizes and from here on party labels will be assigned so that $s_1 > s_2 > s_3$.

Starting with the one-period version of the model, the equilibrium of the game is straightforward. The formateur offers the smaller of the two possible coalition partners a share equal to its size and keeps the rest for herself. Thus, if parties 1 or 2 are formateurs they offer s_3 to Party 3 and keep $1 - s_3$ for themselves. If Party 3 is formateur it offers s_2 to Party 2 and keeps $1 - s_2$ for herself.

Turning to the two period game with dissolution, consider first the subgame following a dissolution. The formateur party, i, offers s_j to its bargaining partner and keeps $1 - s_j$ for itself. The expected second period payoff to the parties involved in the bargaining after dissolution then equals $\frac{s_i}{s_i+s_j}(1 - s_j) + \frac{sj}{s_i+s_j}s_i = \frac{s_i}{s_i+s_j}$.

Consider the expected payoff from rejecting a proposal in the first period. If a proposal is rejected, each party receives a share proportional to their seats in the first period, s_i, in addition to the expected payoff that results from bargaining in the second period. The bargaining in the second period is equivalent to the one period model, i.e., the formateur forms a coalition with the smaller of the possible coalition partners. Party 1's expected payoff is then $s_1 + \delta s_1(1 - s_3)$ as it is only a member of the second period coalition if it is selected formateur. Party 2's expected payoff is $s_2 + \delta s_2(1 - s_3) + \delta s_3 s_2 = (1 + \delta)s_2$ as it is a member of the second period coalition if it or Party 3 is selected formateur. Party 3's expected payoff is $s_3 + \delta s_3(1 - s_2) + \delta(s_1 + s_2)s_3 = s_3 + \delta s_3(1 + s_1)$ as it will always be a member of the second period coalition.

Now consider the parties' strategies for accepting an offer from Party i in the first period. After accepting an offer in the first period the coalition partner, Party j, has two options: i) The party chooses not to dissolve the coalition, in which case the party's total payoff equals $(1+\delta)m_j^1$, or ii) the party chooses to dissolve the coalition formation and bargaining with the opposition party, in which case the party's total payoff is $m_j^1 + \delta\frac{s_j}{s_j+s_k}$. Thus, the coalition will be stable if $m_j^1 \geq \delta\frac{s_j}{s_j+s_k}$. Party j may, however, accept an offer $m_j^1 < \delta\frac{s_j}{s_j+s_k}$ because accepting the offer gives the party an opportunity to dissolve the coalition, which gives the party an expected payoff of $\frac{s_j}{s_j+s_k}$ in the second period whereas rejecting the offer the expected payoffs are those listed in the previous paragraphs. Taking the parties in turn, it is optimal for Party 1 to accept if $m_1^1 \geq s_1 + \delta s_1(1-s_3) - \delta\frac{s_1}{s_1+s_k}$ when Party i is the formateur and Party k is not a member of the proposed coalition. For Party 2 it is optimal to accept if $m_2^1 \geq (1+\delta)s_2 - \delta\frac{s_2}{s_2+s_k}$ and for Party 3 it is optimal if $m_3^1 \geq s_3 + \delta s_3(1+s_1) - \delta\frac{s_3}{s_3+s_k}$.

Suppose Party i is appointed formateur at the beginning of the first time period. It has three options: i) To form an unstable coalition, i.e., a coalition is formed in the first period but is subsequently dissolved, ii) to form a stable coalition that survives through the two periods, and iii) to make a proposal that is rejected and results in a caretaker government.

Start by considering the possibility that Party i opts to form an unstable coalition. As in the model considered in the body of the paper, this is possible because the party that dissolves the coalition gains an advantage by dissolving the coalition — it is more likely to be selected formateur in the second time period. In pursuing an unstable coalition the optimal strategy for Party i is to make the smallest offer acceptable to one of its bargaining partners and to make it to the party whose acceptance threshold is lower. Thus, Party i would choose m_j^1 such that the condition for accepting a first period offer holds with equality. Party 1 prefers to make an offer to Party 3 if $(1+\delta)s_2 - \delta\frac{s_2}{s_2+s_3} > (1+\delta)s_3 + \delta s_1 s_3 - \delta\frac{s_3}{s_2+s_3}$ and to Party 2 otherwise.[39] It can be shown that the condition holds for some parameters but not others. If $\delta = 0$ then the condition reduces to $s_2 > s_3$, which is true by definition and Party 3 receives the offer. If $\delta = 1$ and $s_2 = s_3 + \epsilon$ the condition for preferring Party 3 reduces to $0 > \delta s_1 s_3$ as $\epsilon \to 0$ and Party 2 receives the offer. Party 2 prefers to make an

[39] Party 1 is, of course, indifferent if the two sides of the inequality are equal.

offer to Party 3 if $s_1 + \delta(1 - s_3) - \delta\frac{s_1}{s_1+s_3} > (1+\delta)s_3 + \delta s_1 s_3 - \delta\frac{s_3}{s_1+s_3}$. By $s_1 > s_2 > s_3$, the inequality always holds. Finally, Party 3 prefers to make an offer to Party 2 as the inequality $s_1 + \delta(1 - s_3) - \delta\frac{s_1}{s_1+s_2} > (1+\delta)s_2 - \delta\frac{s_2}{s_1+s_2}$ always hold by $s_1 > s_2 > s_3$. Thus, the formateur's payoff in the first period equals $1 - m_j^1$ where j is determined as discussed above, and its payoff is zero in the second period.

Second, Party i can make a proposal that results in a stable coalition. This requires offering the chosen coalition partner a share that makes it at least indifferent between dissolving the coalition and sticking with the coalition. As the expected second period payoff to party j from dissolving a coalition equals $\frac{s_j}{s_j+s_k}$, Party i would maximize its payoff in a stable coalition by forming a coalition with the smaller of the two parties. Thus, parties 1 and 2 would form a stable coalition with Party 3 while Party 3 would propose a coalition with Party 2. If pursuing a stable coalition Party i would propose:

$$m_i^1 = \begin{cases} (1 - \frac{s_3}{s_2+s_3}, 0, \frac{s_3}{s_2+s_3}) & \text{if } i = 1, \\ (0, 1 - \frac{s_3}{s_1+s_3}, \frac{s_3}{s_1+s_3}) & \text{if } i = 2, \\ (0, \frac{s_2}{s_1+s_2}, 1 - \frac{s_2}{s_1+s_2}) & \text{if } i = 3 \end{cases} \tag{7}$$

Party i's total payoff from pursuing the strategy of a stable coalition then equals:

$$u_i = \begin{cases} (1+\delta)(1 - \frac{s_3}{s_2+s_3}) & \text{if } i = 1, \\ (1+\delta)(1 - \frac{s_3}{s_1+s_3}) & \text{if } i = 2, \\ (1+\delta)(1 - \frac{s_2}{s_1+s_2}) & \text{if } i = 3 \end{cases} \tag{8}$$

Finally, to make a proposal that will be rejected and results in a caretaker government. Doing so yields Party i an expected utility of:

$$E(u_i) = \begin{cases} s_1 + \delta s_1(1 - s_3) & \text{if } i = 1, \\ s_2 + \delta(s_2(1 - s_3) + s_3 s_2) = (1+\delta)s_2 & \text{if } i = 2, \\ s_3 + \delta(s_3(1 - s_2) + (s_1 + s_2)s_3) = s_3 + \delta s_3(1 + s_1) & \text{if } i = 3 \end{cases} \tag{9}$$

As in the model presented in the paper, the aim is to show that the formateur may have an incentive to offer its coalition partner more than a proportional allocation of government portfolios, i.e., that the formateur has an incentive to form a stable coalition. It is clear that when the actors value future payoffs very little, e.g., when $\delta = 0$, then any such incentive will be absent. For simplicity, therefore, I focus on the case where the parties value the future as much as the present, i.e., $\delta = 1$. Deriving the equilibria is slightly more tedious when payoffs are proportional under caretaker coalitions — proportional payoffs imply that the incentives to build a stable coalition vary across parties. Each of the parties must, thus, be considered in turn.

Starting with when Party 1 acts as a formateur, suppose the parameters are such that it prefers to form a coalition with Party 3 when pursuing a strategy of forming an unstable coalition. The payoff from forming an unstable coalition then equals $1 - (2s_3 + s_1 s_3 + \frac{s_3}{s_2+s_3})$. The payoff from pursing a stable coalition equals $2(1 - \frac{s_3}{s_2+s_3})$ while the payoff from making an offer that will be rejected is $2s_1 - s_1 s_3$. Forming a stable coalition is preferred to an unstable coalition if $2(1 - \frac{s_3}{s_2+s_3}) > 1 - (2s_3 + s_1 s_3 + \frac{s_3}{s_2+s_3})$, which simplifies to $1 - 2\frac{s_3}{s_2+s_3} > -(2s_3 + s_1 s_3 + \frac{s_3}{s_2+s_3})$, which always holds as $\frac{s_3}{s_2+s_3} < \frac{1}{2}$ by $s_2 > s_3$. Forming a stable coalition is preferred to making an offer that is rejected if $2 - 2\frac{s_3}{s_2+s_3} > 2s_1 - s_1 s_3$, which is always true as the left-hand side of the inequality is never less than one (by $s_2 > s_3$) and the right-hand side is never larger than one (by the fact that no party has a majority, i.e., $s_1 < \frac{1}{2}$.

Now suppose Party 2 is the formateur. Party 2 prefers making an offer that results in a stable coalition to making an offer that is rejected as $2s_2 < 2(1 - \frac{s_3}{s_2+s_3})$ since $\frac{s_3}{s_2+s_3} < \frac{1}{2}$ by $s2 > s_3$. Thus, $2(1 - \frac{s_3}{s_2+s_3}) > 1 > 2s_2$ as $s_2 < \frac{1}{2}$. Party 2 also prefers a stable coalition to an unstable one by $2(1 - \frac{s_3}{s_2+s_3}) > 1 - (2s_3 + s_1 s_3 - \frac{s_3}{s_2+s_3})$. The inequality can be rewritten:

$$1 + 2s_3 + s_1 s_3 - \frac{3s_3}{s_2 + s_3} \quad > \quad 0$$

Using the fact that $s_1 = 1 - s_2 - s_3$:

$$\begin{aligned}
1 - s_1 + 2s_3 - 2s_1s_3 + s_1s_3 - s_1^2s_3 - 3s_3 &> 0 \\
1 - s_1 - s_3 - s_1s_3 - s_1^2s_3 &> 0 \\
1 - s_1 - s_3 - (1 - s_2 - s_3)s_3 - s_1^2s_3 &> 0 \\
1 - s_1 - 2s_3 + s_3(s_2 + s_3 - s_1^2) &> 0
\end{aligned}$$

The inequality always holds as the sum of the first three terms is always positive, i.e., $1 - s_1 - 2s_3 > 0$ as is the last term as $s_2 + s_3 - s_1^2 > 0$.

Finally, suppose Party 3 is the formateur. Party 3 always prefers forming a stable coalition to making a proposal that is rejected, i.e.,

$$\begin{aligned}
2(1 - \frac{s_2}{s_2 + s_3}) &> 2s_3 + s_1s_3 \\
2s_s + 2s_3 &> 2s_2s_3 + 2s_3^2 + s_1s_2s_3 + s_1s_3 + 2s_2 \\
1 &> \frac{s_1 - s_1^2}{2} + s_2 + s_3,
\end{aligned}$$

which holds as $s_1 + s_2 + s_3 = 1$. Whether Party 3 prefers a stable coalition to an unstable one depends on the sizes of the parties. For example, Party 3 prefers a stable coalition when vector of seat shares is $\left(\frac{15}{32}, \frac{11}{32}, \frac{6}{32}\right)$ but an unstable one when it is $\left(\frac{15}{32}, \frac{13}{32}, \frac{4}{32}\right)$. These examples demonstrate that, depending on the seat distribution, stable and unstable equilibria are possible when Party 3 is the formateur. It is possible to solve explicitly for the conditions under which a stable coalition is the equilibrium, but they are fairly complex.[40] Generally, holding the size of Party 1 fixed, a stable coalition becomes more attractive as Party 3 increases in size (at the expense of Party 2), e.g., when parties 2 and 3 are close in size. Intuitively this is the case because Party 3 can extract a large share from Party 2 when Party 2 expected gains following a dissolution are large, i.e., when Party 2 is likely to be selected formateur in the second period.

To summarize, when the parties don't discount the future, forming a stable coalition in which the formateur is more generous than she need be, is the equilibrium except when i)

[40] I omit the conditions here but they are available upon request.

Party 3 is the formateur *and* ii) Party 3 is relatively small. That is, the only circumstance in which a stable coalition fails to form is in circumstances which are the least likely both empirically speaking and also under the model's assumption about formateur selection. As in the model presented in the body of the paper, it is clear that the incentives to form a stable coalition are smaller if the parties don't value the future as much.

B Caretaker Government: Zero Payoff

In contrast to the models considered in the body of the paper and in appendix A, most models of bargaining of government portfolios assume that the failure to form a coalition results in payoffs of zero to all the parties. Here I show that replacing the assumption that portfolios are equally, or proportionally, distributed in the event of a caretaker cabinet with an assumption that all parties receive a payoff of zero does not affect the key implications of the model. Thus, the allocation of portfolios equals $m^1 = \{0, 0, 0\}$ if a caretaker government forms.

Starting with the second period, the optimal strategy in the subgame following dissolution (and recognition) is to propose a division where the formateur gets all the portfolios and its 'partner' is offered 0. The expected second period payoff to Party i when the party is involved in the coalition bargaining is $\frac{s_i}{s_i+s_j}1 + \frac{s_j}{s_i+s_j}0 = \frac{s_i}{s_i+s_j}$.

Moving up the game tree, consider the decision to accept or reject a proposal in the first period of the game. If the proposal is rejected, each party receives a payoff of zero in the first period and then the expected payoff from bargaining in the second period. Party i's expected payoff in the second period is simply s_i, i.e., party i is selected as formateur with probability s_i in which case it proposes $m_i^2 = 1$ and $m_j^1 = 0, \forall j \neq i$ (and if some other party is selected formateur then it receives $m_i^2 = 0$). Thus, the expected payoff from failing to form a first period coalition is $\delta s_i, \forall i \in \{1, 2, 3\}$.

The expected payoff from accepting an offer from Party i in the first period depends on whether the receiving party, Party j, subsequently decides to dissolve or maintain the coalition. If Party j opts to maintain the coalition then its payoff is $(1 + \delta)m_j^1$ whereas dissolving results in an expected payoff of $m_j^1 + \delta\frac{s_j}{s_j+s_k}$. Thus, the coalition will be stable if

$m_j^1 \geq \frac{s_j}{s_j+s_k}$. As noted in the body of the paper, Party j may have an incentive to accept an offer $m_j^1 < \frac{s_j}{s_j+s_k}$ as doing so affords the party the opportunity to dissolve the coalition an obtain a higher expected payoff in the second round. Here Party j's optimal strategy is to accept any offer, i.e., the condition for accepting an offer is given by $m_j^1 + \delta\frac{s_j}{s_j+s_k} > 0 + \delta s_j$ or, $m_j^1 > \delta(s_j - \frac{s_j}{s_j+s_k})$, but as $s_j + s_k < 1$, $s_j - \frac{s_j}{s_j+s_k} < 0$.

Suppose Party i is selected formateur in the first period. As any offer from Party i will be accepted, Party i essentially has two options: i) To form an unstable coalition, i.e., a coalition is formed in the first period but is subsequently dissolved, and ii) to form a stable coalition that survives through the two periods. Were Party i to opt for forming an unstable coalition, it's payoff would equal 1, i.e., in the first period it keeps the whole pie and in the second period Party i is out of office. If the party opts to form a stable coalition its offer is $m_j^1 = \frac{s_j}{s_j+s_k}$ where $s_j \leq s_k$. Party i's payoff then equals $(1+\delta)(1 - \frac{s_j}{s_j+s_k})$. Party i will then opt to form a stable coalition if $1 < (1+\delta)(1 - \frac{s_j}{s_j+s_k})$, which simplifies to $\frac{s_j}{s_k} < \delta$. The condition implies that the formateur will have an incentive to form a stable coalition if it values the future sufficiently and if its potential bargaining partners are sufficiently different in size. When that is the case Party i offers the smaller of its potential bargaining partners $m_j^1 = \frac{s_j}{s_j+s_k}$.

In sum, the results are substantively similar when the payoffs associated with a caretaker government equal zero. That is, provided the condition above is satisfied, there exists an equilibrium in which in which the formateur party is more generous to its junior partner than in the scenario in which government dissolution is not an option.

C Multiple Dissolution Opportunities

The model presented in the body of the manuscript and above assume that the coalition that forms can be dissolved and replaced with a new coalition that lasts until the end of the term. Of course, any coalition that forms is susceptible to being dissolved and in this appendix I briefly explore how allowing for the possibility that the 'new' coalition may also be dissolved. For simplicity, I now assume that the electoral term is divided into thirds and that a coalition can be dissolved at the end of each third. For simplicity, I further assume that $\delta = 1$.

It is useful to start with establishing some notation. The initial formateur will be labelled as Party 1 and its coalition partner as Party 2. If the coalition dissolves, Party 2 and Party 3 form a coalition in the second period. This then implies that the coalition formed in the third period if the second period coalition dissolves consists of Party 1 and either Party 2 and Party 3 (depending on who was the formateur in the second period coalition).

Solving the model by backwards induction, starting with the decision whether to accept a coalition offer in the final third of the game, the recipient, r, of an offer accepts it if $m_r^3 \geq \frac{1}{3}$ and rejects otherwise. Given r's strategy, the formateur in period 3 then offers $m_r^3 = \frac{1}{3}$ and keeps the remaining portfolios for herself.

Moving to the second period, that period's minor coalition partner's expected payoff of dissolving the coalition is then $\frac{s_j}{s_1+s_j} * \frac{2}{3} + \frac{s_1}{s_1+s_j} * \frac{1}{3} = \frac{2s_j+s_1}{3(s_j+s_1)}$ where $j \in \{2,3\}$ is the minor coalition partner in period 2. Thus, the minor coalition partner maintains the coalition if $m_j^2 \geq \frac{2s_j+s_1}{3(s_j+s_1)}$ but otherwise dissolves the coalition. The second period formateur, $i \in \{2,3\}\backslash j$, can, therefore, prevent dissolution by making an offer $m_j^2 = \frac{2s_j+s_1}{3(s_j+s_1)}$ and keeping the rest for herself. Note that the subgame starting with the formateur's offer in the second period is identical to the model in the body of the paper and, thus, the same conditions for forming a stable coalition apply.

Moving up to Party 2's decision to dissolve the coalition in first period, the expected payoff of dissolving equals:

$$\frac{s_2}{s_2+s_3}\left[1-\frac{2s_3+s_1}{3(s_1+s_3)}\right]+\frac{s_3}{s_2+s_3}\frac{2s_2+s_1}{3(s_1+s_2)}=\frac{s_3(s_1^2+2s_2^2)-s_2\left({s_1}^2+2{s_3}^2-3\right)}{3(s_2+s_3)}$$

Finally, considering the formateur's offer in the first period, the formateur will make an offer to Party 2, where the identity of Party 2 is determined by the requirement that $s_2 < s_3$ as in the two-period version of the model and $m_2^1 = \max\left\{\frac{1}{3}, \frac{s_3(s_1^2+2s_2^2)-s_2\left({s_1}^2+2{s_3}^2-3\right)}{3(s_2+s_3)}\right\}$. That is, Party 1 will offer enough to ensure the offer is preferred to a caretaker cabinet and to render the coalition stable.

The key question of interest here is how the equilibrium portfolio allocation changes as we relax the assumption that the coalition that forms following dissolution lasts until the end of the electoral term. This can be examined by comparing the equilibrium offers in the game in the body of the manuscript and the one presented in this appendix. Unsurprisingly, when the new coalition is vulnerable to dissolution, the formateur's offers become less generous. The equilibrium offer in the two-period game is larger if:

$$\frac{2s_2 + s_3}{3(s_2 + s_3)} \quad > \quad \frac{s_3(s_1^2 + 2s_2^2) - s_2\left({s_1}^2 + 2{s_3}^2 - 3\right)}{3(s_2 + s_3)}$$

which with a bit of rearranging gives us:

$$0 \quad > \quad 2s_2s_3\underbrace{(s_2 - s_3)}_{<0} + \underbrace{(1 - s_1^2)(s_2 - s_3)}_{<0}$$

The fact that the right-hand side of the inequality is negative follows from the formateur being better of forming a coalition with the smaller of the two potential partners, i.e., $s_2 < s_3$. Thus, when the minor coalition partner considers dissolving the coalition, it must also be concerned with forming a stable coalition if it becomes the formateur. This reduces the expected value of dissolving the coalition, which reduces the price the initial formateur must pay for stability. Note, however, that this effect is partly offset by the fact that being at the receiving end of an offer following a dissolution is now more attractive than before (as the second period formateur must now worry about the coalition's stability). Thus, while recognizing that a coalition that forms following a dissolution may be at risk of dissolution itself does restore some of the formateur advantage, the change is relatively moderate. This can be seen in Table C.7, which compares the proportionality of the formateur's payoffs in the two-period model in the body of the paper and the three-period model presented here. More importantly, the effects of changes in the distribution of party seats on proportionality remain substantively the same, i.e., the effect of formateur status depends on the formateur's size much like it does in the two-period model — and as the empirical results suggest.

Table C.7: The Proportionality of the Formateur's Share of Portfolios

Boldface = Formateur party is larger than coalition partner

(A) Two-Period Model

Seat Share of Coalition Partner	Seat Share of Opposition Party: 0.28	0.31	0.34	0.37	0.40	0.43	0.46	0.49
0.01								
0.04								**0.70**
0.07							**0.72**	**0.72**
0.10						**0.73**	**0.75**	**0.76**
0.13					**0.75**	**0.76**	**0.78**	**0.80**
0.16				**0.76**	**0.78**	**0.80**	**0.83**	**0.85**
0.19			**0.77**	**0.79**	**0.82**	**0.85**	**0.88**	**0.91**
0.22		**0.78**	**0.80**	**0.83**	**0.87**	**0.90**	**0.94**	**0.99**
0.25	**0.78**	**0.81**	**0.85**	**0.88**	**0.92**	**0.97**	**1.02**	**1.09**
0.28		**0.86**	**0.90**	**0.94**	**0.99**	**1.05**	1.12	1.21
0.31			**0.96**	**1.01**	1.08	1.16	1.25	1.37
0.34				1.10	1.19	1.29	1.42	1.59
0.37					1.32	1.46	1.65	1.91
0.40						1.70	1.97	2.40
0.43							2.48	3.26
0.46								5.15

(B) Three-Period Model

Seat Share of Coalition Partner	Seat Share of Opposition Party: 0.28	0.31	0.34	0.37	0.40	0.43	0.46	0.49
0.01								
0.04								**0.73**
0.07							**0.76**	**0.78**
0.10						**0.81**	**0.82**	**0.83**
0.13					**0.85**	**0.86**	**0.88**	**0.90**
0.16				**0.89**	**0.91**	**0.93**	**0.95**	**0.98**
0.19			**0.88**	**0.93**	**0.98**	**1.00**	**1.03**	**1.07**
0.22		**0.85**	**0.90**	**0.96**	**1.02**	**1.09**	**1.13**	**1.18**
0.25	**0.80**	**0.86**	**0.92**	**0.99**	**1.06**	**1.14**	**1.23**	**1.31**
0.28		**0.88**	**0.95**	**1.03**	**1.11**	**1.21**	1.32	1.46
0.31			**0.98**	**1.07**	1.17	1.29	1.43	1.61
0.34				1.13	1.26	1.40	1.58	1.83
0.37					1.36	1.55	1.79	2.13
0.40						1.74	2.09	2.61
0.43							2.55	3.45
0.46								5.31

D Presidential Cabinets

In the context of cabinet formation, the key difference between presidential and parliamentary systems is that the identity of the formateur is fixed in presidential system; the cabinet is the president's cabinet. Thus, in the case of a presidential system, the termination of a cabinet simply results in the president forming a new cabinet as opposed to either the minor coalition partner or the opposition partner occupying the role of a formateur as is assumed in the model in the body of the paper. Considering the possibility of cabinet dissolution in presidential system implies a straightforward modification of the model presented in the paper; if the cabinet is terminated, the president resumes her formateur role and proposes a new cabinet. One complication here is that the concept of a caretaker cabinet does not apply in presidential system. In the event that the president fails to form a multiparty cabinet, she can simply appoint a cabinet, partisan or technical, which in minority situations would face an handicap when it comes to passing legislation. Thus, I maintain the assumption that the allocation of spoils is $m^1 = \{\frac{1}{3}, \frac{1}{3}, \frac{1}{3}\}$ for sake of comparability. It is straightforward to verify that the results remain qualitatively the same under different assumptions about the payoffs associated with caretaker cabinets.[41]

The game remains the same in all other aspects. Deriving the equilibrium by backwards induction, we know that in the second period, following a cabinet dissolution, the president

[41] As long as the president prefers a majority coalition to a minority cabinet.

remains the formateur and proposes a coalition with one of the other parties where $m_p^2 = \frac{2}{3}$ (1-r) and $m_i^2 = \frac{1}{3}$ (r) for one of the other parties. As in the model in the body of the paper, it is assumed that the formateur selects her coalition partner with equal probability given her indifference.

Considering the dissolution decision of the coalition partner in the first period (if a coalition cabinet was formed), the expected payoff of dissolving the cabinet is $\frac{1}{2}\frac{1}{3} = \frac{1}{6}$. The optimal dissolution strategy is, therefore, to dissolve the coalition if the $m_i^1 < \frac{1}{6}$ but maintain it otherwise.

Turning to party i's decision to accept the president's offer, the payoff from doing so is $m_i^1 + \delta m_i^1$ if $m_i^1 \geq \frac{1}{6}$ and $m_i^1 + \delta\frac{1}{6}$ else (i.e., if in the coalition, party i is guaranteed $\frac{1}{6}$ in the second period). The payoff from rejecting the president's offer is $\frac{1}{3} + \delta\frac{1}{6}$.

As before, the president has three 'types' of strategies. First, to make an offer that is rejected that would result in a payoff of $\frac{1}{3} + \frac{2\delta}{3} = \frac{1+2\delta}{3}$. Second, to make an offer that is accepted but subsequently leads to dissolution. This involves making an offer to party i that it prefers to accept the offer (yet later is willing to dissolve the coalition). Thus, the payoff to party i from rejecting the offer, $\frac{2+\delta}{6}$ must be at least as large as the payoff from accepting and dissolving, $m_i^1 + \delta\frac{1}{6}$. The formateur must then offer at least $m_i^1 = \frac{1}{3}$. However, if $m_i^1 = \frac{1}{3}$ then party i has no incentive to dissolve the coalition and it is not possible for the formateur to engineer a dissolution in this manner. Finally, the formateur can make an offer that results in a stable coalition. Comparing party i's payoffs from rejecting an offer and accepting an offer of a 'stable coalition', we have $\frac{2+\delta}{6} \leq (1+\delta)m_i^1$, which implies the formateur must offer $m_i^1 = \frac{2+\delta}{6(1+\delta)}$. The president's offer is then, depending on the value of the discount factor, in the $[\frac{1}{4}, \frac{1}{3}]$ range. Pursing the strategy of a stable coalition, the president's payoff is $(1+\delta)\left[1 - \frac{2+\delta}{6(1+\delta)}\right]$, which is always better than making an offer that is rejected. That is, the president prefers a stable coalition to making an offer that is rejected if:

$$\begin{aligned}\frac{1+2\delta}{3} &< (1+\delta)\left[1-\frac{2+\delta}{6(1+\delta)}\right] \\ \frac{1+2\delta}{3} &< 1+\delta-\frac{2+\delta}{6} \\ 0 &< \frac{2+\delta}{6},\end{aligned}$$

which holds for any value of δ.

To summarize, in the subgame perfect equilibrium of the game, the president proposes $m_i^1 = \frac{2+\delta}{6(1+\delta)}$ to one of the other parties and keeps $m_p^1 = 1 - \frac{2+\delta}{6(1+\delta)}$ for herself. Party i accepts the offer and, subsequently, chooses to maintain the coalition in the second period. There are couple of things to not about the equilibrium. First, the president has a sizeable formateur advantage compared to the parliamentary version of the game. Her share of the portfolios is in the $\left[\frac{2}{3}, \frac{3}{4}\right]$ range with the president obtaining a larger share when the discount factor is large. Second, unlike in the parliamentary version, the equilibrium portfolio shares do not depend on the size of the party.

E Methods & Alternative Specifications

As noted in the body of the paper there are certain methodological challenges associated with using simple regression to evaluate Gamson's Law. In this appendix I discuss these methodological issues in a bit more detail and how scholars have sought to address these issues. I also provide the results and discussion of the various robustness tests referenced in the paper.

E.1 Compositional Data

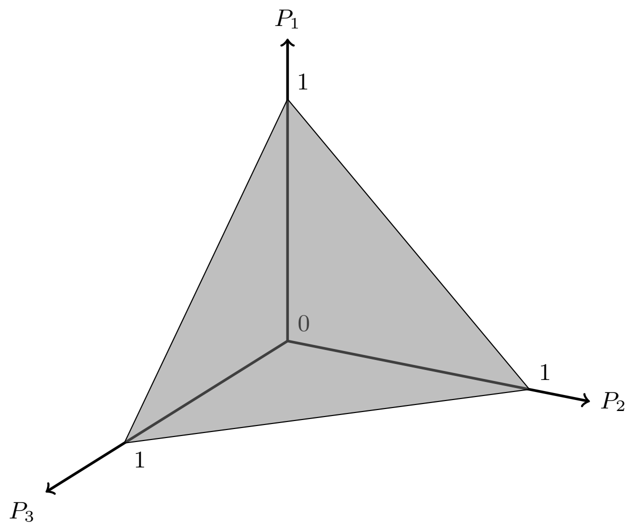
The statistical analysis of how portfolios are divided between coalition parties is complicated by two factors. First, the data are bounded, i.e., no party can hold less than 0% or more than 100% of the portfolios (or, alternatively, less than zero portfolios or more than k portfolios where k is the total number of portfolios). Using OLS regression to estimate models of portfolio allocation data can result in estimates that predict portfolio shares that lie outside the bounds of possible values.[42] Second, as the number of portfolios is fixed, an increase in the number of portfolios allocated to one party necessarily reduces the number of portfolios allocated to some other party. This implies that the errors for coalition partners are correlated.

In general terms, data on portfolio allocation is *compositional* data (Aitchison, 1982). Each cabinet can be described as a vector of portfolio allocations where each component of the vector refers to a parties' share, or number, of portfolios. Compositional data is characterized by the sum of the components equaling some constant, which implies that if we observe $n-1$ components of a portfolio allocation vector for a cabinet of n parties, then the n^{th} party's allocation is also known. Thus, the components of the vector cannot be treated as being independent draws from an n-dimensional Euclidean space. Instead, the sample space is a subset of the n-dimensional Euclidean space that can be represented as the unit $(n-1)$-simplex. For two party coalitions, the unit simplex is a line segment while the unit simplex for three party coalitions is a triangle (see Figure E.7). The unit simplex is defined as $S^{n-1} = \left\{(p_1, p_2, \ldots, p_n) \in \mathbb{R}^n | \sum_i p_i = 1 \text{ and } p_i \geq 0 \text{ for all } i\right\}$. In simpler terms, the unit simplex is simple the set of (positive) coordinates in the Euclidean space which sum to one. Representing the sample space as a $(n-1)$-simplex highlights a third issue with estimating a standard OLS regression model. Including observations for all n parties amounts to assuming that the data contains more information than it really does as the allocation to $n-1$ parties completely characterizes the allocation. Thus, estimating an OLS model with observations for all the cabinet parties has the effect of artificially shrinking the standard errors of the estimates.[43]

[42]The problem of bounded dependent variables is often described as a mere annoyance, i.e., that the predicted values may lie outside the bounds of the variable, while the fact that it can result in biased estimates is mentioned relatively rarely.

[43]The models presented in the previous section were estimated using all the cabinet parties — thus making it more likely that the Gamson's Law null is rejected. However, the conclusions are unaltered when one observation (party) is dropped from each cabinet.

Figure E.7: Three Party Cabinets



Although compositional data is quite common in political science — e.g., data on party vote shares, allocation of campaign expenditures, division of a budget, etc. — the special nature of these data is rarely recognized. Katz and King's (1999) work on multiparty district-level data is about the only publication in the political science literature that uses a statistical model that incorporates the special features of compositional data.[44] Tomz, Tucker and Wittenberg (2002) offer a simple alternative to Katz and King's method. Like Katz and King (1999), they transform the data using the additive logratio transformation, making the data unbounded, but to account for the fact that the vote shares must sum to one they advocate the use of seemingly unrelated regressions (SUR).[45]

While these approaches might appear to be directly applicable to analyzing the allocation of cabinet portfolios, this is not the case. Statistical models of compositional data have primarily been developed to deal with the effects of contextual factors on the size of the composites, e.g., when working with district level electoral results one can model the effects

[44]Philips, Rutherford and Whitten (2016) is another rare exception.

[45]The additive logratio transformation, suggested by Aitchison (1982), represents the seat share as the log of the ratio of each party's seat share to the seat share of one of the parties. That is, the additive logratio transformation is applied to each cabinet so that for the n party cabinet $\mathbf{p} = (p_1, p_2, \ldots, p_n)$, we obtain $\text{alr}(\mathbf{p}) = \left(\log(\frac{p_1}{p_n}), \log(\frac{p_2}{p_n}), \ldots, \log(\frac{p_{n-1}}{p_n})\right)$.

of district level socio-economic factors. In the context of cabinet portfolios, the primary explanatory variables are not contextual but composite specific, e.g., the party's vote share or its formateur status. Models to deal with composite specific effects have not been developed extensively. SUR-type methods are not particularly useful as SUR require the number of composites (parties) to be the same across observations (cabinets). This is clearly violated in our cabinet data where the size of cabinets ranges from two to six. Another problem for portfolio allocation data, common to both approaches, is that one composite must be used as a 'reference' composite (e.g., the Labour party when analyzing election results in the U.K.). When working with cross-national data, or other data where the composites are not constant across observations, it is not clear what should guide the selection of the 'reference' composite.[46]

Although methods for estimating composite specific effects have not been developed extensively, the three problems highlighted above could be addressed, albeit not perfectly (see below), using existing methods. One could combine the different 'fixes' adopted by the various scholars (as discussed in the article), i.e., by sticking with the OLS framework while applying the additive logratio transformation to address the boundedness of the data and the 'excess' number of observations and then clustering the standard errors by cabinet to take the interdependency in the allocation of portfolios within cabinets into account. However, much like in the standard OLS approach, the estimated coefficients depend on the choice of a party to use as the denominator in the logratio transformation.

As with the Poisson count model, applying the additive logratio transformation comes at a cost. After the data is transformed, Gamson's Law no longer implies clear expectations about the coefficients for the intercept and seat shares. Thus, the choice of a modeling strategy implies a trade-off between ease of interpretation and unbiased estimates and (more) appropriate standard errors. However, the analysis using the OLS model suggests that applying the additive logratio transformation may be a better option as the straightforward application of OLS suggested that Gamson's Law didn't hold even when the standard errors

[46] Importantly, as demonstrated in the appendix, the choice of a reference composite has an effect on the estimated coefficients.

are too small.[47] Moreover, it was shown that more proportional outcomes could be obtained by reallocating cabinet portfolios. If Gamson's Law is not supported by the more easily interpreted model, and since those estimates are potentially biased, there would appear to be limited reason to stick with a model that we know is methodologically flawed. In other words, even if we reject Gamson's Law on the basis of these results, we cannot reasonably argue Gamson's Law is incorrect because our confidence in these results is reduced by the fact that the estimates are methodologically unsound.

E.2 Additive Logratio Transformation

The models presented in the body of the paper were estimated using OLS (for their simplicity and comparability with the predictions of Gamson's Law) as well as Poisson regressions (that are better suited for the analysis of compositional data). The third approach that has been used in the literature involves applying an additive logratio transformation to the data — it is, therefore, of some interest to see how the results using this approach compare with the results presented in the paper. The additive logratio transformation was applied to each cabinet so that for the n-party cabinet $\mathbf{p} = (p_1, p_2, \ldots, p_n)$, we obtain $\text{alr}(\mathbf{p}) = \left(\log(\frac{p_1}{p_n}), \log(\frac{p_2}{p_n}), \ldots, \log(\frac{p_{n-1}}{p_n})\right)$ where the 'baseline' party n is randomly selected. The same transformation is applied to the parties' legislative seat shares as Gamson's Law suggests a linear relationship between portfolio and seat shares. The results in Table E.8 suggest that the substantive conclusions hold — seat share has a strong effect on portfolio allocation but that the relationship is weaker for formateur parties as predicted by the model.

It is worth noting, again, that modeling portfolio allocation using OLS (with or without the additive logratio transformation) involves dropping a party from each coalition (or using it as the baseline). The choice of which party to drop, or to use as a baseline, affects the estimated coefficients — this limitation, as far as I can tell, has not been noted in the literature. The reason the decision about which party to drop or use as a baseline is, however, quite intuitive when considering data that exhibits the relationship such as the one found here, i.e., that small parties tend to be over-represented while larger parties are under-represented.

[47] Note, however, that small standard errors make it easier to 'reject' the hypothesis that the slope coefficient equals one.

Table E.8: Portfolio Allocation: Additive Log Ratio Transformation
—Standard Errors Clustered by Cabinet—

	ALR	
	(1)	(2)
Seat Share	0.70***	0.71***
	(0.02)	(0.02)
Formateur	−0.10***	−0.056
	(0.04)	(0.04)
Formateur×Seat Share		−0.065**
		(0.03)
Constant	0.018	0.025
	(0.03)	(0.03)
Observations	522	522
R^2	0.87	0.87

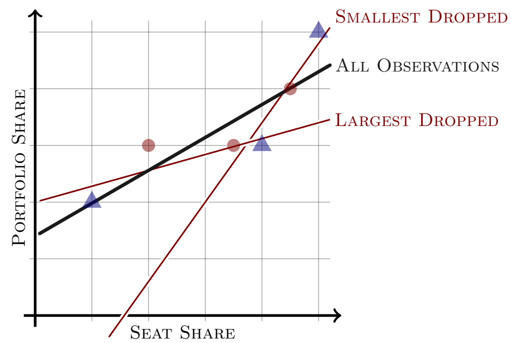
Standard errors in parentheses. * p<0.10, ** p<0.05, *** p<0.01.

To consider extreme cases, suppose that either the smallest party in each cabinet is dropped or the largest cabinet party is dropped. In the former case, over-represented parties are removed from the data (or used as a baseline), which will clearly result in the effect of seat share on portfolio share being biased upwards. In the latter case, under-represented parties are removed from the analysis, which has the effect of biasing the coefficient for seat share downwards. Figure E.8 illustrates this effect for two hypothetical three-party coalitions (red circles and blue triangles). The thick blue line is the regression line when all observations are included while the two red lines are the regression line obtained after dropping the observation with the lowest or highest value of seat share from each coalition.[48]

Thus, while the coefficients in Tables 5 (in the body of the text) and E.8 are in line with expectations, the reported results depend on which parties are dropped from the analysis. To examine the robustness of the findings in the OLS models (with and without the transformation), I estimate the models presented in the two tables 100 times while randomly selecting which party is dropped from the analysis or is used as the baseline each time. As we have seen that the effect of seat share is extremely robust, I focus on the other key quantity

[48]The logic is less straightforward when the additive logratio transformation is used but it is easy to verify that the estimated coefficients depend on which cabinet party is used as a baseline. For example, if the smallest party is used as a baseline for the cabinets in Figure E.8 the slope coefficient equals .37 but 1.00 if the largest cabinet party is used as a baseline.

Figure E.8: The effect of dropping observations



of interest, i.e., the coefficient of the interaction of formateur status and seat share, and plot the result in Figures E.9 and E.10 along with the 90% and 95% confidence intervals. While the sign of the coefficient is virtually always as expected, the effect is not always statistically significant. This suggests that modeling composition data using OLS (with or without the ALR transformation) is quite sensitive to the researcher's decision about which observation to drop from the analysis or to use as a baseline category. Fortunately, the Poisson count model does not require the researcher to make any such arbitrary decisions.

Figure E.9: Interaction of Seat Share & Formateur Status
—OLS, Dropping Random Cabinet Party, S.E.s Clustered by Cabinet—
—90% & 95% Confidence Intervals—

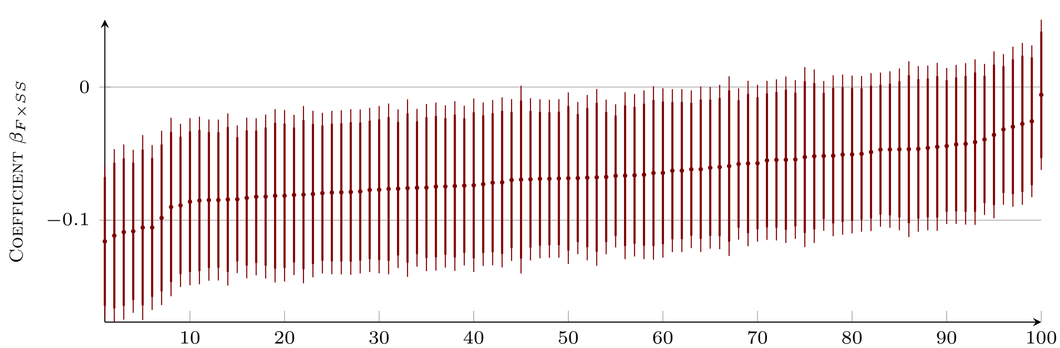
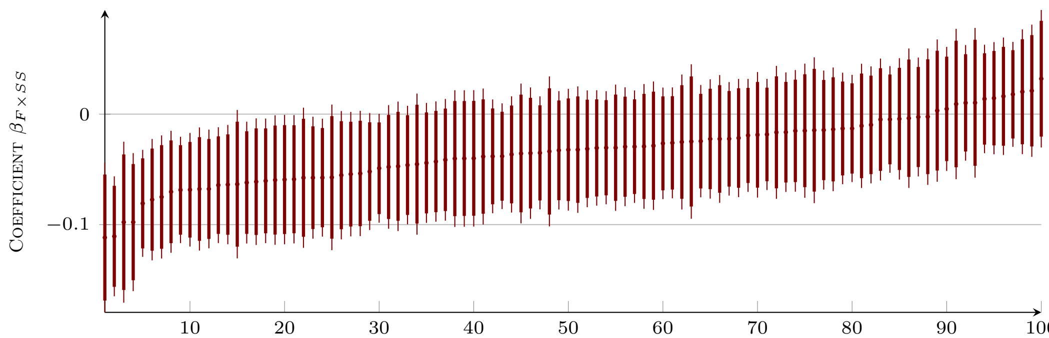


Figure E.10: Interaction of Seat Share & Formateur Status
—Additive Logratio Transformation, S.E.s Clustered by Cabinet—
—90% & 95% Confidence Intervals—



E.3 Portfolio Salience

The analysis above focuses on a simple count of portfolios in determining the share of portfolio payoffs allocated to each party. However, not all portfolios are created equal as, e.g., Warwick and Druckman (2001) have noted — some portfolios are considered more important. Druckman and Warwick (2005) use an expert survey to measures portfolio salience that they, then, use to calculate the 'weighted' portfolio share for each cabinet party. As it is reasonable to think that the weighted measures capture better the manner in which the spoils of office are divided, I estimated the OLS models using Druckman and Warwick's (2005) data — obviously, Poisson count models cannot be estimated when the dependent variable is the weighted portfolio share. In line with Druckman and Warwick's (2005) findings, the results (see Table E.9) do not differ in a meaningful way from the results obtained using the unweighted measures. Seat share has a strong effect on the weighted portfolio share but it still falls short of that predicted by Gamson's Law while the coefficient of the interaction term tends to be negative.[49]

The results presented in the paper focused on the countries included in Warwick and Druckman's (2001) study in order to facilitate comparison with their results (which also represents the set of countries studied in the earlier work) and, in particular, the set of

[49]Druckman and Warwick's (2005) data only covers the period from the end of the second World War until 1989. There is, thus, little reason to focus on portfolio salience — the results are substantively the same regardless of whether one uses the unweighted or weighted measures of portfolio shares.

Table E.9: Portfolio Allocation: Weighted by Portfolio Salience
—Standard Errors Clustered by Cabinet—

	OLS		ALR	
	(1)	(2)	(3)	(4)
Seat Share	0.79***	0.82***	0.74***	0.76***
	(0.02)	(0.03)	(0.02)	(0.02)
Formateur	1.04	3.95***	0.047	0.11**
	(1.0)	(1.4)	(0.04)	(0.04)
Formateur×Seat Share		−0.072**		−0.094***
		(0.03)		(0.03)
Constant	6.20***	5.52***	−0.031	−0.019
	(0.4)	(0.6)	(0.03)	(0.03)
Observations	400	400	397	397
R^2	0.92	0.92	0.87	0.87

OLS models: One party dropped from each cabinet.
Standard errors in parentheses. * p<0.10, ** p<0.05, *** p<0.01.

countries for which measures of portfolio salience are available. Seki and Williams's (2014) extend the portfolio data in both time and space. The analysis in the paper makes use of the more recent data offered by Seki and Williams (2014) but it is also interesting to consider whether the hypotheses implied by the model hold up when considering a larger set of countries. The results of the estimation are presented in model E.10.

Table E.10: Portfolio Allocation: Poisson Regression
—Poisson Count Model—

	(1)	(2)
Seat Share	0.024***	0.032***
	(0.0008)	(0.001)
Formateur	−0.063*	0.66***
	(0.04)	(0.1)
Formateur×Seat Share		−0.017***
		(0.002)
Observations	1246	1246
Log Likelihood	−1368.1	−1340.6

Standard errors in parentheses. * p<0.10, ** p<0.05, *** p<0.01.

E.4 Minimum Integer Weights

As noted in the paper, Snyder, Ting and Ansolabehere (2005), and others, argue that focusing on the party seat share is misguided as coalition formation involves bargaining under weighted voting and, thus, the parties' bargaining weight ought to be a function of the parties' share of voting weights rather than seat shares.[50] There are good reasons to think that voting weights are more relevant for a party's bargaining strength; voting weights reflect the bargaining opportunities that the parties have and having more options ought to translate into a stronger bargaining position. While seat shares may serve as a proxy for bargaining strength, it is easy to see that seat shares don't fully capture the parties' bargaining positions. For example, in the absence of a majority party, every party in a three-party bargaining situation has the same voting weight regardless of its vote share as any party is pivotal to exactly two minimum winning coalitions. However, the equilibrium in a Baron and Ferejohn (1989) style model, such as Snyder, Ting and Ansolabehere (2005), can be seen to depend on two factors; the probability of being recognized as a formateur and the likelihood of being included in a coalition (which is endogenously determined). Snyder, Ting and Ansolabehere (2005) examine bargaining under two different recognition protocols — equal recognition probability and proportional to the parties' voting weights — and motivate the latter by referring to Diermeier and Merlo's (2004) study of formateur selection.[51] Diermeier and Merlo (2004) examine whether seat shares, not voting weights, affect formateur selection but given the strong correlation between the two it is reasonable to argue that Diermeier and Merlo's (2004) finding is not inconsistent with the idea that voting weights affect formateur selection. It does, however, invite questions about what determines the recognition probability, which is a key factor in determining the equilibrium in Baron and Ferejohn (1989) type bargaining models (and *the* key factor in the simple model offered in this paper. As it stands, this remains primarily an empirical question and, at that, one that has probably given insufficient attention to bargaining strength or voting weights.[52]

It is, thus, worth considering whether the results obtained are robust to the inclusion

[50] Other who have examined voting weights, partly or solely, as determinants of portfolio allocation include Ansolabehere et al. (2005), Cutler et al. (2016), and Warwick and Druckman (2006).

[51] See Snyder, Ting and Ansolabehere (2005, p. 982, fn. 8).

[52] See, e.g., Bäck and Dumont (2008).

Table E.11: Portfolio Allocation
—OLS & Poisson Regression w/Fixed Effects—

	OLS			Poisson		
	(1)	(2)	(3)	(4)	(5)	(6)
Seat Share	0.67***	0.69***		1.75***	2.61***	
	(0.04)	(0.04)		(0.2)	(0.2)	
Formateur	−0.044***	−0.032**	0.065	−0.14***	0.61***	0.74***
	(0.009)	(0.01)	(0.04)	(0.05)	(0.1)	(0.1)
Formateur×Seat Sh.		−0.030			−1.70***	
		(0.03)			(0.3)	
MIW Share	0.17***	0.17***	0.85***	0.57***	0.43**	2.92***
	(0.05)	(0.05)	(0.04)	(0.2)	(0.2)	(0.2)
Formateur×MIW			−0.11			−1.63***
			(0.09)			(0.3)
Constant	0.061***	0.058***	0.047***			
	(0.005)	(0.007)	(0.009)			
Observations	386	386	386	595	595	595
R^2	0.91	0.91	0.81	—	—	—
Log likelihood	—	—	—	−664.6	−649.4	−698.4

OLS models: One party dropped from each cabinet.
Standard errors in parentheses. * p<0.10, ** p<0.05, *** p<0.01.

of voting weights. The model considered above can, trivially, be modified by replacing seat shares with voting weights to obtain analogous comparative statics with respect to voting weights (though doing so requires adding more parties to the model). Tables E.11 and E.12 show the estimation results when share of minimum integer weights are included as controls in the models (columns 1 and 3) as well as when minimum integer weights are included, in place of seat shares, and are interacted with formateur status. In the first set of results (table E.11) share of minimum integer weights is defined as the share of the sum of minimum integer weights for all parliamentary parties (as in Snyder, Ting and Ansolabehere, 2005) while in the second table (E.12) the share is calculated as the share of the sum of the cabinet parties' minimum integer weights, which is in line with the theory presented here. The minimum integer weights come from Cutler et al. (2016).[53]

There is not much in terms of surprises in the results. First, in line with previous work examining minimum integer weights, the effect of seat share on portfolio share remains substantively and statistically the same and the inclusion of the minimum integer weights

[53]There were several discrepancies between the data used here (from Warwick and Druckman (2001) and Seki and Williams (2014)) and Cutler et al. (2016). Wherever possible, these were reconciled by consulting election results and, in some instances, changes in party size between elections but in other cases doing so was not feasible. For instance, Cutler et al. (2016) treat the CDU and the CSU in Germany as separate parties whereas the other datasets consider them as one party. Thus, the analysis using minimum integer weights focuses only on those cases that were consistently coded across the datasets.

Table E.12: Portfolio Allocation
—OLS & Poisson Regression w/Fixed Effects—

	OLS			Poisson		
	(1)	(2)	(3)	(4)	(5)	(6)
Seat Share	0.75***	0.77***		1.82***	2.65***	
	(0.03)	(0.04)		(0.2)	(0.2)	
Formateur	−0.044***	−0.030**	0.19***	−0.14***	0.61***	0.86***
	(0.009)	(0.01)	(0.06)	(0.05)	(0.1)	(0.1)
Formateur×Seat Sh.		−0.036			−1.68***	
		(0.03)			(0.3)	
MIW	0.13***	0.13***	1.34***	0.84***	0.66**	5.04***
	(0.05)	(0.05)	(0.06)	(0.3)	(0.3)	(0.3)
Formateur×MIW			−0.53**			−3.16***
			(0.2)			(0.5)
Constant	0.067***	0.063***	0.063***			
	(0.005)	(0.006)	(0.010)			
Observations	382	382	382	590	590	590
R^2	0.91	0.91	0.70	—	—	—
Log likelihood	—	—	—	−656.2	−641.5	−698.1

OLS models: One party dropped from each cabinet.
Standard errors in parentheses. * p<0.10, ** p<0.05, *** p<0.01.

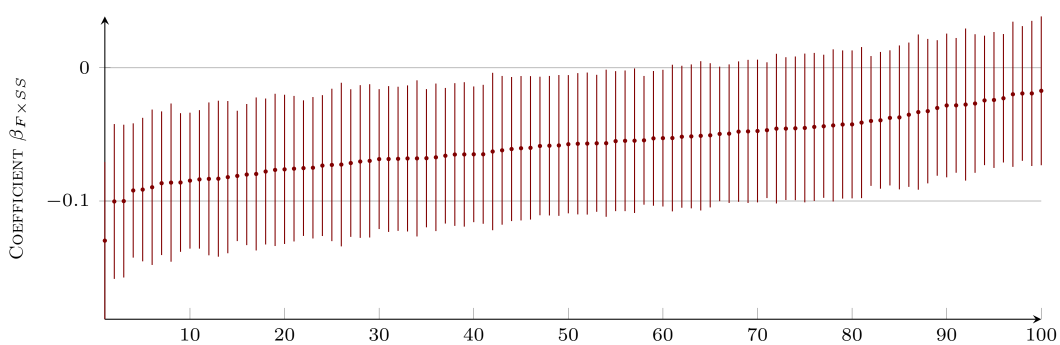
has minimal impact on the fit of the model (columns 1, 2, 4, 5). Second, when minimum integer weights take the place of seat share in the models (columns 3 and 6), the results remain consistent with a version of the formal model presented here where minimum integer weights take the place of seat share in determining recognition probabilities; minimum integer weights have a positive effect on portfolio share but that effect declines in the magnitude of a party's minimum integer weight. However, the fit of the models estimated with minimum integer weights is substantially worse than the models estimated with seat shares.

These findings are, in a sense, somewhat unsatisfying if one sees voting weights as having firmer theoretical foundations than seat shares. One potential explanation for this discrepancy between theory and empirics is that minimum integer weights treat parties as unitary actors whereas often they are less unified than they are assumed to be. Parties may, e.g., shy away from forming government coalitions that have a narrow legislative majority both for reasons related to the very logic suggested in this manuscript, i.e., they may prove unstable, and because of the risk of allowing government policy being held hostage to small factions or individual MPs. There are certainly instances of government formation attempts failing because of the bargaining partners' concern about the size of their majority, incumbent governments deciding not to continue their cooperation following an election with a reduced legislative majority, and coalition governments losing their legislative majorities. Thus, seat shares may be better suited for capturing the benefits that accrue to parties from being able to form coalitions whose legislative support does not consist of a very narrow majority.

E.5 Deviation from Proportionality

Another approach to assessing the proportionality of the portfolio allocation involves considering what a proportional allocation would have looked like and to focus on the deviation from that allocation. Following Bucur and Rasch (2015), I calculated the distribution of portfolios for each cabinet using St. Laguë. I then re-estimate the models in table 2 in the body while replacing the dependent variables (each parties' portfolio share) with deviation from proportional allocation according to St. Laguë's formula. As discussed above, estimating the models using OLS requires dropping a single party from each cabinet because the data is compositional but the estimation results have been shown to depend on which party is dropped. Thus, as above, I estimate the models multiple time, each time selecting at random which coalition party is excluded and plot the estimate of the key coefficient of interest along with its 90% confidence interval (figure E.11). The results are substantively similar to what those reported in the body of the paper. As expected, the coefficient of the interaction term is always negative, indicating that the formateur advantage declines in party size, but whether the coefficient is 'statistically significant' depends on which coalition party happens to be dropped from each coalition.

Figure E.11: Interaction of Seat Share & Formateur Status
—DV=Deviation from St. Laguë, OLS—
—90% Confidence Intervals, S.E.s Clustered by Cabinet—



E.6 Weighing by Coalition Formations and Observations

The data on the parliamentary cabinets consists of 273 coalition formations and 794 coalitions parties. Due to variance in, e.g., government duration and the size of the party system, the different countries contribute different numbers of observations. At the upper end, the data for Italy consists of 42 coalitions and 166 coalition parties while, at the other extreme, Portugal trails with only nine coalitions and 20 coalition parties due to late transition in democracy (the first coalition government formed in 1978). This means that there is a risk that the results are more reflective of patterns of portfolio allocation in countries that provide a large number of observations — although the exploratory results in Table 3 in the paper suggest that there is considerable consistency in terms of the fit of Gamson's Law across countries. To investigate this possibility, I re-estimated the ordinary least squares regression models while weighing the observations by the number of i) formation opportunities and ii) observations contributed by a given country. While I report both, the latter specification is of greater interest as it is really the number of observations that determines the influence of each country on the regression results. Comparing the results with the unweighted results in table 5, shows that the results are substantively similar, which suggests that the results are not being driven by virtue of individual countries contributing a disproportional number of observations.

Table E.13: Portfolio Allocation
—OLS Weighted by Formation Opportunities & Observations—

	#Formation Opportunities		#Observations	
	(1)	(2)	(3)	(4)
Seat Share	0.82***	0.85***	0.84***	0.88***
	(0.02)	(0.03)	(0.02)	(0.03)
Formateur	−0.036***	−0.018	−0.042***	−0.0042
	(0.009)	(0.02)	(0.01)	(0.02)
Formateur×Seat Share		−0.046		−0.092**
		(0.04)		(0.04)
Constant	0.073***	0.069***	0.078***	0.068***
	(0.005)	(0.006)	(0.006)	(0.006)
Observations	521	521	521	521
R^2	0.90	0.90	0.90	0.90

One party dropped from each cabinet.

Standard errors in parentheses. * p<0.10, ** p<0.05, *** p<0.01.

F Parliamentary & Presidential Systems

The results in the body of the text analyzed portfolio allocation in parliamentary and presidential separately but doing so limits our ability to consider whether there are statistically significant differences in the effects of the independent variables. Table F.14 presents the results when the two datasets are combined, and constitutional form is interacted with seat share and formateur status. The main thing to note about the results is that there is evidence of a formateur effect in presidential systems — although it disappears when the formateur's party is by far the largest party in the cabinet[54] — and that the effect of seat share on portfolio share is muted in presidential systems (although the effect is only 'statistically significant' in the OLS model).

Table F.14: Portfolio Allocation: Parliamentary & Presidential Systems
—OLS & Poisson Regression Models—

	OLS		Poisson	
	(1)	(2)	(3)	(4)
Seat Share	0.73***	0.84***	2.01***	3.01***
	(0.02)	(0.02)	(0.09)	(0.2)
Formateur	0.048***	−0.0050	0.073*	0.71***
	(0.01)	(0.01)	(0.04)	(0.1)
Formateur×Seat Share		−0.067**		−1.86***
		(0.03)		(0.3)
Presidential	−0.0048	−0.0083		
	(0.008)	(0.02)		
Pres.×Seat Share		−0.24***		−0.48
		(0.08)		(0.4)
Pres.×Formateur		0.23***		0.80***
		(0.05)		(0.3)
Pres.×Format.×Seat Share		0.11		0.065
		(0.1)		(0.6)
Constant	0.069***	0.064***		
	(0.005)	(0.005)		
Observations	735	735	1109	1109
R^2	0.82	0.87	—	—
Log Likelihood	—	—	−1263.8	−1176.7

OLS models: One party dropped from each cabinet. Standard errors in parentheses. * p<0.10, ** p<0.05, *** p<0.01.

[54] One reason for this, in a sense, is 'mechanical', i.e., if the formateur party represents 99% of the cabinet's parliamentary majority then handing a single portfolio over to another party will cut into the formateur's advantage (as a single portfolio will represent more than 1% of the portfolios).

Finally, Table F.15 presents the result of the OLS estimation when the seat and portfolio shares have been transformed using the additive logratio transformation.

Table F.15: Portfolio Allocation: Parliamentary & Presidential Systems —Additive Logratio Transformation—

	ALR	
	(1)	(2)
Alr(Seat)	0.62***	0.72***
	(0.02)	(0.02)
Formateur	0.25***	−0.057
	(0.06)	(0.04)
Presidential	0.079	−0.21**
	(0.08)	(0.09)
Pres.×Alr(Seat)		−0.24***
		(0.06)
Formateur×Alr(Seat)		−0.053*
		(0.03)
Pres.×Formateur		1.18***
		(0.2)
Pres.×Format.×Alr(Seat)		−0.029
		(0.10)
Constant	−0.060*	0.038
	(0.03)	(0.03)
Observations	735	735
R^2	0.72	0.77

Standard errors in parentheses. * p<0.10, ** p<0.05, *** p<0.01.