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

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Work in progress

September 13, 2011

Abstract

The empirical phenomenon termed Gamson's Law is well known but not least because it lacks firm theoretical foundations. In fact, Gamson's Law is a real puzzle as most models of coalition bargaining suggest that bargaining strength should determine the division of portfolios, which, in turn, suggest that portfolios should rarely be allocated in proportion to the parties' seat share. I propose a theory of portfolio allocation that goes some way towards explaining Gamson's Law. The theory 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 much of the pie for oneself means that one's coalition partner can be bought of rather easily. Thus, the problem of forming a stable coalition requires making it sufficiently expensive to buy off each party in the coalition. While this logic is in many respects similar to the logic of the standard coalition bargaining model it differs in important ways as a new coalition may form at any time, i.e., the opposition parties can always propose to form a new coalition. I test hypotheses derived from the model on an extensive dataset on portfolio allocations in coalition cabinets across Europe.

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1 Introduction

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 such empirical regularities have been deemed worthy of being termed 'laws'. While the other law, Duverger's Law, has fairly firm theoretical underpinnings – although it has required several refinements (Riker, 1982) – Gamson's Law has no theoretical foundations. Indeed, as Warwick & Druckman (2001) note, there appears to be a considerable discrepancy between the predictions generated by bargaining theories of coalition formation and the empirically observed proportional allocation of ministerial portfolios among coalition parties.

Bargaining theories of coalition formation that build on Baron and Ferejohn's (1989) extension of Rubinstein's (1982) alternating offers model to legislative bargaining generally predict that the formateur will receive a disproportionally large share of the portfolios. As much of the literature on Gamson's Law has noted, there is little evidence for such formateur advantage and coalition payoffs appear largely proportional – see, e.g., Schofield & Laver (1985), Warwick & Druckman (2001), and Warwick & Druckman (2006). 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 are generally determined by the parties' voting weights rather than their seat shares. Empirical work has generally focussed on the latter, which may have obscured the benefits that stem from being the formateur as Ansolabehere et al. (2005) show.[1]

The equilibrium predictions of the Baron-Ferejohn model have also been considered in several experimental studies (Fréchette et al., 2003, 2005; Diermeier & Morton, 2005). While the studies generally find some evidence of a formateur advantage, this advantage is smaller than that predicted by bargaining models of coalition formation. Some scholars have argued that the failure to find evidence for a formateur advantage of the magnitude predicted by the bargaining models suggests that the standard bargaining framework is inappropriate for modeling government formation. However, if formateurs do reap a disproportionate share, even if smaller than predicted, bargaining models must be considered to contribute to our understanding of coalition formation. After all, most theories only offer predictions about marginal effects.

Recently, a few scholar have sought to provide theoretical accounts that explain the proportional allocation of government portfolios. Morelli (1999) proposes a demand bargaining model in which the parties sequential field demands and a coalition forms if subset of the parties' demands that constitute a majority are compatible. The form of bargaining in Morelli's model may be considered an attractive feature as, on the face of it, it would appear to resemble more closely how coalition bargaining takes place in reality. The data in Müller & Strøm (2001), for example, suggests that formateurs don't make a single take-it-or-leave

[1] 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.

offer as the Baron-Ferejohn type models assume but rather that the parties shop around.[2] 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. Morelli (1999) also finds, in line with Browne & Franklin (1973) and Browne & Frendreis (1980), that small parties are overcompensated when the number of parties needed to form a coalition is small.

Carroll & Cox (2007) offer a fundamentally different explanation of Gamson's Law, arguing that the formation of electoral coalitions plays an important role. Carroll & Cox argue that the effort exerted by each party in the electoral coalition is influenced by its expected payoffs from winning the election and that a proportional allocation of portfolios will elicit the greatest effort by each member. In line with their argument they find a close fit between the parties' share of seats and portfolios when the parties have been members of an electoral coalition.

Overall, considerable disagreement remains about Gamson's Law although few would deny that a strong correlation exists between parties' share of seats in the legislature and its seats in the cabinet. A part of the problem is that because Gamson's Law lacks firm theoretical foundations it is not clear how it would be shown to be incorrect. A strict interpretation of Gamson's Law would argue that seat and portfolios shares are perfectly proportional, i.e., in a simple regression framework we would expect to estimate the intercept to equal zero and the coefficient for seat shares to equal one. However, most studies of Gamson's Law neglect to test whether the slope coefficient is statistically different from one. A cursory glance at the findings in the literature suggests that more often than not, the slope coefficient is different from one with a high degree of statistical certainty.

This paper begins to explore some ideas that may cast a light on allocation of coalition payoffs. First, we consider a simple bargaining model that helps reconcile the large formateur advantage predicted by the Baron-Ferejohn bargaining models with the relatively proportional outcome that is observed empirically. Second, the examination of portfolio payoffs has largely ignored the role of ideology. This is true of both formal models of coalition bargaining as well as empirical examinations of Gamson's Law. Third, we consider whether there are marked differences in the patterns of coalition payoffs cross-nationally. Differences across countries may offer insights into the factors that shape the proportionality of coalition payoffs.

2 A Simple Model of Coalition Bargaining

The Baron-Ferejohn model of coalition bargaining has been criticized for making restrictive assumptions about the bargaining process. Warwick & Druckman (2006), e.g., argue that

[2] This is suggested by both formateurs talking with multiple parties and, perhaps less directly, by the fact that in many instances their are multiple formateurs.

assuming an exogenous order of proposers (presumably, even if probabilistic) and take-it-or-leave-it offers is unrealistic.[3] The focus here is on a different aspect of coalition bargaining. A common feature of coalition bargaining model is that coalition formation is treated as a one-shot game. After a bargain is struck and a coalition is formed, the game ends and the parties realize their payoffs. In real life, the formation of a coalition is not the end of the game but rather the beginning. Most importantly, the payoffs that stem from coalition membership are generally realized over the life of the coalition. To obtain the benefits of office (whether they are simply being in office or come from influencing policy), the coalition must be maintained but a crucial feature of parliamentary systems is that the government can fall at any time – either by losing the confidence of the legislature or, more importantly in the current context, by the desertion of a coalition partner.

In short, a coalition containing an unhappy coalition partner that suspects that he might improve his lot by forming a different coalition will be unstable. 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 rules, the formateur may prefer the moderate payoff from a stable coalition of content coalition partners to an unstable coalition in which he receives the full formateur advantage. Thus, the need to maintain the government coalition may introduce moderation on part of the formateur as he has an incentive to make his coalition partners expensive to buy off by parties in the opposition.

To clarify the logic of the argument I consider a highly stylized two period model of legislative bargaining. The bargaining takes place between three parties and each parties' 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 coalition but any two parties can form a majority coalition. In each period the parties bargain over a division of a dollar. The bargaining protocol is the simplest possible – one party is recognized as the formateur in each period. The formateur proposes a division of the dollar 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 $\sum\limits_{i \in N} m_i^t = 1, t = 1, 2$. 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 rejected the dollar is divided equally between the parties and the game moves on to the next period (or, if in the second period, the dollar is divided and the game ends). 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 dollar, remains unaltered in the second period. That is, it is assumed that the terms of the coalition agreement can not

[3]The Baron-Ferejohn model does allow for amendments under open rule so strictly speaking it cannot be characterized as take-it-or-leave-it bargaining.

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. 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 dollar m^2 and a vote is taken on the new coalition.

To sum up, the sequence of the game and the parties' strategies are the following. Without loss of generality, party 1 is assumed to be the formateur in period 1 and its strategy is a mapping $P : S \rightarrow M$.[4] Following party 1's proposal each party votes to accept or reject the proposal. Each party's strategy is a mapping $v_i : S \times M \rightarrow \{A, R\}$. 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 $D : s_2 \times s_3 \rightarrow \{D, C\}$. 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. If the minor party chooses to continue the coalition, the same division of the dollar takes place 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 $m^2 \in M$.

The parties' payoffs are simply the sum of the parties' share of the dollar in each period with the second period payoff discounted by δ:

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

I consider the subgame perfect equilibrium of the game to show that the possibility of dissolution can induce moderation on part of the formateur's strategy in the first period of the game. 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 dollar, i.e., the amount the party would 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 (i.e., the minor party and the opposition party) in the subgame following a 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

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

formateur with probability equal to its legislative seat share. If a party is recognized its optimal proposal allocates two-thirds of the dollar 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 $\frac{2s_i+s_j}{3(s_2+s_3)}$. As long as the party's allocation of the dollar in the first stage is is greater or equal to the expected payoff in the second period the minor party will opt to stay in the coalition.

The voting strategies in the first period may appear slightly more complicated than in the second stage as minor party status in a coalition offers a potential for increasing benefits in the future – it allows 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 party's probability of becoming the formateur is greater than when the bargaining round involves all the 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.[5] It is optimal for the 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

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

Now consider the first period proposal. The formateur's action can lead to three different types of outcomes. First, some proposal will be rejected, which lead to the government formation process to start over in the second period. Second, the formateur offer a proposal that leads to the formation of a stable coalition that stays in place in the second period. This requires offering the minor party a share of the dollar greater than what it obtains if it chooses to dissolve the coalition in the second period and entering 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 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 he can construct a proposal that allocates slightly more than one-third of the dollar to one of the parties and the rest to himself, which would be accepted. Thus, the formateur's choice depends on which of the

[5] 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 parties expected payoff equals $\frac{1}{2}$.

two 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 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.[6] The maximum 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 his coalition, and smaller parties are 'cheaper', the actors must discount the future rather heavily for the formateur to forego the opportunity to form a stable coalition.[7]

To sum up, if the condition on the discount factor above is satisfied there exists an equilibrium in the game 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 predicted by the standard bargaining models that predict a large formateur advantage.[8] 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 and keeps the rest to himself. As the formateur's proposal makes clear 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' seat share shows that party i's coalition payoff

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

[7] 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.

[8] It is important to note, however, that the results are not directly comparable as the standard bargaining model assumes a more involved bargaining protocol. Nevertheless, the results in the present model should carry over to a model in which multiple bargaining rounds can occur in each period in a straightforward manner.

is increasing, conditional on it being the smaller non-formateur party, in its seat share:

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

Considering how party size influence the proportionality of coalition payoff 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 clarify the proportionality of coalition payoffs, table 1 shows the proportionality of the formateur party's payoffs $\left(\frac{\text{share of portfolios}}{\text{share of seats}}\right)$ for various combinations of seat distributions. The boldfaced numbers indicate that the formateur party was the largest party for a particular seat distribution and the empty cells represent cases in which the non-formateur parties don't hold a majority of seats between them or the 'coalition partner' is smaller than the 'opposition' partner (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

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

The table highlights three 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 number of portfolios doesn't keep pace with the total size of the coalition and, thus, smaller coalition partners receive proportionally a larger share of portfolios. As table 1 shows, that is also true of the formateur party. The smaller the formateur party is, the disproportionally larger its share of portfolios.

Table 2: The Proportionality of the Formateur's Share of Portfolios in a One Shot Bargaining Model

Boldface = Formateur party is larger than coalition partner

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

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), however, leads to greater proportionality 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. When the formateur party is the largest party its share is generally larger than proportional allocation produces. Thus, the results suggest a small party bias consistent with the findings in the literature, see, e.g., Browne & Frendreis (1980).

Finally, the table clearly shows that what determines the distribution of payoffs is 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 whether the possibility of dissolution influences portfolio allocation the outcomes in table 1 need to be compared to what the portfolio allocation would be if dissolution could not occur, i.e., like in the standard bargaining models where the game ends after a bargain has been struck. Table 2 lists 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. In table 2 the formateur's share of portfolios is always higher than in table 1. 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 what seat distributions can be considered plausible. It has been shown that the likelihood of becoming a formateur is a function of party size (Diermeier & Merlo, 2004) so the cases in which the formateur is the largest party is perhaps a natural focus of attention. Restricting our attention to those case we can see that when dissolution is possible hardly ever leads to a formateur advantage whereas the 'one shot' bargaining model suggest that there are many instances in which the formateur gains from his position.

3 Some Empirical Results

3.1 Does Gamson's Law Really Hold?

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 by running a simple regression of the parties' seat share (within the coalition) on their share of portfolios. While there are several methodological problems with this approach, the case for Gamson's Law has been made, at least in part, by incorrect interpretation of the results. Table 3 shows the results of a simple regression of seat shares on portfolio shares using Warwick & Druckman's (2006) data which covers West European parliamentary systems in the period 1945-2000.[9] Gamson's Law implies specific coefficient values in this model, i.e., perfect proportionality of payoffs implies that the coefficient for seat share should equal one and the intercept should equal zero. However, as table 3 shows, the intercept is .084 with a standard error of .005 and can, therefore, be considered to be highly unlikely to equal zero. The fact that the distribution of portfolios is necessarily discrete has sometimes been used to excuse this deviation from Gamson's Law – I'll return to the issue of discreteness below.

The coefficient for seat share clearly indicates a strong positive relationship with portfolio share but it falls somewhat short of unity. There is, however, a tendency in the literature to simply note that the relationship is strong and that coefficient is 'statistically significant'. The tests reported generally assume that the null hypothesis is that the coefficient is equal

[9] The countries included are Austria, Belgium, Denmark, Germany, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, and Sweden. I have excluded two countries, Finland and France, that are in Warwick & Druckman's (2006) dataset as they are semi-presidential systems. Including these countries doesn't change the results in any appreciable fashion.

to zero, which may not be of particular interest. If our interest is in verifying whether Gamson's Law holds or not then the questions we should be asking is how likely it is that the coefficient is equal one. A quick glance at the standard error of the slope coefficient in table 3 should suffice to verify that the probability of the coefficient equaling one is vanishingly small.[10] Leaving 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 does, however, does not obviate the fact that there is strong positive relationship between seat and portfolio shares.

Another question of interest is whether there is any variation cross-nationally in how well Gamson's Law describes the allocation of portfolios. A 'law' implies an absolute description of how things work. If Gamson's Law is really a law it would imply that there is minimal cross-national variation – other than perhaps that the size of the cabinet places limitations on how proportional the division of portfolios is. More importantly, cross-national differences suggest that institutional differences may play a role in determining the allocation of portfolios. In other words, cross-national differences suggest that we should be looking for a theory of portfolio allocation that can explain such variation rather than a theory that rationalizes the point prediction embedded in Gamson's Law.

Table 3: Regressing seat share on portfolio share

	All Countries
Constant	.084***
	(.005)
Party seat share	.756***
	(.011)
Observations	608
R^2	.892

Table 4 and figure 1 show the results of regressing seat shares on portfolio shares for each of the countries in the sample. It would be a stretch to say that there is a lot of variation across the countries but it would also be wrong to argue that there is none. The standard errors are generally fairly small, making it unlikely that portfolio allocations are generated by the same process across the countries. Note, however, that for each of the countries (save Portugal) we reach the same conclusion as when all the countries were pooled. The true value of the intercept is unlikely to be zero and the probability of the true slope equaling one is very low.[11] The range of the estimated coefficients is non-negligible. The intercept ranges from .04 to .20 and the slope coefficient from .52 to .90. Another intriguing aspect of the results is that there is that the deviations from proportionality are consist across the countries. The nature of the discrepancy between the data and Gamson's Law is shown clearly in figure 1. Smaller parties tend to be overrepresented while large parties are underrepresented. If the true underlying parameters are those described by Gamson's Law

[10] Warwick & Druckman (2006) and others report coefficients that are closer to one but not sufficiently so to avoid the same conclusion. Carroll & 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.

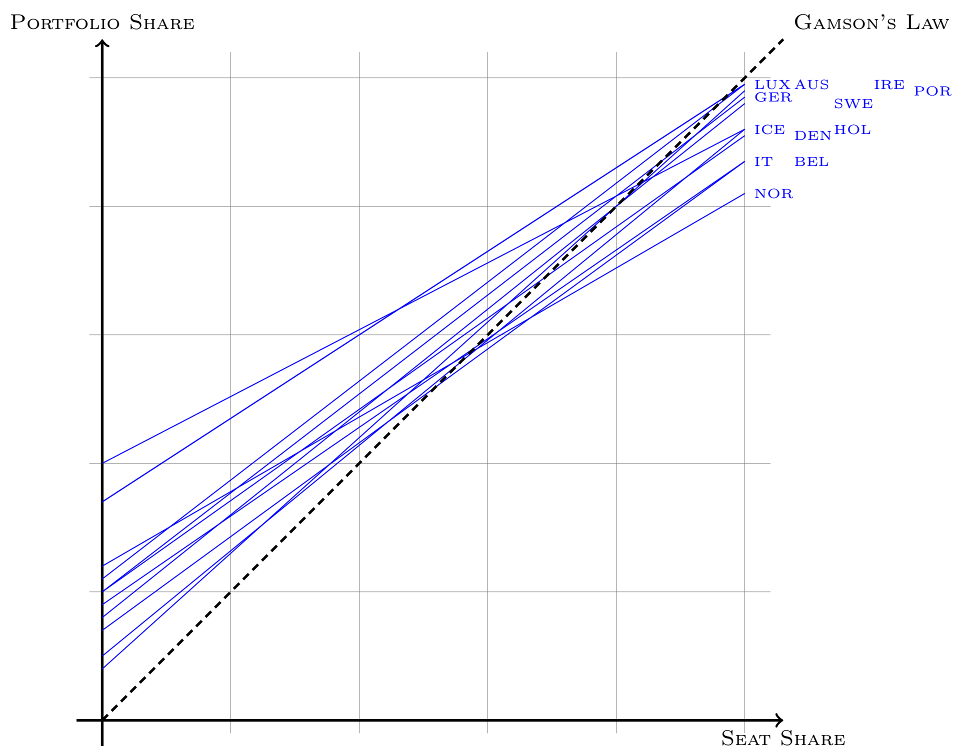
[11] The coefficients for Portugal (.04 and .9) come closest to Gamson's Law but Portugal also has the smallest number of observations and, subsequently, relatively large standard errors.

then one would not expect such consistency in the deviations from proportionality.

Table 4: Gamson's Law by Country

	AUS	BEL	DEN	ICE	IRE	IT	LUX	HOL	NOR	POR	SWE	GER
Const.	.17*	.09*	.10*	.20*	.11*	.07*	.17*	.05*	.12*	.04	.08*	.10*
	(.03)	(.02)	(.01)	(.03)	(.02)	(.01)	(.04)	(.01)	(.02)	(.04)	(.02)	(.01)
Seat Share	.65*	.69*	.71*	.52*	.77*	.73*	.65*	.82*	.58*	.90*	.80*	.77*
	(.06)	(.05)	(.03)	(.08)	(.04)	(.01)	(.08)	(.04)	(.07)	(.08)	(.04)	(.02)
Obs.	35	100	49	49	20	141	38	67	24	14	18	53
R^2	.76	.71	.92	.49	.95	.96	.62	.88	.78	.91	.96	.97

Figure 1: Gamson's Law by Country



As mentioned above, the fact that each portfolio must be allocated to one party may limit the degree of proportionality that can be achieved. The effect of this on disproportionality is generally larger, the smaller the number of portfolios to be allocated. To see why, simply note that doubling the size of the cabinet can never decrease, but may increase, the proportionality of the outcome. If discreteness is the source of the observed deviations from Gamson's Law, the fit ought to be better for large cabinets. The results in table 5 suggest that the discreteness issue does play some role. Table 5 displays the results of regressions where the sample has been split in two on the basis of cabinet size. Cabinets that contain fewer than 20 portfolios are considered small. The coefficients are somewhat closer to the expectations established by Gamson's Law for the larger cabinets but the differences are not big.[12] More importantly, even when we focus on large cabinets we reach the same conclusion as before: Gamson's Law is not a good description of the actual distribution of portfolios.

Table 5: Gamson's Law by Cabinet Size

	Small Cabinets	Large Cabinets
Constant	.102***	.070***
	(.008)	(.005)
Party Seat Share	.732***	.767***
	(.017)	(.013)
Observations	323	285
R^2	.855	.926

The fact that the size of the cabinet doesn't appear to make that much difference is, of course, not conclusive evidence that rules discreteness 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 a possibility. A more direct way of considering whether discreteness is to blame, is to consider whether there exists an alternative distribution of the portfolios 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.[13]

Figuring out whether the observed distribution of portfolios is the most proportional one achievable is a simple matter. For each coalition a measure of disproportionality was calculated as as a measure of over/underrepresentiona for each party. Using this information, one portfolio was transferred from the most overrepresented party to the most underrepresented party and the measure of disproportionality was recalculated. The findings are shown in figure 2.

The results show that it was possible to achieve a more proportional distribution of portfolios in an overwhelming majority (84.7%) of the cases. This is a clear suggestion that the discreteness of the portfolio distribution is not responsible for the observed deviations from perfect proportionality. Of course, smaller parties tend to be overrepresented 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.[14] One might even argue that party leaders would find it

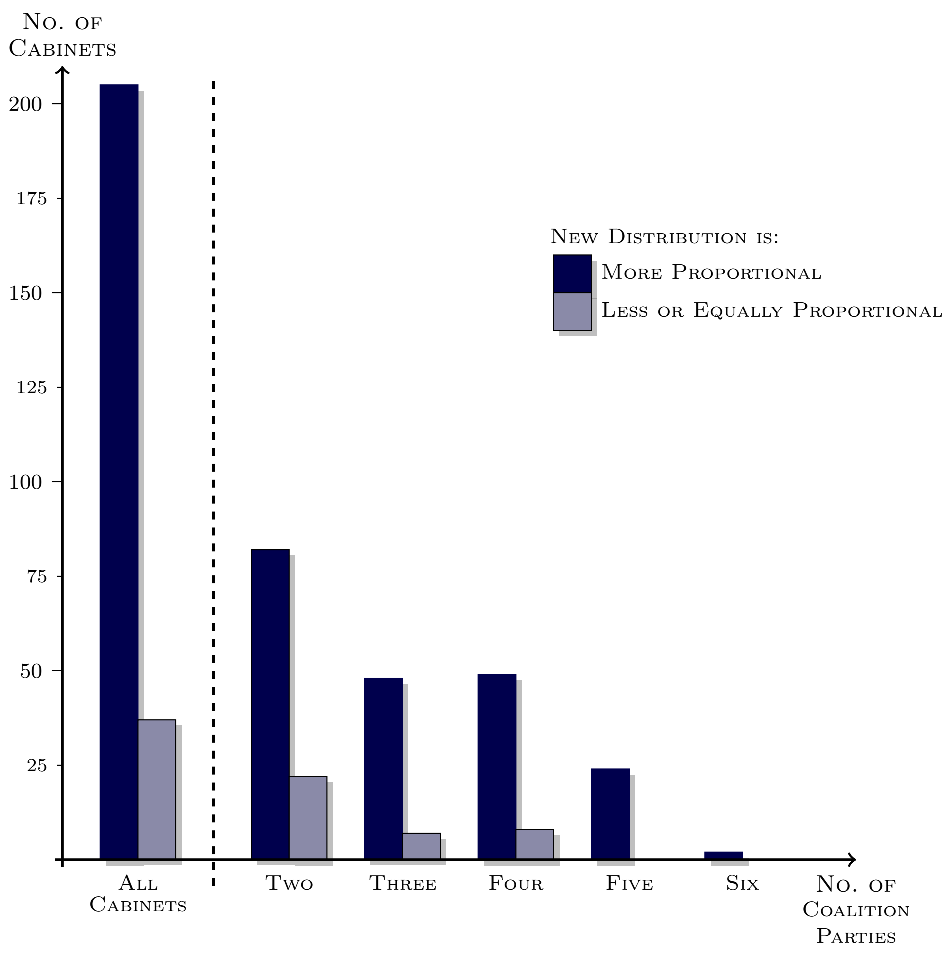
[12] When the model is estimated with an interaction between large cabinets and seat shares instead of splitting the sample, the coefficient of the interaction term has a p-value of .047. Considering a subsample of even larger cabinets, with 30 or more portfolios, we move still closer to Gamson's Law but are still fairly far off with a slope coefficient of .81 and standard error of .023.

[13] It is, of course, a little difficult to make a statement such as this when Gamson's Law lacks theoretical underpinnings.

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

difficult to convince its members to join a coalition if they are the only ones who stand to receive a seat in the cabinet. It turns out that neither of these exceptions are particularly relevant. Out of the 242 cabinets in the dataset, in only three cases did the most overrepresented party only hold one portfolio and in 16 cases did it hold two portfolios. In four out of these 19 cases did the reallocation of a portfolio not result in less disproportionality. Even allowing for these exceptions to the proportional distributions of portfolios, a more proportional outcome could be obtained in 78.5% of the cases.[15]

Figure 2: Redistributing Portfolios to Achieve Greater Proportionality



Despite noting at the beginning of this section that that there are methodological problems associate with using OLS to verify Gamson's Law, I have nevertheless proceeded with

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

using simple regressions to examine Gamson's Law from different angles. The reason I have proceeded in this way is to highlight that the we should have doubts about lawlike nature of Gamson's Law even if we rely on the standard approach in the literature (though there are a few variations on the theme). That is, the problem lies, at least in part, in the interpretation of the evidence and not solely in the methodological issues surrounding the use of OLS. I now turn to considering these methodological issues and propose a simple solution that resolves some (but not quite all) of these problems.

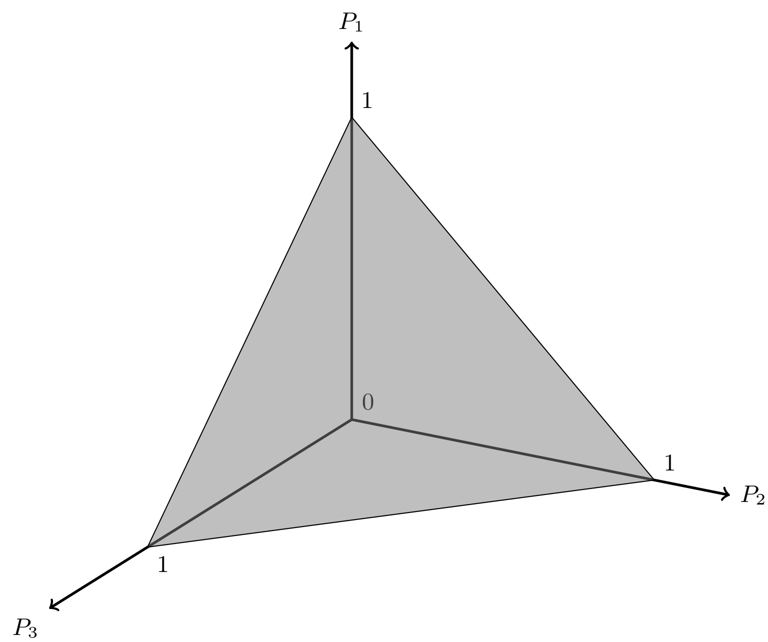
3.2 Some (Unresolved) Methodological Issues

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 receive 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 lie outside the bounds of possible values.[16] Second, as the number of portfolios is fixed, a change in the number of portfolios allocated to one party must be accompanied be a reduction in the number of portfolios allocated to some other party. The implication of this is that the errors for parties belonging to the same coalition are correlated.

Both of these problems have to do with portfolio allocation data being *compositional* data (Aitchison, 1982). Each cabinet can be described as a vector of portfolio allocation where each component of the vector refers to a parties' share of the portfolios or its number of portfolios. The defining characteristic of compositional data is that the sum of the components equals some constant, which implies that if we observe $n-1$ components of a portfolio allocation vector for cabinet of n parties, then we also know the n^{th} party's allocation. Thus, the components of the vector cannot be treated as being drawn 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 3). 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 using the standard OLS regression to analyze the data. Including observations for all the n parties amounts to assuming that the data contains more information than it really does because the allocation to $n-1$ parties completely characterizes the allocation with the effect of shrinking the standard errors of the estimates.

[16]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 often results in biased estimates is mentioned relatively rarely.

Figure 3: Three Party Cabinet: The Unit Simplex



Aitchison (1982) was the first to offer a statistical model for the analysis of compositional data. Although compositional data is quite common in political science – e.g., party vote shares, allocation of campaign expenditures, division of a budget, etc. – little attention has been given to the special nature of these data. Katz & King's (1999) work on multiparty district-level data appears to be the only publication in the political science literature that uses a statistical model that incorporates the special features of compositional data. Tomz et al. (2002) offer a simple alternative to Katz and King's method. Like Katz & King (1999), they transform the data using additive logratio transformation, making the data unbounded, but to account for the fact that votes shares must sum to one they advocate the use of seemingly unrelated regressions (SUR).

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 dealing with district level electoral results we can model the effects of socio-economic factors within the district. In the context of cabinet portfolios, our primary explanatory variable is not contextual but composite specific, i.e., the party's vote share. Models to deal with composite specific effects have not been developed. SUR-type methods turn out not to be particularly useful either as SUR require the number of composites (parties) to be the same across observations. 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 data where the composites are not constant across observations, it is not clear what should guide the selection of the 'reference' composite.

While the literature on Gamson's Law has not ignored the nature of compositional data, it has not addressed the problems comprehensively. Fréchette et al. (2005) and Carroll & Cox (2007), e.g., drop one party from each cabinet in recognition of the data's compositional nature. However, this only addresses the problem that the degrees of freedom in compositional data are less than the number of parties, i.e., including all the parties inflates the number of observations without adding any information. Dropping a party neither solves the problem of correlated errors (except in the case of two party cabinets) nor the problem of the data being bounded. In contrast, Warwick & Druckman (2006) adopt a different approach by allowing for clustered standard errors. Clustering standard errors by cabinet 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.

While methods for estimating composite specific effects have not been developed (and, so far, the solution has escaped me), the three problems highlighted above can be addressed, albeit not perfectly, within the OLS framework. It involves two steps. First, using the additive logratio transformation on the data solves both the problem of the data being bounded and the 'excess' number of observations. Second, clustering standard errors by cabinets takes into account the interdependency in the allocation of portfolios.

However, 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 in the previous section suggest applying the additive logratio transformation may be a better option. The straightforward application of OLS suggested that Gamson's Law was didn't hold even when the standard errors are too small.[17] 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

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

Law is incorrect because our confidence in these results is reduced by the fact that the estimates are methodologically unsound.

While the modeling strategy suggested here doesn't allow a simple test of Gamson's Law, the law states that *only* the parties' vote shares should influence portfolio allocation. Thus, showing that other factors do influence the allocation provides further evidence against Gamson's Law. The perceived robustness of Gamson's Law appears to have discouraged efforts to consider what other factors influence portfolio allocation. Considerations of formateur status and voting weights are the two exceptions but both formal models of bargaining provide strong arguments for why they should matter. A factor that has received less attention is the ideological orientation of the coalition parties. Most models of bargaining are based on Baron & Ferejohn (1989) type bargaining models, which focus on the division of a fixed prize. Political parties, however, may have preferences over policy in addition to office benefits and this may influence the outcome of the bargaining and the allocation of portfolios.

In what follows I briefly consider the effect of ideology on portfolio allocation. These results are very preliminary and the exercise is primarily aimed at providing further evidence against Gamson's Law. That is, my theoretical expectations about the effect of ideology are vague but Gamson's Law, however, suggests very specific expectations about the effects of ideology. In general, the party containing the median legislator is in an advantageous positions in the coalition bargaining process as it can form coalitions with the parties either on its left or its right and can, therefore, potentially play the parties off against one another when it comes to negotiating the allocation of portfolios. There are, thus, theoretical reasons for focusing on the median party and the parties ideological distance from the median. Note, however, that the eventual portfolio allocation is really a function of two (intertwined) sets of decisions, i.e., the decision who forms the coalition and the decision how portfolios are allocated, which may render the relationship between ideology and portfolio allocation less straightforward then is suggested by the above.[18]

The following results employ the same data as in the previous section with the addition on data on the parties' policy platform derived from the Comparative Manifesto Project using Laver & Budge's (1992) method. The resulting ideological positions are used to identify the median party in the legislature and to calculate each parties' (absolute) ideological distance from the median party. 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 $\text{alr}(\mathbf{p}) = \Big(\log(\frac{p_1}{p_n}), \log(\frac{p_2}{p_n}), \ldots, \log(\frac{p_{n-1}}{p_n})\Big)$ where party n is the party receiving the largest share of portfolios. The same transformation is applied to the parties' legislative seat shares as we know that there is a strong linear relationship between portfolio and seat shares.

The results are shown in table 6. Seat share has a strong effect on portfolio share as

[18] The formal model above will eventually be extended to include ideological considerations in order to get at the issues involved and to provide specific hypothesis about the role of ideology.

Table 6: Regression Results

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Const.	-.087**	-.099***	-.062*	-.076*	-.101**	-.095***	-.105**
	(.034)	(.036)	(.036)	(.040)	(.039)	(.036)	(.044)
alr-seats	.641***	.638***	.642***	.640***	.606***	.644***	.615***
	(.021)	(.021)	(.021)	(.021)	(.028)	(.022)	(.029)
Median Party		.071		.051		-.087	-.076
		(.056)		(.059)		(.069)	(.075)
Dist.M			-.178	-.137	.112		.095
			(.113)	(.119)	(.152)		(.162)
Median*alr(Seats)						-.192***	-.164**
						(.072)	(.075)
Dist.M*alr(Seats)					.279**		.221*
					(.120)		(.122)
Formateur Party	-.181***	-.180***	-.186***	-.184***	-.183***	-.149***	-.155***
	(.046)	(.047)	(.046)	(.047)	(.045)	(.042)	(.041)
Formateur Party*Seats	-.139***	-.143***	-.134**	-.138***	-.122**	-.121***	-.111**
	(.052)	(.053)	(.052)	(.053)	(.050)	(.045)	(.046)
Obs.	399	399	399	399	399	399	399
R^2	.783	.784	.784	.784	.786	.788	.79

before. Being the median party has a positive effect on the number of portfolios received by the party but the effect weak. When interacted with the additive logistic transformation of seat share we find that small median parties tend to get more portfolios while large median parties actually receive fewer portfolios.[19] Ideological distance from the median party has a weak negative effect on a party's portfolio share and, much like with the indicator variable, when the effect of ideological distance is conditioned on party seat share, small parties close to the median do better while larger parties fare worse. Although the effect of the variables is statistically significant for a range of values of seat shares (though not medium sized parties), the magnitude of the effect is small and including the variables in the model does not improve the fit of the model much.

In terms of offering further evidence against Gamson's Law, these findings are not very impressive. There is some evidence that ideology matters but substantive impact is so small that one is hesitant to draw strong conclusions on its basis. Nevertheless, the results suggest that taking a closer look at ideology may be worthwhile. The measures of ideology employed here are relatively coarse and the choice of measures was only motivated very basic theoretical concerns. Spelling out in greater detail how ideology influences coalitions payoffs when parties care about both policy and office – and perhaps in different amounts – would yield more precise hypotheses along with suggestion how ideology ought to be operationalized for empirical analysis.

[19]The average value of alr(Seats) is -.62.

4 Conclusion

In this paper I have considered a simple model of government formation that 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 considered departs from the standard bargaining model in that it takes into account the fact that coalitions must be maintained, i.e., the benefits of forming a coalition are not all reaped at the moment it is formed. The implication of this is that taking a full advantage of ones position as a formateur can lead to the formation of coalition that are unstable. If the parties value the future enough, the will be willing to pay a premium, in the form of additional portfolios for its coalition partner, for forming a coalition that is stable. 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, avoids extracting the maximum formateur advantage possible and picks a more moderate allocation. For a number of possible seat distribution this has the effect of wiping out the formateur advantage and bias the results in favor of its (smaller) coalition partner.

The model offers several additional predictions about the allocation of portfolios. Perhaps most importantly it clearly 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 partner.

In the second half of the paper I took a look at the evidence in support of Gamson's Law and the methods used to study 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 results – but perhaps not the interpretation of the evidence. I also consider the possibility that deviations from 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 isn't a very 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 their is room for improvement but that doesn't necessitate throwing the baby out with the bath water. In the context of portfolio allocation, this means that one should not dismiss bargaining models too easily. After all, the standard bargaining model suggest that a party's share of portfolios will depend on it seat share (or voting weight) – which is what the data shows.

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