Appendices

Tying the Hands of Coalition Partners in International Negotiations: Public Dissent and Constraining Powers

Appendix A. Formal Model

Setup

The following formal model describes a game of coalition policy-making in international negotiations. The central actors in the games are two parties that belong to the same coalition government C. Without loss of generality, party 1 is delegated to lead the negotiations with other member states of the intergovernmental arena. Consequently, party 1 is the insider and party 2 the outsider in the game. For simplicity, the other member states are modeled as a unitary actor S. For each actor $i = 1, 2, S$, let $\theta_i \in \mathbb{R}$ denote its ideal point on a common ideological dimension. The model assumes that parties 1 and 2 have perfect and complete information about each others' positions and actions.

The game is sequential with two stages as illustrated by Figure 1 in the paper. Let $d \in \{0, 1\}$ denote party 2's decision to dissent publicly from the insider. Party 2, i.e. the outsider, moves in the first stage because dissent must take place prior to the negotiations to have any meaningful effect. In addition, coalition C may provide coalition parties with institutional constraining powers for enforcing coalition compromises in international negotiations. Let $m \in \{0, 1\}$ denote whether such constraining mechanisms are cheaply available. In the second stage, party 1 takes a position θ_C in the negotiations with S.

The policy outcome is the result of the negotiations between the insider on behalf of C and the other member states S. It is defined as a simple weighted average

$$\theta^*(\theta_C) \coloneqq w_C\theta_C + (1 - w_C)\theta_S \tag{2}$$

where w_C is the bargaining power of the coalition government in the negotiations. Throughout, the model allows for dissent to result in a loss of bargaining power w_l because the coalition is not viewed as a cohesive actor which may be exploited by S. Assume that the bargaining power of no single member state exceeds 0.5. Thus,

$$w_C \coloneqq w_u - dw_l \tag{3}$$

where $0 < w_l \leq w_u \leq 0.5$.

Further assume that $\theta_C \in I_C$ where $I_C = \left[\min_{i\in\{1,2\}} \theta_i, \max_{i\in\{1,2\}} \theta_i\right]$, i.e. the coalition can only take a position that lies within the ideological range of its constituent parties. This prevents member states from taking excessively extreme positions to shift the policy outcome to their ideal point.

Finally, assume that actors have identical quadratic utility functions

$$u(\theta_i, \theta^*) \coloneqq -\big(\theta_i - \theta^*\big)^2. \tag{4}$$

Backward Induction

The sequential nature of the game enables us to solve the game using backward induction. To do so, we begin by defining party 1's best response to the outsider's choice of dissent. Next, we can define party 2's choice of dissent in anticipation of party 1's best response given perfect and complete information.

Party 1's Best Choice of θ_C

Party 1 moves second and sets θ_C given party 2's action d and available constraining mechanisms m. When party 2 dissents and/or strong constraining mechanisms exist, i.e. when $d = 1 \vee m = 1$, the model assumes that the coalition compromise is enforced. Otherwise, party 1 chooses θ_C such that it maximizes its utility. We can thus write party 1's best response as

$$\theta_C^*(d, m) = \begin{cases} \underset{\theta_C \in I}{\text{argmax}} \Big(u\big(\theta_1, \theta_C\big) - u\big(\theta_1, \theta_S\big)\Big) & \\ \qquad\qquad \Big(u\big(\theta_2, \theta_C\big) - u\big(\theta_2, \theta_S\big)\Big) & , d = 1 \vee m = 1 \\ \underset{\theta_C \in I_C}{\text{argmax}}\ u\big(\theta_1, \theta^*(\theta_C)\big) & , \text{otherwise.} \end{cases} \tag{5}$$

where $I = [\min_i \theta_i, \max_i \theta_i]$. The coalition compromise is thus a Nash bargaining solution (NBS) that maximizes the joint utility while taking into account the position of S as the status quo or fallback outcome, should C fail to reach an agreement.

Party 2's Choice of Dissent d

Next, we move backward to party 2's choice of dissent. For this, it is useful to rewrite its utility as a function of d and m

$$u_2(d, m) = -\big(\theta_2 - w_C \theta_C^*(d, m) - (1 - w_C)\theta_S\big)^2. \tag{6}$$

Anticipating party 1's reaction, party 2 maximizes its utility and thus dissents when its utility is greater when it dissents than when it does not: $u_2(d = 1, m) > u_2(d = 0, m)$. Equivalently, we can define the utility gain for party 2 as $u_2(d = 1, m) - u_2(d = 0, m)$. Party 2 benefits from dissenting when this utility gain is greater than zero and thus its best action is

$$d^* = \begin{cases} 1 & , u_2(d=1,m) - u_2(d=0,m) > 0 \\ 0 & , \text{otherwise.} \end{cases} \tag{7}$$

Solution

In order to solve the game, we first provide a closed-form solution for party 1's best response. We set $\theta_1 = 0$ and $\theta_S > 0$ which effectively sets a reference point and determines θ_S as the scale while making this and subsequent computations considerably easier.[26]

We can then move on to an analytical solution of party 2's choice of dissent by considering when it benefits from it. The solution of the game is provided separately for the case in which constraining institutions exist ($m = 1$) and when they do not ($m = 0$). The center of attention is to determine if and when party 2's utility gain from dissenting publicly is positive. This can be studied as a function of party 2's ideological position relative to the other actor's positions that are held equal as described above.

Closed-form Solution of Party 1's Best Choice of θ_C

To determine party 1's best response, we need to solve the two cases in equation 5. Beginning with the first case where the NBS is enforced, we have the following first order condition

$$\frac{\partial}{\partial \theta_C} \Big(u\big(\theta_1, \theta_C\big) - u\big(\theta_1, \theta_S\big) \Big) \Big(u\big(\theta_2, \theta_C\big) - u\big(\theta_2, \theta_S\big) \Big) \overset{!}{=} 0 \tag{8}$$

which yields the closed form for the NBS

$$\theta_C^{\text{NBS}} = \begin{cases} \frac{1}{4} \Bigg(3\big(\theta_1 + \theta_2\big) - 2\theta_S \\ \quad + \sqrt{9\big(\theta_1^2 + \theta_2^2\big) - 14\theta_1\theta_2 - 4\theta_S\big(\theta_1 + \theta_2 - \theta_S\big)} \Bigg) & , \theta_2 < \theta_S \\ \theta_S & , \text{otherwise.} \end{cases} \tag{9}$$

Note that the more general solution of the first order condition includes additional cases that are ruled out by $\theta_1 = 0 < \theta_S$.[27]

[26] This deliberately ignores the case where $\theta_1 = \theta_S$. In this rare case, it is easy to show that the outsider is always indifferent about dissenting. In the data used for the empirical analysis, this case does not exist. Otherwise, this step is without loss of generality.

[27] In particular, the more general solution involves separate cases for the split difference when

For the second case in equation 5, where party 1 maximizes its utility, it is useful to rewrite the utility function by plugging equation 2 into party 1's utility function to obtain

$$u\big(\theta_1, \theta^*(\theta_C)\big) = -\big(\theta_1 - w_C\theta_C - (1 - w_C)\theta_S\big)^2. \tag{10}$$

We thus have the following first order condition

$$\frac{\partial}{\partial \theta_C} u\big(\theta_1, \theta^*(\theta_C)\big) \overset{!}{=} 0 \tag{11}$$

$$2w_C\big(\theta_1 - w_C\theta_C - (1 - w_C)\theta_S\big) = 0 \tag{12}$$

which yields the point at which party 1 maximizes its utility

$$\tilde{\theta}_C = \left(1 - \frac{1}{w_C}\right)\theta_S \tag{13}$$

which is a maximum because $\frac{\partial^2}{\partial \theta_C^2} u\big(\theta_1, \theta^*(\theta_C)\big) = -2w_C^2 < 0$. To provide some intuition, this global maximum is given at the point where party 1 is able to achieve a negotiation outcome at its own ideal point by playing a more extreme point given its coalition's bargaining power. Whether or not this can be played depends on whether it lies on the closed interval I_C. When $\tilde{\theta}_C \in I_C$ party 1 plays the global maximum $\theta_C^* = \tilde{\theta}_C$. By the extreme value theorem, $u(\theta_1, \theta^*(\theta_C))$ must have a minimum and a maximum on I_C. When $\tilde{\theta}_C \notin I_C$, we know that the maximum on I_C must be either θ_1 or θ_2 at the edges of I_C because the utility functions are strictly concave. Consequently, party 1 plays θ_2 if $u(\theta_1, \theta^*(\theta_2)) > u(\theta_1, \theta^*(\theta_1))$ and its own ideal point θ_1 otherwise.

Party 1's best response can thus be written as a function of (d, m)

$$\theta_C^*(d, m) = \begin{cases} \theta_C^{\text{NBS}} & , d = 1 \lor m = 1 \\ \tilde{\theta}_C & , d = m = 0 \;\&\; \tilde{\theta}_C \in I_C \\ \theta_2 & , d = m = 0 \;\&\; \tilde{\theta}_C \notin I_C \;\&\; u\big(\theta_1, \theta^*(\theta_2)\big) > u\big(\theta_1, \theta^*(\theta_1)\big) \\ \theta_1 & , \text{otherwise.} \end{cases} \tag{14}$$

Solution When Institutional Constraining Mechanisms Are Available ($m = 1$)

Generally, we need to determine party 2's utility gain from dissenting to solve the game. Given that we consider the setting where $m = 1$, the utility gain is given by $u_2(d = 1, m = 1) - u_2(d = 0, m = 1)$. Plugging in equations 6 and 3, the utility gain

both $\theta_1, \theta_2 \gtrless \theta_S$. Here, this simplifies to the condition $\theta_2 < \theta_S$.

is

$$- \big(\theta_2 - (w_u - w_l)\theta_C^*(d=1, m=1) - (1-(w_u - w_l))\theta_S\big)^2 \\ + \big(\theta_2 - w_u\theta_C^*(d=0, m=1) - (1-w_u)\theta_S\big)^2. \quad (15)$$

Given that $m = 1$, we know that $\theta_C^* = \theta_C^{\text{NBS}}$ and so we obtain

$$-\big(\theta_2 - (w_u - w_l)\theta_C^{\text{NBS}} - (1-(w_u - w_l))\theta_S\big)^2 + \big(\theta_2 - w_u\theta_C^{\text{NBS}} - (1-w_u)\theta_S\big)^2. \quad (16)$$

To identify when party 2 can benefit from dissent, we need to identify the $\Theta_2 \subseteq \mathbb{R}$ such that the utility gain from dissenting is greater than zero when $\theta_2 \in \Theta_2$. Because party 1's best response also depends on θ_2, we can study the utility gains for disjoint subsets of $\mathbb{R}$.

First, note that when $\theta_2 \geq \theta_S$, we have that $\theta_C^{\text{NBS}} = \theta_S$ and thus the utility gains are

$$-\big(\theta_2 - \theta_S\big)^2 + \big(\theta_2 - \theta_S\big)^2 = 0 \quad (17)$$

Thus, when $\theta_2 \geq \theta_S$, party 2 has no utility gains from dissenting.

Next, we study the case when $\theta_2 \leq 0$. To do so, we first rewrite equation 16, perform binomial expansion, and then simplify:

$$\begin{aligned}
&- \Big(\big(\theta_2 - w_u\theta_C^{\text{NBS}} - (1-w_u)\theta_S\big) + w_l(\theta_C^{\text{NBS}} - \theta_S)\Big)^2 \\
&+ \Big(\theta_2 - w_u\theta_C^{\text{NBS}} - (1-w_u)\theta_S\Big)^2 && (18)\\
=& - \Big(\big(\theta_2 - w_u\theta_C^{\text{NBS}} - (1-w_u)\theta_S\big)^2 + \big(w_l(\theta_C^{\text{NBS}} - \theta_S)\big)^2 \\
&+ 2\big(\theta_2 - w_u\theta_C^{\text{NBS}} - (1-w_u)\theta_S\big)\big(w_l(\theta_C^{\text{NBS}} - \theta_S)\big)\Big) && (19)\\
&+ \Big(\theta_2 - w_u\theta_C^{\text{NBS}} - (1-w_u)\theta_S\Big)^2 \\
=& \underbrace{-\big(w_l(\theta_C^{\text{NBS}} - \theta_S)\big)^2}_{<0} \underbrace{-2\big(\theta_2 - w_u\theta_C^{\text{NBS}} - (1-w_u)\theta_S\big)\big(w_l(\theta_C^{\text{NBS}} - \theta_S)\big)}_{<0} < 0. && (20)
\end{aligned}$$

Thus, party 2 also has no utility gains from dissenting when $\theta_2 \leq 0$.

It is considerably more tedious to analytically solve the utility gains for the remaining interval where $0 < \theta_2 < \theta_S$. However, note that here as well, $-\big(w_l(\theta_C^{\text{NBS}} - \theta_S)\big)^2 < 0$ and $w_l(\theta_C^{\text{NBS}} - \theta_S) < 0$. We can thus conclude that the utility gains are also smaller than zero when

$$\theta_2 - w_u\theta_C^{\text{NBS}} - (1-w_u)\theta_S \leq 0 \quad (21)$$

thereby keeping the second term in equation 20 negative or equal to zero. We know that $\theta_C^{\text{NBS}} < \theta_2 < \theta_S$. Thus, the term is maximized when w_u is large and θ_C^{NBS} small. As a result, there may exist w_u' such that inequality 21 does not hold. To further simply the computation, note that θ_C^{NBS} is lower-bounded by $\frac{1}{2}(\theta_2 + \theta_2^2/\theta_S)$ on the interval $0 < \theta_2 < \theta_S$. Plugging this lower bound into inequality 21 yields

$$\theta_2 - w_u \frac{1}{2}(\theta_2 + \theta_2^2/\theta_S) - (1 - w_u)\theta_S \leq 0 \tag{22}$$

$$w_u \leq \frac{2\theta_S}{2\theta_S + \theta_2} \tag{23}$$

which is minimized as θ_2 approaches θ_S on this interval, yielding that inequality 21 certainly holds for any $w_u < 2/3$. Thus, also on the interval $0 < \theta_2 < \theta_S$, party 2 does not gain any utility from dissenting. Note that this is a lower bound for w_u. In practice, the utility gains from dissenting on this interval will remain nonexistent for higher w_u because of the negative first term in inequality 20 and because we arrived at the threshold $2/3$ through the use of a lower bound for the Nash bargaining solution.[28] Regardless, even this conservative threshold lies outside the assumed interval $(0, 0.5]$ for w_u. Further note that this assumed interval is not very restrictive at all. It practically states that a single member state may have as much bargaining power as all other member states combined which is highly unlikely.

In summary, the steps above prove that within this game, party 2 cannot gain any utility from dissenting when constraining mechanisms exist. More formally, we can conclude that the utility gains are less or equal to zero for all $\theta_2 \in \mathbb{R}$ and thus $\Theta_2 = \emptyset$. As a result, $d^* = 0$ for all $\theta_2 \in \mathbb{R}$. The empirical implication of this is thus that when constraining mechanisms exist, dissent should not be more frequent as the outsider party, i.e. party 2 in the formal model, becomes relatively more aligned with the other states than its minister, i.e. party 1 in the formal model. An illustration of this is provided in the left panel of Figure 2 in the paper, which visualizes the utility gain as a function of θ_2 while holding the bargaining power and losses constant at $w_u = 2w_l = 0.25$.

Solution When Institutional Constraining Mechanisms Are Not Available ($m = 0$)

Before we can repeat the study of party 2's utility gain when institutional constraints are not possible, i.e. when $m = 0$, we need to further specify party 1's best response $\theta_C^*(d, m)$. In particular, we determine when the conditions of the four

[28] A numerical analysis suggests that the inequality holds for $w_u \leq 0.85$.

cases in equation 14 are satisfied.

The first case condition is trivially satisfied when $d = 1$. For the condition of the second case, we require that $\tilde{\theta}_C \in I_C$. First, note that because $\theta_S > 0$ and $w_C > 0$,

$$\tilde{\theta}_C = \left(1 - \frac{1}{w_u}\right)\theta_S < 0. \tag{24}$$

Hence, the condition is satisfied if and only if $d = 0$ and

$$\theta_2 \leq \left(1 - \frac{1}{w_u}\right)\theta_S. \tag{25}$$

Turning to the third and fourth condition, this also implies that $\tilde{\theta}_C \notin I_C$ when $\theta_2 > (1 - 1/w_u)\theta_S$. We then have $u\big(\theta_1, \theta^*(\theta_2)\big) > u\big(\theta_1, \theta^*(\theta_1)\big)$ if and only if $(1 - 1/w_u)\theta_S < \theta_2 < 0$. The final condition is thus satisfied if and only if $\theta_2 \geq 0$. In summary,

$$\theta^*_C(d,m) = \begin{cases} \theta_C^{\text{NBS}} & , d = 1 \vee m = 1 \\ \tilde{\theta}_C & , d = m = 0 \,\&\, \theta_2 \leq \left(1 - \frac{1}{w_u}\right)\theta_S \\ \theta_2 & , d = m = 0 \,\&\, \left(1 - \frac{1}{w_u}\right)\theta_S < \theta_2 < 0 \\ \theta_1 & , d = m = 0 \,\&\, \theta_2 \geq 0. \end{cases} \tag{26}$$

This now enables us to determine $\Theta_2 \subseteq \mathbb{R}$ where the utility gain from dissenting is greater than zero when $\theta_2 \in \Theta_2$ in the setting where $m = 0$. Similar to the previous setting, we analyze the utility gains separately by partitioning $\mathbb{R}$ into a number of disjoint sets. Generally, the utility gain in this setting is given by

$$\begin{aligned} &-\big(\theta_2 - (w_u - w_l)\theta_C^{\text{NBS}} - (1 - w_u + w_l)\theta_S\big)^2 \\ &+\big(\theta_2 - w_u\theta^*_C(d = 0, m = 0) - (1 - w_u)\theta_S\big)^2 \end{aligned} \tag{27}$$

We begin with the case in which $\theta_2 \leq (1 - 1/w_u)\theta_S$. Here, $\theta^*_C(d = 0, m = 0) = \tilde{\theta}_C$ at which point party 1 achieves the an outcome $\theta^* = 0$ at its ideal point so the utility gain can be simplified as

$$-\big(\theta_2 - (w_u - w_l)\theta_C^{\text{NBS}} - (1 - w_u + w_l)\theta_S\big)^2 + \theta_2^2. \tag{28}$$

Again using binomial expansion and simplifying yields

$$\begin{aligned} &2\theta_2\big((w_u - w_l)\theta_C^{\text{NBS}} + (1 - (w_u - w_l))\theta_S\big) \\ &\underbrace{-\big((w_u - w_l)\theta_C^{\text{NBS}} + (1 - (w_u - w_l))\theta_S\big)^2}_{<0}. \end{aligned} \tag{29}$$

Because the second term is smaller than zero, we can show that party 2 has nothing to gain from dissenting when the first term is less than or equal to zero. To show this, first note that $\theta_2 < 0$ and that we thus require that

$$\big((w_u - w_l)\theta_C^{\text{NBS}} + (1 - (w_u - w_l))\theta_S\big) \geq 0 \tag{30}$$

.

where the left hand side is minimized when $w_u - w_l$ is large and θ_C^{NBS} small. To simplify the computation, note that on this interval, θ_C^{NBS} is lower bounded by $-\frac{1}{3}\theta_S$. Plugging this in, we obtain

$$\big(-\frac{1}{3}(w_u - w_l)\theta_S + (1 - (w_u - w_l))\theta_S\big) \geq 0 \tag{31}$$

$$\frac{3}{4} \geq w_u - w_l \tag{32}$$

which is satisfied because $0 < w_l < w_u \leq 0.5$. As before, note that also here, this is the most conservative threshold at which inequality 29 holds due to the use of the lower bound and the fact that the second term is always smaller than zero. As a result, there are no utility gains for party 2 whenever $\theta_2 \leq (1 - 1/w_u)\theta_S$.

We next focus on the interval $\left(1 - \frac{1}{w_u}\right)\theta_S < \theta_2 \leq 0$. Here it is obvious that party 2 cannot gain from dissenting publicly because party 1 plays party 2's ideal point which is also the optimal point for both parties that it can play given that $\theta_C \in I_C$.

Taken together, the steps above show that party 2 has nothing to gain from dissenting when $\theta_2 \leq 0$.

We now focus on the remaining cases where $\theta_2 \geq 0$ such that party 1 plays $\theta_C^*(d = 0, m = 0) = \theta_1$. First consider the case where $\theta_2 \geq \theta_S$. Here, we know that $\theta_C^{\text{NBS}} = \theta_S$. Party 2's gain in utility is thus

$$-\big(\theta_2 - \theta_S\big)^2 + \big(\theta_2 - w_u\theta_1 - (1 - w_u)\theta_S\big)^2 \tag{33}$$

$$= -\big(\theta_2 - \theta_S\big)^2 + \big(\theta_2 - \theta_S - w_u(\theta_1 - \theta_S)\big)^2 \tag{34}$$

$$\begin{aligned} &= -\big(\theta_2 - \theta_S\big)^2 + \big(\theta_2 - \theta_S\big)^2 \\ &\quad + \big(w_u(\theta_1 - \theta_S)\big)^2 - 2\big(\theta_2 - \theta_S\big)\big(w_u(\theta_1 - \theta_S)\big) \end{aligned} \tag{35}$$

$$= \underbrace{\big(w_u(\theta_1 - \theta_S)\big)^2}_{>0} \underbrace{-2\big(\theta_2 - \theta_S\big)\big(w_u(\theta_1 - \theta_S)\big)}_{\geq 0} > 0. \tag{36}$$

We thus know that party 2's utility is strictly greater when it dissents whenever $\theta_S \leq \theta_2$.

For the last remaining interval $0 < \theta_2 < \theta_S$, the calculation again becomes rather tedious. However, we can show that there exists a unique solution $\theta_2' \in (0, \theta_S)$ such that for all $\theta_2 \geq \theta_2'$, party 2 benefits from dissenting. To obtain this we solve

$$-\left(\theta_2 - (w_u - w_l)\theta_C^{\text{NBS}} - (1 - (w_u - w_l))\theta_S\right)^2 + \left(\theta_2 - (1 - w_u)\theta_S\right)^2 = 0 \tag{37}$$

which yields

$$\theta_2' = \frac{\theta_S}{4\left(3(w_l - w_u) + 4\right)} \left(\sqrt{\left(w_l - w_u\right)^2 \left(16w_l^2 - 8w_l(7w_u - 6) + 49w_u^2 - 76w_u + 36\right)} + 4w_l^2 + w_l(18 - 11w_u) + 7w_u^2 - 26w_u + 16 \right). \tag{38}$$

Because this solution is unique on $(0 < \theta_2 < \theta_S)$ and the utility gain is a continuous function that is less than zero for $\theta_2 \leq \theta_1$ and greater than zero for $\theta_S \leq \theta_2$, we can conclude that party 2 benefits from dissent if and only if $\theta_2 > \theta_2'$, i.e. $\Theta_2 = (\theta_2', \infty)$ when $m = 0$. In other words, the steps above prove that in the absence of strong constraining powers, there exists a point θ_2' as party 2 becomes more closely aligned with the other states than its own partner after which it benefits from dissenting publicly with said partner. The empirical implication of this is that when internal constraining mechanisms are absent, an outsider party will become more likely to dissent from the insider party as the outsider becomes relatively more aligned with the average position among the other states. The right panel of Figure 2 in the main paper illustrates party 2's utility gain from dissenting in this setting. As before, bargaining power and loss are fixed at $w_u = 2w_l = 0.25$.

Extension: Salience and Preference Tangentiality

An important finding in the coalition policymaking literature is that delegation is especially precarious when issues are equally salient for coalition partners (e.g. Falcó-Gimeno, 2014). In contrast, when the preference distribution among coalition partners is tangential, coalition compromises tend to be self-enforcing regardless of whether coalition partners can exercise oversight or not. A straightforward way of incorporating this in the model is to modify the position-taking of the insider $\theta_C^*(d, m)$ in equation 14.

Let $\psi \in [0, 1]$ denote the preference tangentiality between insider and outsider. When $\psi = 1$, coalition parties have perfectly tangential preferences and when $\psi = 0$, the importance they attribute to the issue is conflictual. We can then redefine the position taken by the insider by mixing it with the coalition compromise θ_C^{NBS} as follows:

$$\vartheta_C^*(d, m, \psi) \coloneqq (1-\psi)\theta_C^*(d, m) + \psi\theta_C^{\text{NBS}}. \tag{39}$$

This encapsulates the idea that as preference become more tangential, the compromise solution is self-enforced. At the extremes, when $\psi = 0$, this simplifies to the position taken in the original model, i.e. $\vartheta_C^*(d, m, \psi = 0) = \theta_C^*(d, m)$, and when $\psi = 1$, the insider trivially takes the compromise position regardless of d and m. This immediately yields the first insight: When preferences are fully tangential, the outsider's utility gain from dissenting is upper-bounded at zero.

Further note that when $m = 1 \vee d = 1$, the position taken by the insider is also identical in the redefined and original version. As a result, the first term of the outsider's utility gain from dissenting remains unchanged and we can focus on how the second term is affected by changes in ψ.

To compare this, we rewrite the outsider's utility to highlight its dependence on ψ through the position taken by the insider as:

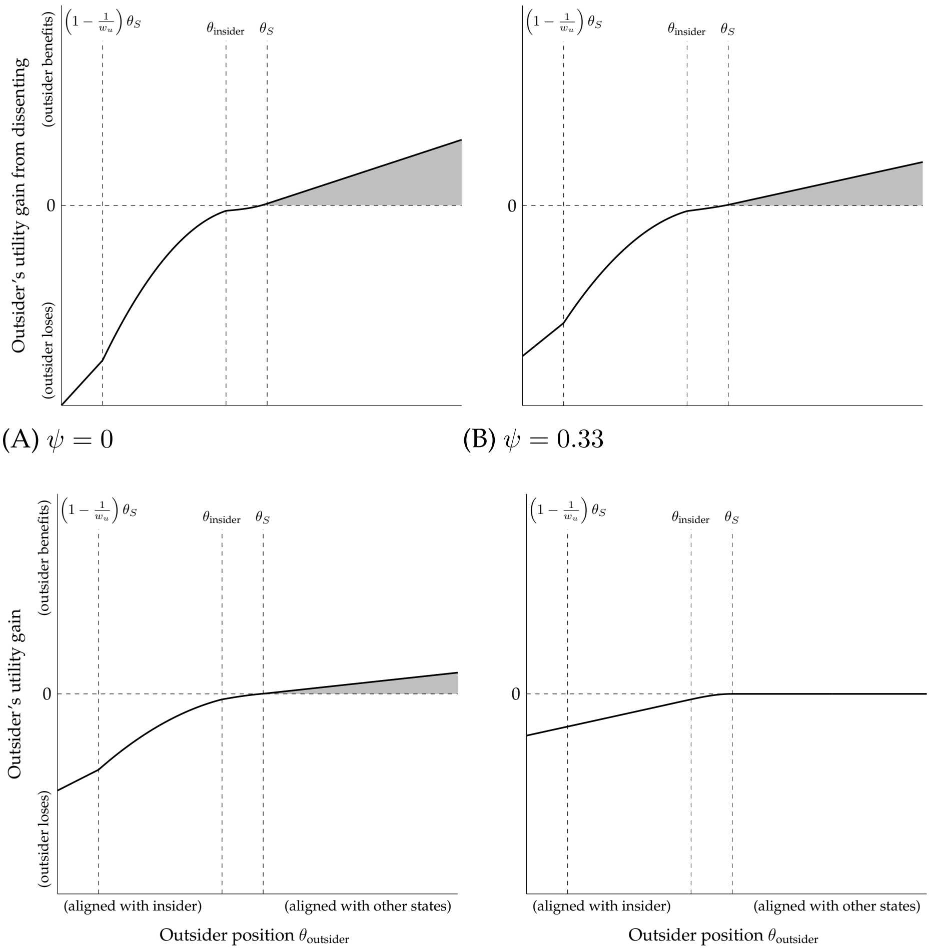
$$u_2'(d = 0, m, \psi) = -\big(\theta_2 - w_C\vartheta_C^*(d = 0, m, \psi) - (1 - w_C)\theta_S\big)^2. \tag{40}$$

For similar reasons as above, it is immediately clear that $u_2'(d = 0, m = 1, \psi) = u_2(d = 0, m = 1)$. From this follows the second insight that the outsider's utility gain from dissenting remains upper-bounded at zero when constraining powers are available. As a result, the core prediction of the model for this case remains unchanged: regardless of relative misalignment, outsiders should not dissent from the insider when constraining powers are available.

What remains to be shown is how utility changes when constraining powers are absent and the outsider does not dissent. In this case, we can show that the outsider's utility decreases in ψ when they are relatively aligned with the insider and increases in ψ when they are relatively aligned with others in the Council. Specifically,

$$\frac{\partial}{\partial\psi} u\left(\theta_2, \vartheta_C^*(d = 0, m = 0, \psi)\right) \begin{cases} > 0 & , \theta_2 > \theta_2' \\ < 0 & , \theta_2 < \theta_2' \end{cases} \tag{41}$$

From this, we obtain a final insight of how this modification affects the empirical implications: The outsider's utility gains in the absence of constraining powers decrease in ψ where they were positive in the original model and increase where they were negative. However, their sign remains the same such that the result is a decrease in the gradient of the utility gain which is visualized in Figure A1.



(A) $\psi = 0$ (B) $\psi = 0.33$

(C) $\psi = 0.67$ (D) $\psi = 1$

Figure A1: Outsider party's utility gain from dissenting when constraining powers are absent as a function of the outsiders relative alignment for various levels of preference tangentiality ψ. Shaded area highlights when the outsider gains from dissenting. All other parameters are identical to those used for Figure 2.

In other words, higher preference tangentiality dampens the relationship between relative misalignment and dissent. This is precisely the expectation formulated as hypothesis H_2 in the paper.

Extension: Cost of Dissent

Another extension of the model concerns the broader costs that dissent may entail. Publicly disagreeing with a coalition partner can strain relationships within the government and impose long-term reputational costs. While prior research shows that coalition parties must maintain some degree of visible differentiation to avoid being seen as indistinguishable from their partners (e.g. Martin & Vanberg, 2008; Sagarzazu & Klüver, 2017; Fortunato, 2019, 2021; Nonnemacher & Spoon, 2023), the model can account for such costs directly. To do so, the utility functions are extended by an additional cost term $L > 0$, which applies when $d = 1$. For the outsider, the utility function $u_2(d, m)$ in equation 6 would thus become

$$u_2'(d, m) \coloneqq u_2(d, m) - dL. \tag{42}$$

For the main result, as visualized in Figure 2, this means that the utility gain is

$$u_2'(d = 1, m) - u_2'(d = 0, m) = u_2(d = 1, m) - u_2(d = 0, m) - dL. \tag{43}$$

In other words, the utility gain function in Figure 2 is shifted downwards by dL but the main relationship between misalignment and the utility from dissent remains the same.

Appendix B. Descriptive Statistics

	n	Mean	SD	Min	Max
Dissent	86,067	0.240	0.427	0	1
Δ_{policy}	86,067	−0.054	1.000	−4.384	4.712
Δ_{rile}	86,067	0.051	1.000	−2.748	3.547
Share of allies	86,067	0.396	0.293	0.000	1.000
Distance to insider ($\lvert\theta_{\text{outsider}} - \theta_{\text{insider}}\rvert$)	86,067	1.191	1.000	0.000	6.465
Distance to Council ($\lvert\theta_{\text{outsider}} - \theta_{\text{Council}}\rvert$)	86,067	1.273	1.000	0.0001	6.756
Preference tangentiality	86,067	0.721	0.522	0.000	4.346
Constraining power	86,067	0.564	0.244	0.000	0.875
Monitoring power	86,067	0.642	0.295	0.083	1.000
Executive comprehensiveness	86,067	0.849	0.358	0	1
Executive centralization	86,067	0.515	0.500	0	1
Parliamentary monitoring	86,067	0.768	0.223	0.167	1.000
Parliamentary constraining	86,067	0.279	0.228	0.000	0.750

Table A1: Descriptive statistics.

Appendix C. Matching Policy Areas with Council Configurations

Table A2 summarizes how votes are assigned to different Council configurations on the basis of the policy area as classified by Hix et al. (2022).

Policy area	Council configuration
agriculture	AGRIFISH
budget	ECOFIN
budgetary control	JHA
civil liberties, justice and home affairs	JHA
constitutional and inter-institutional affairs	GAC
culture and education	EYCS
development	FAC
economic and monetary affairs	ECOFIN
employment and social affairs	EPSCO
environment and public health	ENVIR
fisheries	AGRIFISH
foreign and security policy	FAC
gender equality	EPSCO
industry, research and energy	TTE
internal market and consumer protection	COMPET
international trade	FAC
juridical affairs	JHA
legal affairs	JHA
regional development	GAC
transport and tourism	TTE

Table A2: Matching table for vote policy areas and Council configurations.

Appendix D. Matching Policy Scales and Council Configurations

Table A3 provides information on how the different policy scales are assigned to Council configurations. It also includes detailed information on the manifesto codes defined as ″left″ or ″right″ on the respective dimension.

Council config.	Policy scale	Source	Left codes	Right codes
AGRIFISH	freemarket & environment	A	per401, per402, per501, per416	per403, per412, per413, per415, per410
COMPET	freemarket	A	per401, per402	per403, per412, per413, per415
ECOFIN	stateeconomy	B	per403, per404, per406, per412, per413, per504, per506, per701	per401, per402, per407, per414, per505
ENVIR	environment	A	per501, per416	per410
EPSCO	stateservices	A	per504, per506	per505, per507
EYCS	libcons	B	per103, per105, per106, per107, per202	per104, per201, per203, per305, per601, per603, per605, per606
FAC	internationalism	C	per107	per109
GAC	eu	C	per108	per110
JHA	libcons	B	per103, per105, per106, per107, per202	per104, per201, per203, per305, per601, per603, per605, per606
TTE	freemarket	A	per401, per402	per403, per412, per413, per415

Table A3: Matching table for policy scales and Council configurations. Policy dimensions have been introduced by the following sources: A = Lowe et al. (2011), B = Benoit and Laver (2007), C = Volkens et al. (2019). Left and right codes specify the CMP categories used to compute these dimensions.

Appendix E. Additional Analyses

E.1 Disentangling Relative Alignment Δ

As a verification that relative misalignment and not just intra-coalition conflict drive the results in the main paper, I estimate an alternative model that replaces Δ with a full interaction of its two components. The results of this alternative model specification, used to produce Figure 6 in the paper, are summarized in Table A4. Note that coefficients and significance tests of a binomial logistic regression can be misleading, especially with a triple interaction. The visual representation in the paper clearly shows that these findings are statistically significant and in line with theoretical expectations.

Table A4: Binary logistic regression estimates. Standard errors in parentheses.

	(A1)	(A2)	(A3)
Distance to insider ($\lvert\theta_{\text{outsider}} - \theta_{\text{insider}}\rvert$)	0.170***	0.153***	0.337***
	(0.014)	(0.035)	(0.073)
Distance to Council ($\lvert\theta_{\text{outsider}} - \theta_{\text{Council}}\rvert$)	0.122***	−0.017	−0.045
	(0.013)	(0.036)	(0.076)
$\lvert\theta_{\text{outsider}} - \theta_{\text{insider}}\rvert \times \lvert\theta_{\text{outsider}} - \theta_{\text{Council}}\rvert$	−0.050***	−0.007	−0.117**
	(0.007)	(0.020)	(0.039)
Constraining power		−0.175*	
		(0.085)	
$\lvert\theta_{\text{outsider}} - \theta_{\text{insider}}\rvert \times$ Constraining power		0.029	−0.250*
		(0.058)	(0.117)
$\lvert\theta_{\text{outsider}} - \theta_{\text{Council}}\rvert \times$ Constraining power		0.232***	0.433***
		(0.057)	(0.117)
$\lvert\theta_{\text{outsider}} - \theta_{\text{insider}}\rvert \times \lvert\theta_{\text{outsider}} - \theta_{\text{Council}}\rvert \times$ Constraining power		−0.073*	0.036
		(0.032)	(0.061)
Cabinet × party FE			✓
Vote ID FE			✓
Log. Lik.	-47276.675	-47265.602	-31613.957
Num.Obs.	86 067	86 067	86 067

+ p <0.1, * p <0.05, ** p <0.01, *** p <0.001

E.2 Preference Tangentiality

As discussed in the paper, the hypothesized effect should be especially prominent when coalition partners attach non-complementary salience to the issue at hand. The models in Table A5 thus include an additional interaction with preference tangentiality. Here, too, the visualization in Figure 5 in the paper shows that the models are in line with theoretical expectations.

Table A5: Binary logistic regression estimates. Standard errors in parentheses.

	(A4)	(A5)	(A6)	(A7)
Δ_{policy}	0.219***	0.506***	0.184***	0.424***
	(0.032)	(0.057)	(0.038)	(0.076)
Preference tangentiality	0.103***	−0.286***	0.145***	−0.249**
	(0.026)	(0.071)	(0.033)	(0.096)
Preference tangentiality × Δ_{policy}	−0.193***	−0.231***	−0.192***	−0.252**
	(0.041)	(0.070)	(0.051)	(0.093)
Preference tangentiality × Constraining power	0.022	0.656***	0.122+	1.028***
	(0.051)	(0.131)	(0.062)	(0.181)
Constraining power	0.042		−0.044	
	(0.048)		(0.058)	
Δ_{policy} × Constraining power	−0.399***	−0.782***	−0.368***	−0.722***
	(0.051)	(0.093)	(0.061)	(0.126)
Preference tangentiality × Δ_{policy} × Constraining power	0.415***	0.366**	0.451***	0.399*
	(0.069)	(0.119)	(0.084)	(0.156)
Cabinet × party FE		✓		✓
Vote ID FE			✓	✓
Log. Lik.	-47336.259	-43491.386	-36113.789	-31636.658
Num.Obs.	86 067	86 067	86 067	86 067

+ p <0.1, * p <0.05, ** p <0.01, *** p <0.001

E.3 Monitoring Powers

An important question is how other forms of institutional oversight affect the relationship between relative misalignment and dissent. To this end, I replicate the models of the main analysis for monitoring powers instead of constraining powers. The results, shown in Table A6, reveal that monitoring powers interact fundamentally different with relative misalignment than monitoring powers. In particular, the relationship points in the opposite direction which can be seen as further evidence that dissent is a substitute for constraining powers, but not for other institutions.

Table A6: Binary logistic regression estimates. Standard errors in parentheses.

	(A8)	(A9)	(A10)	(A11)	(A12)
Δ_{policy}	−0.114***	−0.052+	−0.123***	−0.133***	0.113*
	(0.019)	(0.029)	(0.023)	(0.038)	(0.054)
Δ_{policy} × Constraining power					−0.478***
					(0.075)
Monitoring power	0.030		−0.001		
	(0.027)		(0.034)		
Δ_{policy} × Monitoring power	0.210***	0.104**	0.220***	0.153**	0.216***
	(0.026)	(0.038)	(0.032)	(0.050)	(0.051)
Cabinet × party FE		✓		✓	✓
Vote ID FE			✓	✓	✓
Log. Lik.	-47366.685	-43548.277	-36176.912	-31678.399	-31655.889
Num.Obs.	86 067	86 067	86 067	86 067	86 067

+ p <0.1, * p <0.05, ** p <0.01, *** p <0.001

E.4 Components of Monitoring and Constraining Powers

To establish which of the institutional mechanisms contribute most to the findings presented in the main paper, I replace the aggregated measures with their individual components. The motivation here is that the theoretical expectations should find support with those control mechanisms that contribute to internal checks on and coordination with coalition partners because they truly are substitutes for overt dissent. In turn, this yields some insight into which control mechanisms matter for coalition governments in the EU. The results for these models are shown in TableA7 and visualized in Figure A2.

The findings confirm that for both sets of institutions, its components each yield compatible results. Of the two constraining institutions in the two left panels, in particular executive comprehensiveness yields a virtually identical pattern to the combined measure of constraining powers. While considerably weaker, parliamentary constraining powers also yield compatible results. For the components of monitoring powers, both components yield similar results to those presented in Table A6 for the aggregate monitoring power.

Taken together, these findings suggest that both executive and parliamentary constraining powers may aid coalition governments in EU policy-making. However, the findings also match evidence by Franchino and Wratil's (2019) whose findings point to a dominance of executive mechanisms.

Table A7: Binary logistic regression estimates. Standard errors in parentheses.

	(A13)	(A14)	(A15)	(A16)
Δ_{policy}	0.276***	−0.076**	0.036	−0.176**
	(0.051)	(0.024)	(0.026)	(0.058)
Δ_{policy} × Executive comprehensiveness	−0.331***			
	(0.054)			
Δ_{policy} × Executive centralization		0.082**		
		(0.031)		
Δ_{policy} × Parliamentary constraining			−0.207**	
			(0.070)	
Δ_{policy} × Parliamentary monitoring				0.193**
				(0.072)
Cabinet × party FE	✓	✓	✓	✓
Vote ID FE	✓	✓	✓	✓
Log. Lik.	-31662.92	-31679.71	-31678.83	-31679.64
Num.Obs.	86 067	86 067	86 067	86 067

+ p <0.1, * p <0.05, ** p <0.01, *** p <0.001

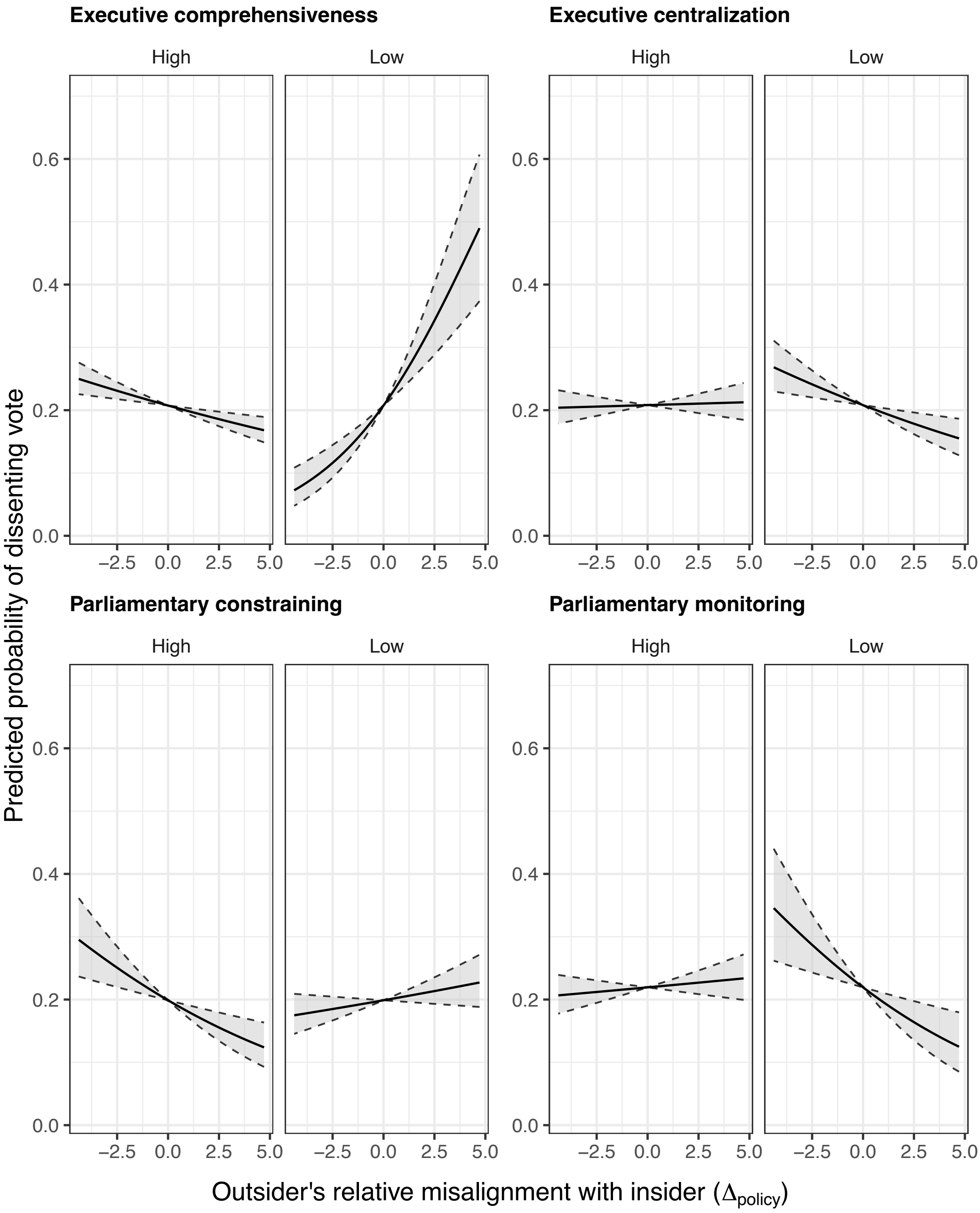


Figure A2: Predicted probabilities of a dissenting vote for individual institutions. Based on Models A13-A16 in Table A7 using M5S in Conte I cabinet and vote 8-10163 as the baseline. For the continuous parliamentary mechanisms, high and low correspond to the empirical maximum and minimum. Shaded areas represent 95% confidence intervals.

E.5 RILE Positions

An alternative operationalization of the relative misalignment is to use generic left-right positions instead of the policy-specific positions. To do so, I rely on the standard RILE measure of party positions and compute Δ_{rile} analogous to Δ in the main analysis by replacing all party, government, and Council policy positions with their analogous RILE positions. Figure A3 illustrates that while this alternative measure correlates with the original Δ, the relationship is relatively weak.

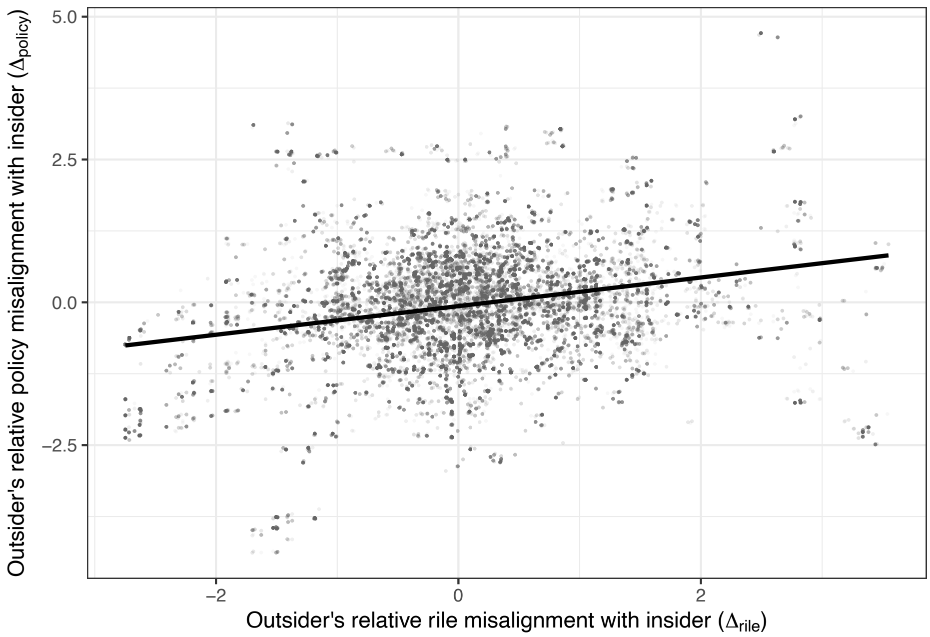


Figure A3: Relationship between relative misalignment based on generic left-right positions and policy-specific positions. Solid line indicates linear relationship (Pearson $r = 0.25$, $p < .001$).

Table A8: Binary logistic regression estimates. Standard errors in parentheses.

	(A17)	(A18)	(A19)	(A20)	(A21)
Δ_{rile}	0.090***	0.318***	0.529***	0.428***	0.783***
	(0.008)	(0.017)	(0.064)	(0.021)	(0.089)
Constraining power		0.226***		0.237***	
		(0.035)		(0.042)	
$\Delta_{\text{rile}} \times$ Constraining power		−0.397***	−0.908***	−0.477***	−1.265***
		(0.027)	(0.111)	(0.033)	(0.154)
Cabinet × party FE			✓		✓
Vote ID FE				✓	✓
Log. Lik.	-47340.578	-47227.401	-43518.159	-35953.487	-31642.45
Num.Obs.	86 067	86 067	86 067	86 067	86 067

+ p <0.1, * p <0.05, ** p <0.01, *** p <0.001

This alternative measure is used to replicate the main analysis. The results, presented in Table A8, show that the main findings are very much robust to this. Not only do the models exhibit a nearly identical pattern to the main findings, the effect sizes are also considerably larger. This replication strongly bolsters the robustness of the findings presented in this paper by demonstrating that they are not driven by idiosyncrasies or errors in the measurement of the policy positions.

E.6 Share of Potential Allies

As discussed in the paper, an insightful alternative to the measurement of outsiders' incentives to dissent is to compute the share of member states whose policy position is closer to the outsider than the insider. In Table A9, I show the regression results for models where Δ has been replaced by this alternative share of potential allies. The results of these models are very similar to the main findings in the paper.

Table A9: Binary logistic regression estimates. Standard errors in parentheses.

	(A22)	(A23)	(A24)	(A25)	(A26)
Share of allies	0.182***	0.521***	0.828***	0.428***	0.679***
	(0.027)	(0.071)	(0.097)	(0.085)	(0.129)
Constraining power		0.283***		0.139*	
		(0.055)		(0.065)	
Share of allies × Constraining power		−0.582***	−1.040***	−0.265*	−0.881***
		(0.112)	(0.157)	(0.135)	(0.211)
Cabinet × party FE			✓		✓
Vote ID FE				✓	✓
Log. Lik.	-47382.003	-47366.97	-43511.644	-36167.079	-31668.34
Num.Obs.	86 067	86 067	86 067	86 067	86 067

+ p <0.1, * p <0.05, ** p <0.01, *** p <0.001

E.7 Subset of Moderate Cabinets

Using the Council average as a reference point creates a potential issue that outsider parties belonging to centrist parties are more likely to be more aligned with others in the Council than their more extreme insiders. Consequently, dissent might arise from a need to control their more extreme coalition partners. To rule out this alternative explanation, I replicate the main analysis with a subset of coalitions where all coalition parties can be considered centrist. To do so, I remove cabinets where the left-most party is further left than the first quartile of all left-most parties and those where the right-most party is further right than the 3rd quartile of all right-most parties, using parties' RILE positions. The estimates for the main models in the paper using this subset are summarized in Table A10. Clearly, these results are very much in line with the original models.

Table A10: Binary logistic regression estimates. Standard errors in parentheses.

	(A27)	(A28)	(A29)	(A30)	(A31)
Δ_{policy}	-0.028*	0.012	0.481***	-0.009	0.425***
	(0.013)	(0.048)	(0.078)	(0.060)	(0.124)
Constraining power		0.711***		0.843***	
		(0.057)		(0.073)	
Δ_{policy} × Constraining power		-0.072	-0.762***	0.002	-0.663***
		(0.073)	(0.119)	(0.092)	(0.190)
Cabinet × party FE			✓		✓
Vote ID FE				✓	✓
Log. Lik.	-26491.58	-26405.665	-24313.451	-18191.319	-15684.885
Num.Obs.	49 094	49 094	49 094	49 094	49 094

+ p <0.1, * p <0.05, ** p <0.01, *** p <0.001

E.8 EP Group Fixed Effects

As discussed in the paper, another concern is that the findings may be driven by dynamics related to party groups in the EP. To address this, I add fixed effects for the interaction of party group IDs and the legislative term. This also takes into account that party groups may differ systematically across legislative terms. Table A11 includes models with these fixed effects in isolation (model A32) and in combination with the fixed effects used in the main analysis (model A33).

Table A11: Binary logistic regression estimates. Standard errors in parentheses.

	(A32)	(A33)
Δ_{policy}	0.132***	0.221***
	(0.021)	(0.047)
Constraining power	−0.125***	
	(0.036)	
Δ_{policy} × Constraining power	−0.132***	−0.408***
	(0.033)	(0.074)
EP group × term FE	✓	✓
Cabinet × party FE		✓
Vote ID FE		✓
Log. Lik.	-46373.43	-31628.211
Num.Obs.	86 067	86 067

+ p <0.1, * p <0.05, ** p <0.01, *** p <0.001

E.9 Separate Party and Cabinet Fixed Effects

Table A12 summarizes results of a replication of the main analysis with fixed effects for party, cabinet, and year to show that the results are not driven by idiosyncratic choices of the fixed effects used in the main analysis.

Table A12: Binary logistic regression estimates. Standard errors in parentheses.

	(A34)	(A35)	(A36)	(A37)	(A38)
Δ_{policy}	0.149***	0.067*	0.129***	0.150***	0.059*
	(0.025)	(0.026)	(0.021)	(0.026)	(0.027)
Constraining power	-1.031***		0.008	0.237	
	(0.261)		(0.033)	(0.297)	
$\Delta_{\text{policy}} \times$ Constraining power	-0.182***	-0.128**	-0.159***	-0.180***	-0.116**
	(0.041)	(0.042)	(0.033)	(0.041)	(0.043)
Party FE	✓			✓	
Cabinet FE		✓			✓
Year FE			✓	✓	✓
Log. Lik.	-44664.286	-44759.416	-47003.683	-44355.384	-44515.036
Num.Obs.	86067	86067	86067	86067	86067

+ $p < 0.1$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

E.10 Leave-one-out Sensitivity Analysis

For further scrutiny of the two-way fixed effects approach, I conduct a leave-one-out replication of the main model including fixed effects. Specifically, I replicate model 5 in Table 1. Figure A4 shows the estimates for the main coefficients after removing cabinet × party IDs one by one. The observations are sorted within each panel by increasing effect size for better exposition. Because there are over 6,000 individual vote IDs, I instead remove individual dates to avoid fitting an excessive number of models where very few observations are removed. Notably, this results in a more conservative test. Figure A5 summarizes the estimates when removing individual dates from the sample. Both replications clearly show that the main estimates are very stable, thereby alleviating concerns related to excessive heterogeneous effects.

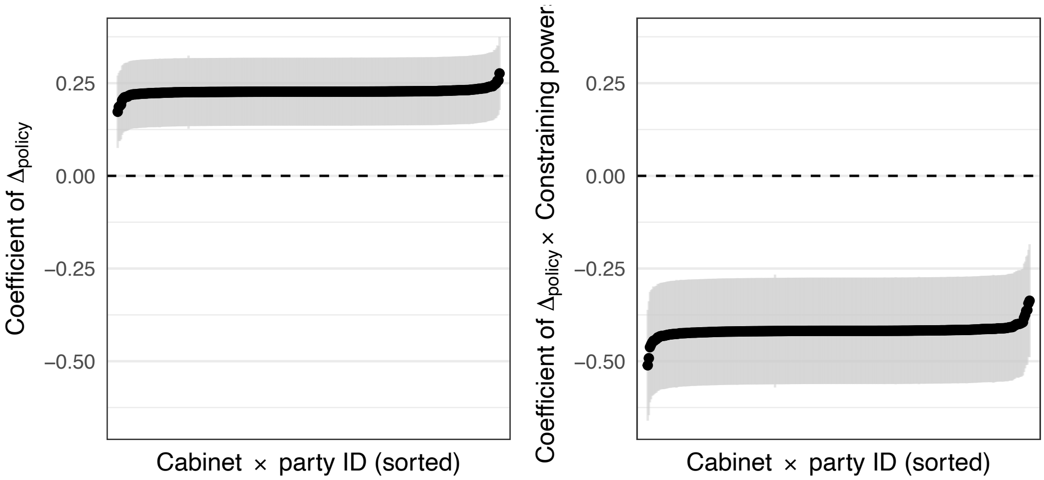


Figure A4: Results of leave-one-out models excluding cabinet × party IDs.

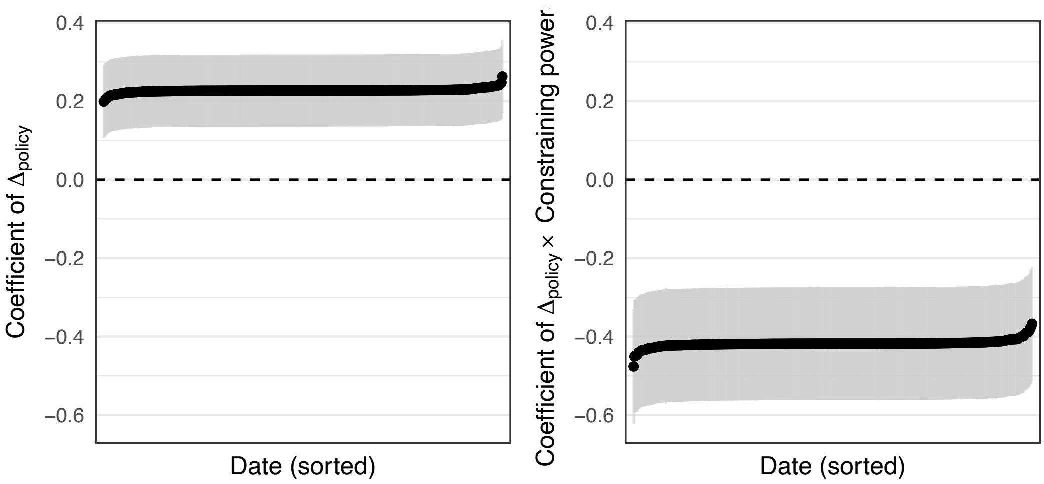


Figure A5: Results of leave-one-out models excluding dates.

E.11 Linear Probability Models

As described in the paper, the estimation of average marginal effects (AMEs) is computationally infeasible due to the high number of observations and fixed effect IDs. Because effect sizes in logistic regression models depend on covariates and thus also on the fixed effects, I replicate the two main models from which marginal effects are computed with linear regression models. Average marginal effects from the resulting linear probability models, summarized in Table A13, do not suffer from this dependence on covariates and thus show that the selected baseline of the M5S in the Conte I cabinet and vote ID 8-10163 is a representative case. In the absence of constraining powers, the AME is 3.7 pp in the specification of the main model and 6.3 pp in the model including preference tangentiality, when preferences are not tangential.

Table A13: Binary logistic regression estimates. Standard errors in parentheses.

	(A39)	(A40)
Δ_{policy}	0.037***	0.063***
	(0.005)	(0.008)
Preference tangentiality		−0.042***
		(0.012)
Preference tangentiality × Δ_{policy}		−0.035***
		(0.010)
Preference tangentiality × Constraining power		0.131***
		(0.022)
Δ_{policy} × Constraining power	−0.065***	−0.107***
	(0.009)	(0.014)
Preference tangentiality × Δ_{policy} × Constraining power		0.057**
		(0.018)
Cabinet × party FE	✓	✓
Vote ID FE	✓	✓
Num.Obs.	86 067	86 067
R2	0.302	0.302
R2 Adj.	0.244	0.244

+ p <0.1, * p <0.05, ** p <0.01, *** p <0.001

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