

# Online Appendix

## Coalition Inclusion Probabilities: A Party-Strategic Measure for Predicting Policy and Politics \*

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### Abstract

Policy in coalition governments (a) depends on negotiations between parties that (b) continue between elections. No extant means of predicting policy – bargaining power indices, vote shares, seat shares, polling, veto players or measures of electoral competitiveness – recognizes both of these facts. We conceptualize, estimate and validate the first dynamic measure of parties’ bargaining leverage intended to predict policy and politics. We argue that those parties with the greatest leverage in policy negotiations are those with the highest probability of participating in an alternative government, were one to form. Combining a large set of political polls and an empirical coalition formation model developed with out-of-sample testing, we estimate coalition inclusion probabilities for parties in a sample of 21 parliamentary democracies at a monthly frequency over four decades. Applications to government spending and to the stringency of environmental policy show coalition leverage to be strongly predictive while the primary alternatives – vote shares, seat shares and polls – are not.

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# Online Appendix

This document is meant to accompany [Kayser, Orłowski and Rehmert \(forthcoming\)](#).

## A Variable definitions

Each potential cabinet is described by a set of binary variables indicating whether it is the *status quo* cabinet, a *minority government*, or a *minimal winning coalition*. Other dummy variables encode whether the *largest*, the *median* and/or the *previous prime minister* party are part of a potential cabinet, and whether or not it contains at least one *anti-system party* (see [Abedi, 2004](#)).<sup>1</sup>

Following [Martin and Stevenson \(2001, 2010\)](#), we also include a set of continuous predictors that characterize each potential cabinet. While the *number of parties* in a potential coalition proxies the heterogeneity of its members' preferences arithmetically, the *ideological range* in the coalition and in opposition do so on substantive grounds. The same holds for the *anti-establishment preferences* in the coalition, which is the maximum value of the sum over four items<sup>2</sup> in the manifesto data for the parties in the coalition.

Besides the status quo indicator, three additional variables capture the role of history in predicting future governments. In their attempt to disentangle different sources of incumbency advantage in government formation (preference familiarity, inertia, bargaining costs, and incumbents' procedural privileges), [Martin and Stevenson \(2010\)](#) introduced two new variables that capture the *similarity* between a potential cabinet and the status quo government on a continuous scale and the *familiarity* of any pair of parties in the potential cabinet. Similarity is the absolute difference in parties' Gamson scores<sup>3</sup> when comparing a potential cabinet to the incumbent coalition. It thus captures not only the overlap between the two cabinets in terms of partisan composition but also differences in parties' relative size ([Martin and Stevenson, 2010](#)). The more similar a potential coalition is to the incumbent coalition, the lower the corresponding bargaining costs, and the more likely it is to form.

Martin and Stevenson's familiarity measure captures the notion that common government experience facilitates coalition bargaining between any pair of parties. The more parties in a potential coalition that have previously governed together, the easier it is for them to form a coalition. Dissent, especially that leading to coalition dissolution, is also not so quickly forgotten ([Tavits, 2008](#)). Arguing that more recent and longer experiences should matter more than more distant ones, [Martin and Stevenson \(2010\)](#) suggest combining the share of days that any pair of parties had governed together using a weighting

<sup>1</sup>Abedi classifies a party as anti-system if: (a) it challenges the status quo of major policy and political system issues, (b) it perceives itself as a challenger to established parties, and (c) it asserts that a clear divide between the political establishment and the people exists ([Abedi, 2004](#)). Abedi's data have been updated by [Loomes \(2012\)](#). We use both datasets as well as [Hanley and Sikk \(2016\)](#) for Central European countries for our coding.

<sup>2</sup>These are a party's view on the constitution (per204), on political corruption in the country (per304), and its evaluation of the national way of life (per602) and traditional morality (per604).

<sup>3</sup>A party's Gamson score is the share of legislative seats that it contributes to all seats held by the parties in government.

scheme according to which the contribution of common government experience on familiarity decreases with time. Because party leaders change, on average, after eight years in Western European parties, in computing their measure, Martin and Stevenson completely discount common government experience that lies further in the past.

Unaltered party leadership, however, is not the only mechanism that preserves common government experience and facilitates coalition bargaining among former partners. Personnel below the formal party leadership are involved in coalition negotiations, as they also are in the everyday business of joint government.

The duration of an entire party career therefore seems to be a more sensible benchmark for choosing a rate of decay for common government experience. Consequently, we constructed a measure for each potential cabinets' *common history*. Past governments contribute to the common government experience of some subset of parties in a potential cabinet. By computing the share of parties in a potential cabinet that were part of a particular previous government, we determine the size of this subset. Summing up these scores over all past governments weighted by their duration in days, again, is a first indicator of a potential cabinet's shared history. We then set an exponential decay rate such that after 50 years, approximately the maximum length of a political career, less than one percent of the information a particular historic government provides for the common history of potential cabinets remains.

Following [Martin and Stevenson \(2010\)](#), we also include a set of variables describing the broader bargaining context. Two binary indicators describe the institutional context capturing governments' *investiture requirements*<sup>4</sup> and the existence of *post-election continuation rules*.<sup>5</sup> Additional dummy variables indicate whether the formation opportunity took place after a general election and whether or not the incumbent cabinet dissolved due to public *intra-cabinet conflict*.<sup>6</sup> We rescaled all continuous variables to range from zero to one.

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<sup>4</sup>Positive parliamentarism per [Bergman \(1995\)](#).

<sup>5</sup>Incumbent parties are collectively given the first shot at building a new government after an election.

<sup>6</sup>Data come from [Woldendorp, Keman and Budge \(2013\)](#) with updates by [Seki and Williams \(2014\)](#).

## B Models of Coalition Formation

Table B1: Models of coalition formation

	<i>Naïve</i>	<i>MS 2001</i>	<i>MS 2010</i>	<i>KOR</i>
	(1)	(2)	(3)	(4)
Minority Government		-0.815** (0.393)	-0.833** (0.414)	-0.660 (0.542)
Minimal Winning Coalition		0.309** (0.154)	0.295* (0.167)	0.486*** (0.155)
Number of Parties in Coalition		-0.544*** (0.106)	-0.566*** (0.130)	-0.049 (0.115)
Largest Party in Coalition (LP)	1.580*** (0.172)	1.593*** (0.225)	1.608*** (0.232)	1.078*** (0.298)
Median Party in Coalition		0.452** (0.192)	0.448** (0.197)	0.537*** (0.190)
Ideological Range in Coalition (log RiLe)	-7.485*** (0.721)	-5.715*** (1.091)	-5.755*** (1.113)	
Ideological Divisions within Majority Opposition (log RiLe)		-0.629 (0.990)	-0.368 (1.009)	
Previous PM Party in Coalition (PM)		-0.112 (0.228)	-0.864** (0.385)	-0.783** (0.377)
Status Quo	3.088*** (0.166)	2.612*** (0.207)	1.831*** (0.458)	1.705*** (0.439)
Minority Government with Investiture Requirement		-0.015 (0.313)	0.011 (0.317)	-0.537* (0.300)
Anti-Establishment Preference in Coalition		-3.112** (1.266)	-3.245** (1.291)	-0.923 (1.208)
Anti-Pact associated with Coalition		-2.335*** (0.402)	-2.358*** (0.402)	
Pre-Electoral Pact associated with Coalition		4.483*** (0.766)	4.664*** (0.790)	
Familiarity			-0.009 (0.742)	
Similarity			1.343** (0.530)	0.879 (0.545)
Intracabinet Conflict $\times$ SQ			-0.355 (0.502)	-0.115 (0.449)
Intracabinet Conflict $\times$ PM			0.373 (0.435)	0.112 (0.407)
Postelection Bargaining (PE) $\times$ SQ			0.533 (0.432)	0.613 (0.406)
Average Seat Change (SC)			0.034 (0.047)	0.043 (0.050)
SC $\times$ PE			0.004 (0.058)	0.018 (0.059)
SC $\times$ SQ			-0.012 (0.070)	0.028 (0.071)
SC $\times$ PE $\times$ SQ			0.023 (0.082)	-0.034 (0.082)
Anti-System Party in Coalition				-2.083*** (0.352)
Second Largest Party				0.188 (0.221)
Third Largest Party				0.801*** (0.208)
Cabinet History				2.590*** (0.514)
Ideological Range in Coalition (Party Families)				-0.647*** (0.091)
Ideological Divisions in Majority Opposition (Party Families)				0.067 (0.103)
Countries	20	20	20	20
Formation Opportunities (in-sample)	262	262	262	262
Observations	79,084	79,084	79,084	79,084
R <sup>2</sup>	0.008	0.010	0.010	0.011
Max. Possible R <sup>2</sup>	0.028	0.028	0.028	0.028
Log Likelihood	-798.910	-720.441	-714.103	-657.767

Note: Training dataset. Random 20% of observations withheld for out-of-sample testing. Conditional logit with formation opportunities as observations and potential coalitions in choice set. \*p<0.1; \*\*p<0.05; \*\*\*p<0.01.

Table B2: Coalition level confusion matrix excluding majority situations

	Naive Model		MS 2001		MS 2010		KOR	
	not realized	realized	not realized	realized	not realized	realized	not realized	realized
$\widehat{\text{not realized}}$	18,004 (0.998)	34 (0.548)	18,003 (0.998)	35 (0.565)	18,001 (0.998)	37 (0.597)	18,006 (0.998)	32 (0.516)
$\widehat{\text{realized}}$	34 (0.002)	28 (0.452)	35 (0.002)	27 (0.435)	37 (0.002)	25 (0.403)	32 (0.002)	30 (0.484)
Precision	0.45		0.44		0.40		0.48	
Recall	0.45		0.44		0.40		0.48	

*Note: All models estimated on a training dataset excluding single-party majority situations and predictions tested out-of-sample. Column percentages in parentheses. Precision =  $\frac{TP}{TP+FP}$ ; Recall =  $\frac{TP}{P}$ .*

## C Missing Polling Data

Sources for supplemental polling data not included in the original [Jennings and Wlezien \(2016\)](#):

- **Austria:** Market, Gallup, IMAS, Unique Research, Hajek, OGM, IFES, Karmasin; [www.ots.at](http://www.ots.at), [https://en.wikipedia.org/wiki/Opinion\\_polling\\_for\\_the\\_next\\_Austrian\\_legislative\\_election](https://en.wikipedia.org/wiki/Opinion_polling_for_the_next_Austrian_legislative_election)
- **Czech Republic:** Politika! surveys retrieved from the Czech Social Data Archive (<http://archiv.soc.cas.cz/en>), Factum, CVVM, STEM, Sanep, Median, ppm, TNS, TNS Asia, Médea, Phoenix Research; [https://en.wikipedia.org/wiki/Opinion\\_polling\\_for\\_the\\_Czech\\_legislative\\_election,\\_2017](https://en.wikipedia.org/wiki/Opinion_polling_for_the_Czech_legislative_election,_2017) and respective sites for earlier elections.
- **Denmark:** Søren Risbjerg Thomsen's polling data collection, Epinion, Gallup, Greens, Norstat, YouGov, Wilke, Voxmeter; [https://en.wikipedia.org/wiki/Opinion\\_polling\\_for\\_the\\_next\\_Danish\\_general\\_election](https://en.wikipedia.org/wiki/Opinion_polling_for_the_next_Danish_general_election) and respective sites for earlier elections.
- **Estonia:** TNS Emor <http://www.emor.ee/erakondade-toetus/>, TNS Emor, Turu-uuring; [https://en.wikipedia.org/wiki/Estonian\\_parliamentary\\_election,\\_2019#Opinion\\_polls](https://en.wikipedia.org/wiki/Estonian_parliamentary_election,_2019#Opinion_polls) and respective sites for earlier elections.
- **Finland:** Taloustutkimus [http://www.taloustutkimus.fi/tuotteet\\_ja\\_palvelut/puolueiden\\_kannatusarviot/puolueiden\\_kannatusarviot\\_2000/](http://www.taloustutkimus.fi/tuotteet_ja_palvelut/puolueiden_kannatusarviot/puolueiden_kannatusarviot_2000/), Taloustutkimus, TNS Gallup; [https://en.wikipedia.org/wiki/Opinion\\_polling\\_for\\_the\\_Finnish\\_parliamentary\\_election,\\_2019](https://en.wikipedia.org/wiki/Opinion_polling_for_the_Finnish_parliamentary_election,_2019) and respective sites for earlier elections.
- **Germany:** Forschungsgruppe Wahlen. Allensbach, Emnid, Forsa, GMS, Infratest, INSA, Ipsos; [https://en.wikipedia.org/wiki/Opinion\\_polling\\_for\\_the\\_next\\_German\\_federal\\_election](https://en.wikipedia.org/wiki/Opinion_polling_for_the_next_German_federal_election) and respective sites for earlier elections.
- **Greece:** ALCO, AUEB-STAT, Bridging Europe, Data RC, E-Voice, Focus, GPO, Kapa Research, MARC, Metrisi, Metron Analysis, MRB, Palmos Analysis, PAMAK, PatrisNews, ProRata, Public Issue, Pulse RC, RASS, ToThePoint, VCitizens, VPRC; [https://en.wikipedia.org/wiki/Opinion\\_polling\\_for\\_the\\_next\\_Greek\\_legislative\\_election](https://en.wikipedia.org/wiki/Opinion_polling_for_the_next_Greek_legislative_election) and respective sites for earlier elections.
- **Hungary:** Tárki <http://www.tarki.hu/hu/research/elect/index.html>, Publicus, Medián, Republikon, Századvég, Iránytű, ZRi, Nézőpont, Tárki, Ipsos; [https://en.wikipedia.org/wiki/Opinion\\_polling\\_for\\_the\\_Hungarian\\_parliamentary\\_election,\\_2018](https://en.wikipedia.org/wiki/Opinion_polling_for_the_Hungarian_parliamentary_election,_2018) and respective sites for earlier elections.
- **Iceland:** MMR, Gallup, Háskóli Íslands, Fréttablaðið, Zenter; <https://github.com/gogn-in/polls> and [https://en.wikipedia.org/wiki/Icelandic\\_parliamentary\\_election,\\_2017#Opinion\\_polls](https://en.wikipedia.org/wiki/Icelandic_parliamentary_election,_2017#Opinion_polls) and respective sites for earlier elections.

- **Ireland:** *Elections Ireland* <http://electionsireland.org/polls.cfm?show=table&year=2016> and earlier years; Red C, Millward Brown, Ipsos, Behaviour and Attitudes; [https://en.wikipedia.org/wiki/Next\\_Irish\\_general\\_election#Opinion\\_polls](https://en.wikipedia.org/wiki/Next_Irish_general_election#Opinion_polls) and respective sites for earlier elections.
- **Italy:** Termometro Politico <http://www.termometropolitico.it/sondaggi-politici-elettorali>, Ekma, IPR, Eurisko, Termometro Politico, Euromedia, Unicab, Dinamiche, Ipsos, Piepolis, Crespi, Ferrari Nasi, Demoskopea, Lorien, Digis, Demos&Pi, Quaeris, ClandestinoWeb, PoliticalLink, Pareto, Coesis, SWG, Analisi Politica, TP, SPinCON, GPG, ScenariPolitici, CFI Group, EMG, FullResearch, MManagement, CISE; IBS, Datamonitor, Quorum, EULAB, Index, Demos; [https://en.wikipedia.org/wiki/Opinion\\_polling\\_for\\_the\\_Italian\\_general\\_election,\\_2018](https://en.wikipedia.org/wiki/Opinion_polling_for_the_Italian_general_election,_2018) and respective sites for earlier elections.
- **Japan:** NHK <http://www.nhk.or.jp/bunken/research/yoron/political/2016.html> and earlier years and Asahi Shimbun <http://www.tv-asahi.co.jp/hst/poll/2016.html> and earlier years.
- **Netherlands:** Nieuw Haags Peil <https://home.noties.nl/peil/nieuw-haags-peil/>, Ipsos, De Stemming, Peil, TNS NIPO, I&O Research, Nieuw Haags Peil; [https://en.wikipedia.org/wiki/Opinion\\_polling\\_for\\_the\\_next\\_Dutch\\_general\\_election](https://en.wikipedia.org/wiki/Opinion_polling_for_the_next_Dutch_general_election) and respective sites for earlier elections.
- **New Zealand:** Roy Morgan Research <http://www.roymorgan.com/findings/finding-3925-201303050332> and other entries, One News Colmar Brunton, TV3 NFO, NBR-HP Invent, Herald-DigiPoll, 3 News TNS, BRC, Roy Morgan Research, AC Nielson, [https://en.wikipedia.org/wiki/Opinion\\_polling\\_for\\_the\\_New\\_Zealand\\_general\\_election,\\_2017](https://en.wikipedia.org/wiki/Opinion_polling_for_the_New_Zealand_general_election,_2017) and respective sites for earlier elections.
- **Norway:** TNS Gallup Partibarometeret 1964-2010 from Norwegian Centre for Research Data <http://www.nsd.uib.no/nsd/english/index.html>, Sentio, Opinion Perduco, Ipsos, TNS Gallup, Norstat, Respons, InFact, Norfakta; [https://en.wikipedia.org/wiki/Opinion\\_polling\\_for\\_the\\_Norwegian\\_parliamentary\\_election,\\_2017](https://en.wikipedia.org/wiki/Opinion_polling_for_the_Norwegian_parliamentary_election,_2017) and respective sites for earlier elections.
- **Poland:** CBOS [http://www.cbos.pl/SPISKOM.POL/1992/K\\_107\\_92.PDF](http://www.cbos.pl/SPISKOM.POL/1992/K_107_92.PDF) and later years, CBOS, PBS, TNS OBOP, Demoskop, Pentor, OBW, PBBOUS, PGB, Ipsos, GfK Polonia, Homo Homini, SMG/KRC, Estymator, Marcin Palade, PPSP, WAW, IBRiS, Millward Brown, Dobra Opinia, Arianda, PressMix, PAS-P, Pracownia Mediowa, Kantar Public; [https://en.wikipedia.org/wiki/Opinion\\_polling\\_for\\_the\\_next\\_Polish\\_parliamentary\\_election](https://en.wikipedia.org/wiki/Opinion_polling_for_the_next_Polish_parliamentary_election) and respective sites for earlier elections.
- **Portugal:** Eurosondagem, Aximage, Catolica, Markttest, Pitagorica, Intercampus; <http://www.popstar.pt/dados.php>, Aximage, UCP CESOP, Pitagorica, Intercampus, Markttest; [https://en.wikipedia.org/wiki/Opinion\\_polling\\_for\\_the\\_next\\_Portuguese\\_legislative\\_election](https://en.wikipedia.org/wiki/Opinion_polling_for_the_next_Portuguese_legislative_election) and respective sites for earlier elections.

- **Slovakia:** Focus <http://www.focus-research.sk/?section=show&id=10>, Polis, AKO, Focus; [https://en.wikipedia.org/wiki/Opinion\\_polling\\_for\\_the\\_next\\_Slovak\\_parliamentary\\_election](https://en.wikipedia.org/wiki/Opinion_polling_for_the_next_Slovak_parliamentary_election) and respective sites for earlier elections.
- **Slovenia:** Politbarometer, Slovenia, 1996-2000 Cumulative Dataset <https://www.adp.fdv.uni-lj.si/eng/>, Episcentra, RM Plus, Ninamedia, Slovenian Beat, FUDA, Mediana, UvNG, Delo Stik, SLOvenski Utrip, Parsifal; [https://en.wikipedia.org/wiki/Opinion\\_polling\\_for\\_the\\_next\\_Slovenian\\_parliamentary\\_election](https://en.wikipedia.org/wiki/Opinion_polling_for_the_next_Slovenian_parliamentary_election) and respective sites for earlier elections.
- **Spain:** Alef, AP, Append, Aresco, ASEP, Atento STC, Celeste-Tel, CEMOP, CIS, Citigate Sanchis, Demoiberica, Demometrica, Demoscopia, DYM, ECO, El Pais, Emopublica, GAD3, Gallup, GESOP, GETS, Gruppo, Iberconsulta, ICP, INE, Inner, Intereconomia, Intergallup, Invymark, Ipsos, IO2000, Iope-Etmar, ISIS, Jaime Miquel & Asociados, La Vanguardia, Metra Seis, Metroscopia, NC Report, Noxa, Obradoiro de Socioloxia, Opina, OTR, Perfiles, PP, PSOE, Sigma Dos, Simple Logica, Sofemasa, Sondaxe, Tabula-V, TC, Telemarket, Tempo, Typol, Vox Publica; [https://en.wikipedia.org/wiki/Opinion\\_polling\\_for\\_the\\_next\\_Spanish\\_general\\_election](https://en.wikipedia.org/wiki/Opinion_polling_for_the_next_Spanish_general_election) and respective sites for earlier elections.
- **Sweden:** SIFO Barometer (SND 0586-001) from Swedish National Data Service <https://snd.gu.se/en>, Skop, Demoskop, Sifo, TEMO, SCB, Gallup, Ruab, Zapera, SVT Valu, Synovate Temo, Sentio, Novus, United Mindes, YouGov, Ipsos, Inizio; <https://github.com/MansMeg/SwedishPolls>, Sentio, Demoskop, Inizio, Ipsos, Sifo, YouGov, Novus, SCB; [https://en.wikipedia.org/wiki/Opinion\\_polling\\_for\\_the\\_Swedish\\_general\\_election,\\_2018](https://en.wikipedia.org/wiki/Opinion_polling_for_the_Swedish_general_election,_2018) and respective sites for earlier elections.



## D Confusion Matrix with Majority Situations

Table D1: Comparison out-of-sample: Confusion matrix with majority situations

	Naïve Model		MS 2001		MS 2010		KOR		KOR par.	
	not realized	realized	not realized	realized	not realized	realized	not realized	realized	not realized	realized
<b>Coalition Level</b>										
$\widehat{\text{not realized}}$	19,397 (0.998)	38 (0.437)	19,394 (0.998)	41 (0.471)	19,394 (0.998)	41 (0.471)	19,400 (0.998)	35 (0.402)	19,399 (0.998)	36 (0.414)
$\widehat{\text{realized}}$	38 (0.002)	49 (0.563)	41 (0.002)	46 (0.529)	41 (0.002)	46 (0.529)	35 (0.002)	52 (0.598)	36 (0.002)	51 (0.586)
Precision	0.56		0.53		0.53		0.60		0.59	
Recall	0.56		0.53		0.53		0.60		0.59	
AUPR	0.53		0.57		0.57		0.61		0.61	
<b>Party Level</b>										
$\widehat{\text{not realized}}$	290 (0.898)	67 (0.362)	305 (0.944)	85 (0.459)	305 (0.944)	84 (0.454)	288 (0.892)	50 (0.270)	286 (0.885)	51 (0.276)
$\widehat{\text{realized}}$	33 (0.102)	118 (0.638)	18 (0.056)	100 (0.541)	18 (0.056)	101 (0.546)	35 (0.108)	135 (0.730)	37 (0.115)	134 (0.724)
Precision	0.78		0.85		0.85		0.79		0.78	
Recall	0.64		0.54		0.55		0.73		0.72	
AUC	0.84		0.86		0.86		0.90		0.89	

Note: All models estimated on a training dataset including single-party majority situations and predictions tested out-of-sample. Column percentages in parentheses. Precision =  $\frac{TP}{TP+FP}$ ; Recall =  $\frac{TP}{P}$ ; AUPR = Area under the Precision-Recall Curve; AUC = Area under the Receiver Operator Curve.

## E Measures of model fit

Table E1: Analysis of Coalition Level Predictions

	Naïve Model	MS 2001	MS 2010	KOR	KOR par.
<b>False Positives</b>	38	41	41	35	36
Completely false composition	12	5	5	5	4
Superset of true coalition	6	6	5	6	5
Subset of true coalition	16	22	23	15	17
Other	4	8	8	9	10
Mean difference of parties in true and predicted coalition	1.77	1.67	1.78	1.67	1.69
<b>Predicted rank of true coalitions</b>					
1st Rank (= True Positives)	49	46	46	52	51
2nd Rank	9	10	10	4	7
3rd Rank	2	4	4	2	5
4th Rank	4	3	1	6	2
5th Rank	3	1	4	1	1
True coalitions among top 5 predicted coalitions	67	64	65	65	66

*Note: **Completely false composition** indicates no overlap in party composition of true and predicted coalitions; **superset of true coalition** indicates that predicted coalition is a superset of true coalition; **subset of true coalition** indicates that predicted coalition is a subset of true coalition; **other** indicate that predicted coalitions has some party composition overlap with true coalition.*

At the coalition level, we rely on precision and recall as metrics of model performance because the extremely large number of potential coalitions in any given formation opportunity would result in almost perfect prediction of true negatives – as can be seen in the upper-left quadrants in Table D1. Substantively, the use of precision – the share of all predicted coalitions that are actually true coalitions – reflects our interest in predicting the single one true coalition and not which coalition out of many has not formed. Recall reports the share of the predicted true coalitions out of all true coalitions. As maximizing either one of these metrics implies a trade-off, we also report the Area under the Precision - Recall curve (AUPR) at the coalition level in the figures below. At the party level, the absence of an abundance of true negatives allows us to use the more common Area under the Curve (AUC) as is seen in Figure ?? in the main text.

Figure E1: Coalition-level precision-recall plots. All models, as specified in Table ??, Table ?? and Table B1, estimated on samples including majority situations.

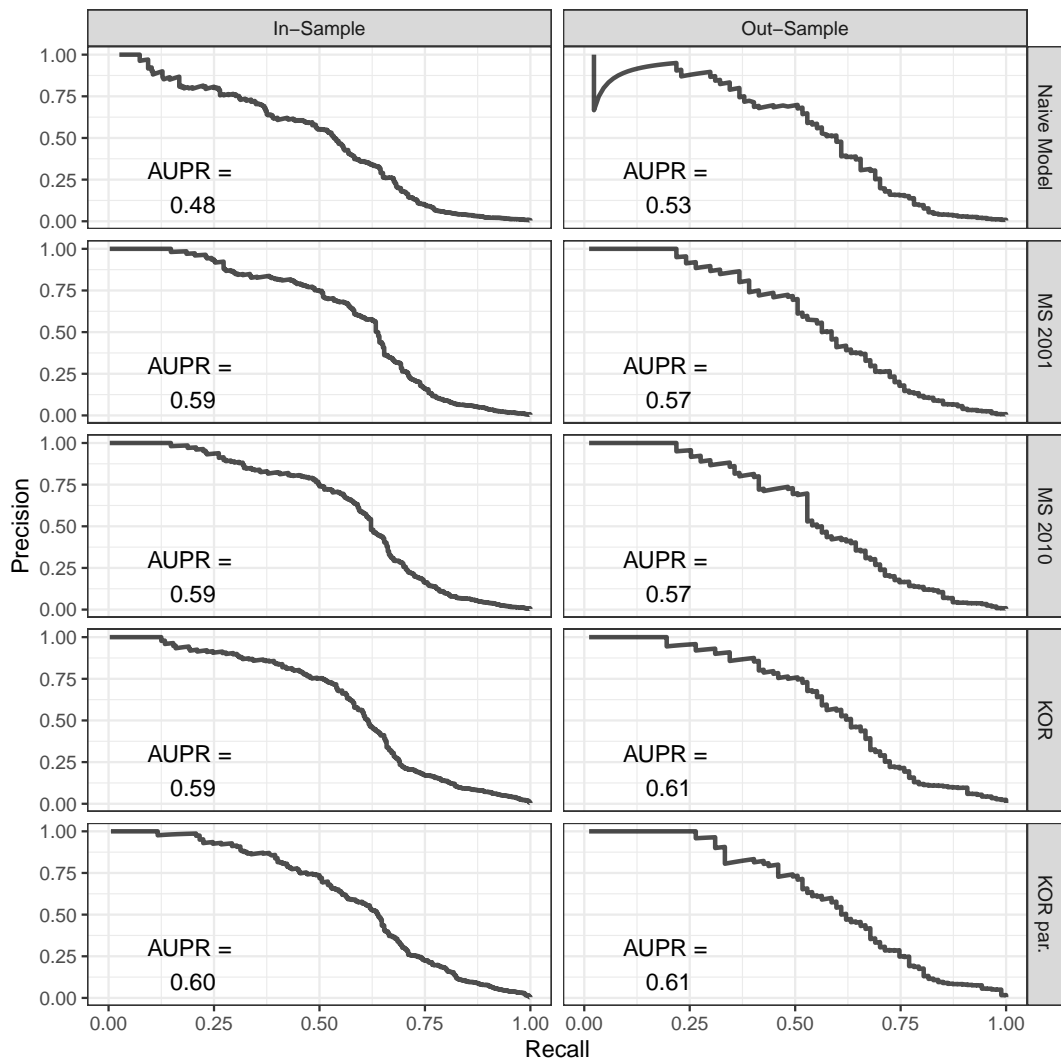


Figure E2: Party-level precision-recall plots. All models, as specified in Table ??, Table ?? and Table B1, estimated on samples including majority situations.

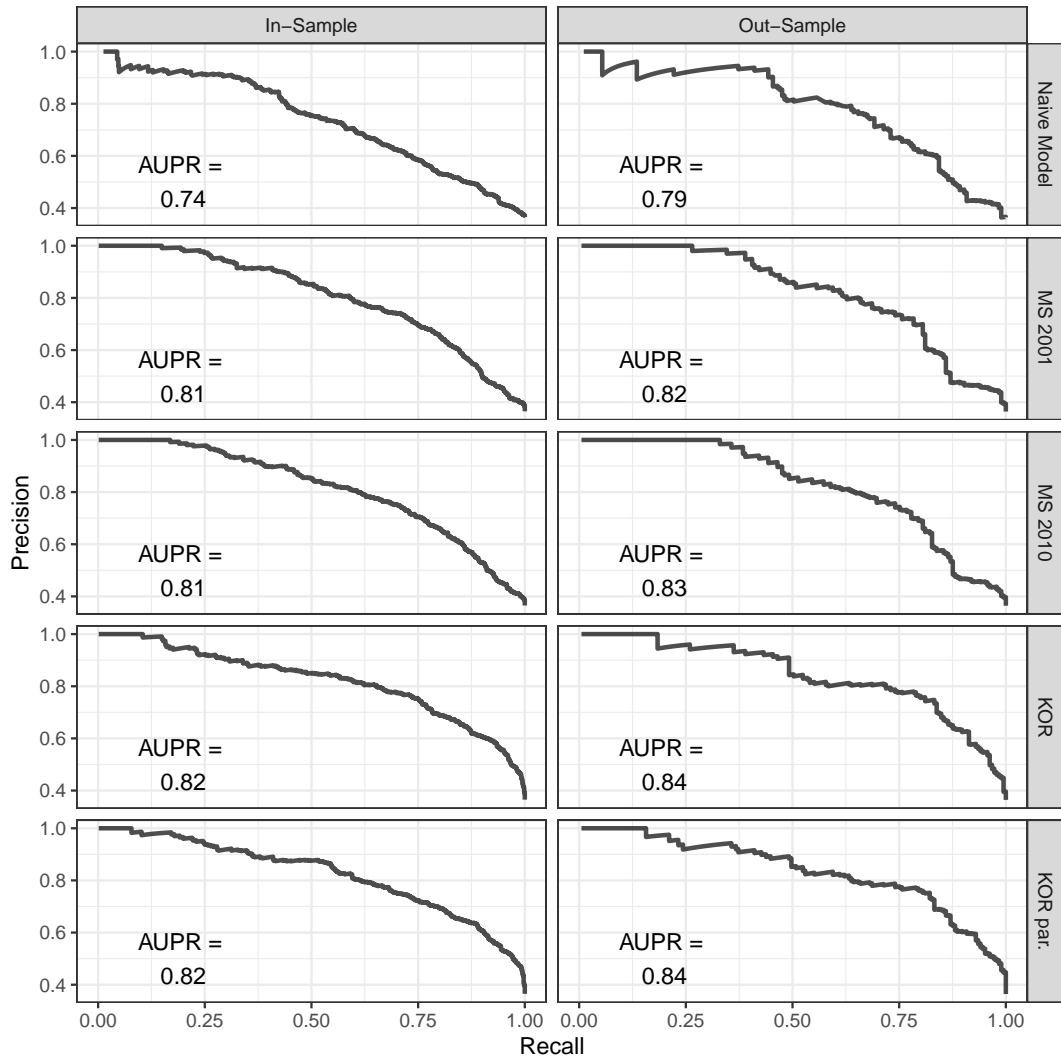


Table E2: Final Model Used to Calculate CIP

	“Western”	CEE
Largest Party in Coalition (LP)	1.213*** (0.203)	1.627*** (0.266)
Single Party Government (SP)	-1.443*** (0.361)	
LP × SP	2.530*** (0.388)	
No-Majority Situation (NM) × LP × SP	1.273*** (0.350)	
NM × Minority Government (MG)	-0.812*** (0.272)	0.317 (0.378)
NM × MG × Investiture Vote	-0.330 (0.224)	
NM × Minimal Winning Coalition	0.965*** (0.188)	1.709*** (0.285)
NM × Number of Parties in Coalition	-0.552*** (0.079)	-0.195 (0.120)
NM × Median Party in Coalition	0.696*** (0.138)	0.537** (0.222)
Ideological Range in Coalition	-0.649*** (0.063)	-0.441*** (0.081)
Status Quo	2.700*** (0.132)	2.394*** (0.263)
Cabinet History	0.084 (0.335)	1.469** (0.597)
Anti-Establishment Party in Coalition	-1.780*** (0.200)	-0.215 (0.297)
NM × Second Largest Party	0.659*** (0.153)	0.045 (0.220)
NM × Third Largest Party	0.963*** (0.151)	0.245 (0.205)
Countries	20	11
Formation Opportunities	633	165
Observations	739,282	170,830
Log Likelihood	-1452.137	-613.517

\*p&lt;0.1; \*\*p&lt;0.05; \*\*\*p&lt;0.01

“Western” Sample: Australia, Austria, Belgium, Canada, Denmark, Finland, Germany, Greece, Iceland, Ireland, Italy, Japan, Luxembourg, the Netherlands, New Zealand, Norway, Portugal, Spain, Sweden, United Kingdom. Central and Eastern Europe: Bulgaria, Croatia, Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Romania, Slovakia, Slovenia.

## F Validation and comparison

### F.1 Face validity in three distinct party systems

For simple face validity, Figure F1 and F2 present coalition inclusion probabilities for parties in three selected democracies that are characterized by different *modi operandi* of government formation. Figure F1 depicts the distribution of parties' CIP, i.e. their probability of entering government, in Spain for each month from 1980 to September 2018 (with gaps especially in the early years). Our CIP measure neatly captures and displays the tradition of single-party governments: either the *People's Alliance Party* (PP) or the *Socialist Workers Party* (PSOE) (as well as the now defunct *Union of the Democratic Centre*, UCD) are predicted to form governments.

Figure F2 displays the same quantities for Swedish (Panel a) and German (Panel b) parties from 1970 to September 2018. For Sweden the traditional block-party system shows up in the predicted CIP. The *Social Democrats* (SAP), for instance, has usually governed alone for a long period and is predicted high probability of government participation. The group of conservative parties around the *Centre Party* (C) and, later on, the *Moderate Coalition Party* (MSP) have lower predicted CIPs, reflecting the constant probability that the SAP could even govern as a minority government.

Finally, panel (b) shows predicted CIP for German parties between 1970 and September 2018. Traditionally, the *Free Democrats* (FDP) have played the role of the kingmaker, helping either the *Christian Democrats* (CDU/CSU) or the *Social Democrats* (SPD) to obtain the chancellorship. At times, the FDP could enjoy the privilege of choosing between these parties (having high CIP) while at others it polled below the electoral threshold (having extremely low CIP). For both countries, anti-establishment parties such as the SD in Sweden or the PDS-Linke and the AfD in Germany are predicted consistent opposition status. In summary, for all three countries and their patterns of coalition formation, predicted CIP match our expectations.

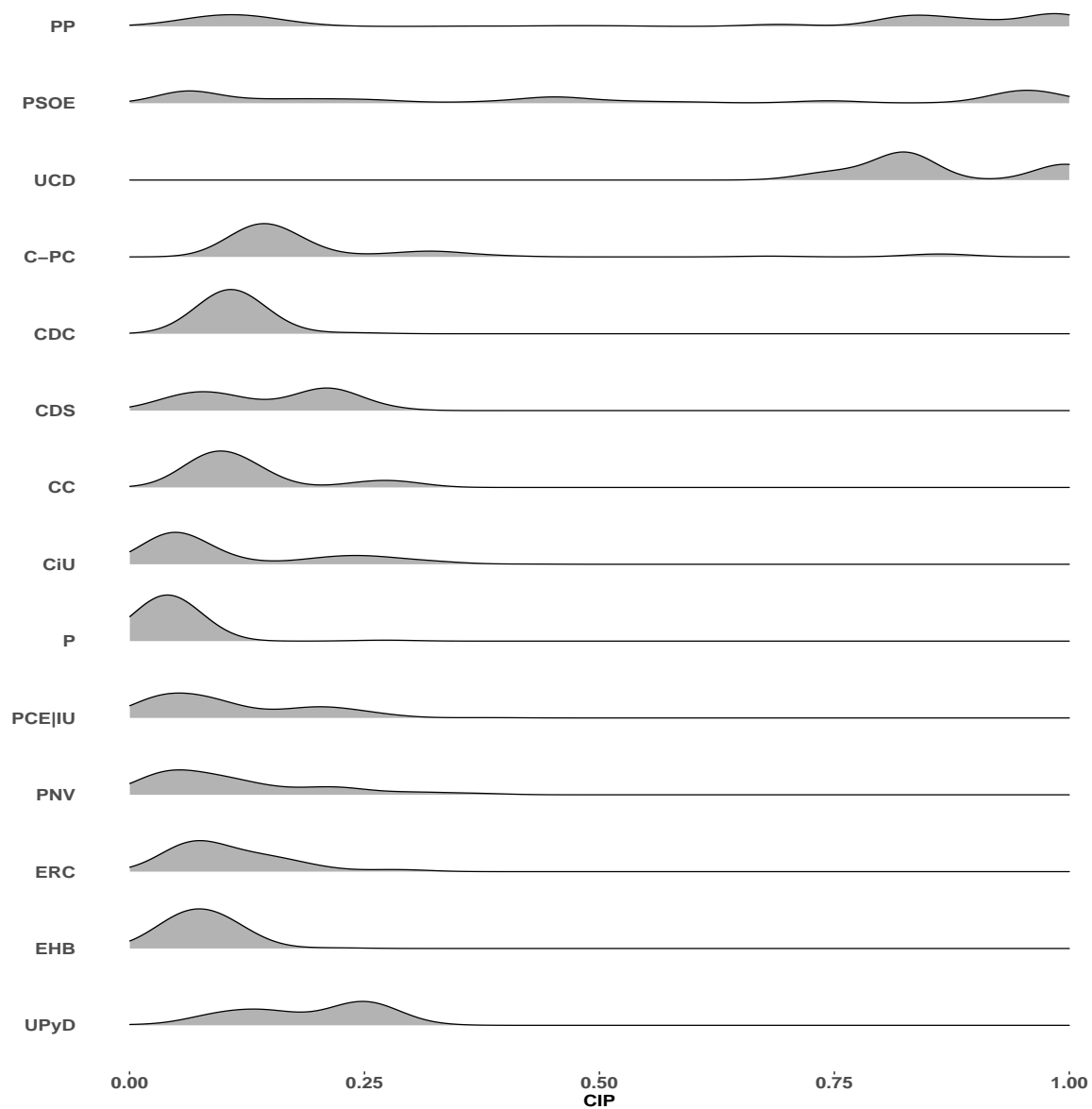
#### Party name abbreviations:

**Spain:** PP People's Alliance Party, PSOE Spanish Socialist Workers Party, UCD Union of the Democratic Centre, C-PC Citizens – Party of the Citizenry, CDC Democratic Convergence of Catalonia, CDS Democratic and Social Centre, CC Canary Coalition, CiU Convergence and Union, P Podemos, PCE|IU Communist Party|United Left, PNV Basque Nationalist Party, ERC Republican Left of Catalonia, EHB Basque Country Unite, UPyD Union, Progress and Democracy.

**Sweden:** SAP Social Democrats, MSP Moderate Coalition Party, FP People's Party, C Centre Party, MP Green Party, KD Christian Democrats, SD Sweden Democrats, NyD New Democracy, V Left Party.

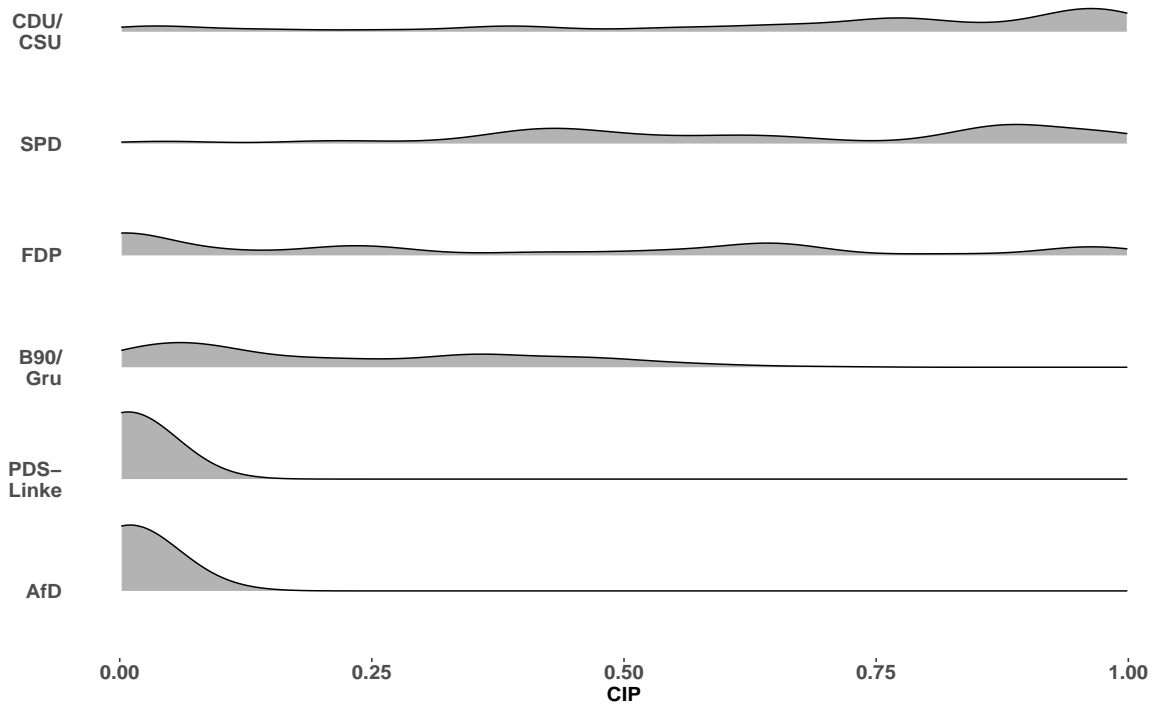
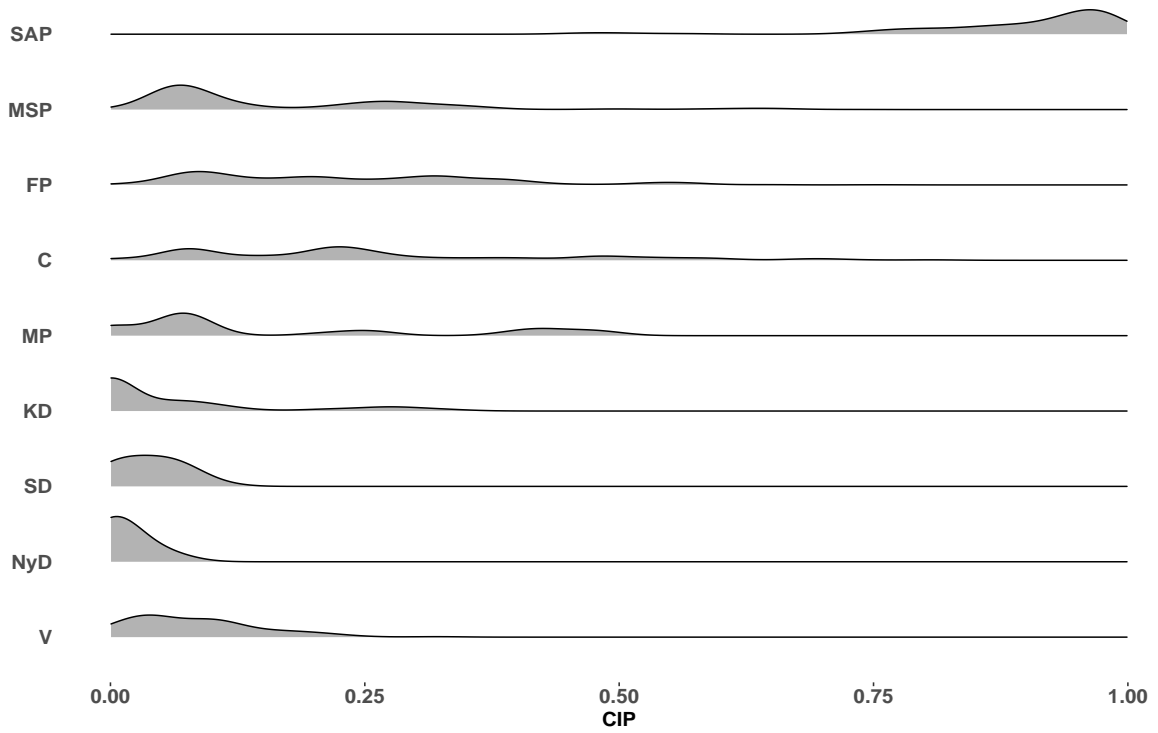
**Germany:** CDU/CSU Christian Democrats, SPD Social Democrats, FDP Free Democratic Party, B90/Gru Bündnis 90/Grüne, PDS-Linke The Left/Party of Democratic Socialism, AfD Alternative for Germany.

Figure F1: Distribution of monthly CIP in Spain



Full party names available in the online appendix.

Figure F2: Distribution of monthly CIP in Sweden and Germany.



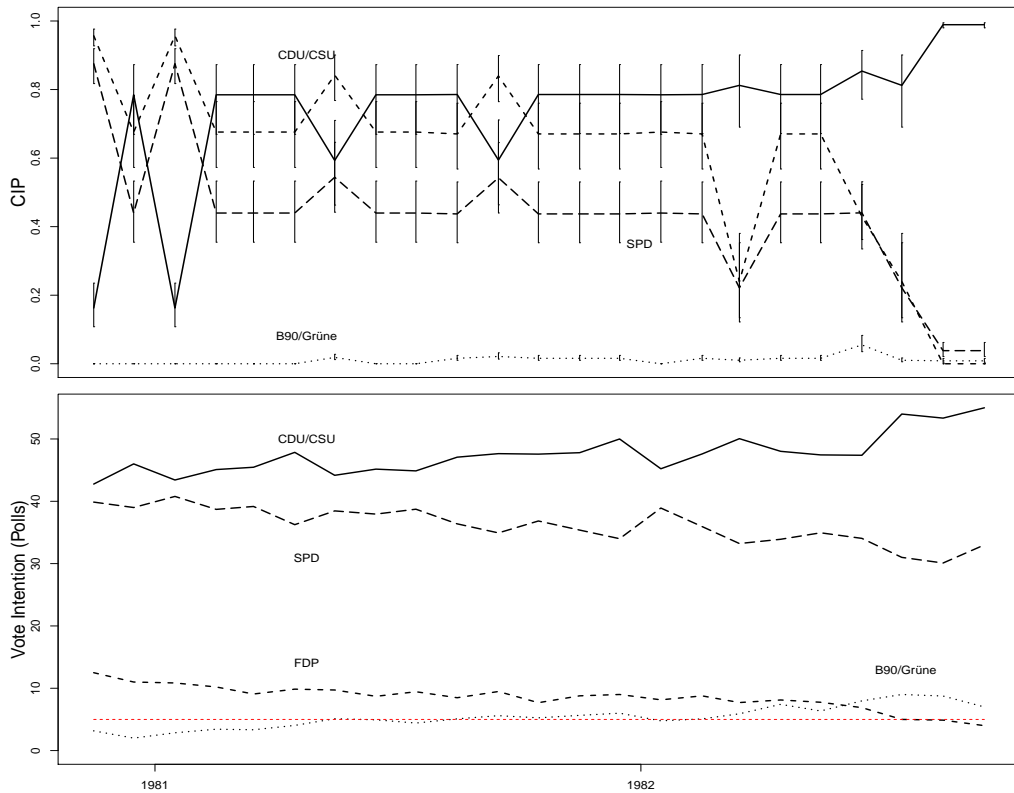
Full party names available in the online appendix.



## F.2 Face validity over time

Inclusion in a governing coalition, a goal of most parties, most often depends on the availability and electoral fortunes of potential coalition partners. This “coalition calculus”, as we have argued in the main text, makes simple polling numbers inadequate for predicting party behavior and creates the need for an alternative measure that takes parties’ coalition prospects explicitly into account. To illustrate this advantage over polls and as a check of face validity over time, we examine one inter-election period in a multi-party country in greater detail. We compare CIP to polls because they are the only other dynamic measure of electoral competitiveness that tracks parties between elections, serving as “common knowledge” about what an election would deliver. Figure F3 plots out both the coalition inclusion probabilities and the polling numbers for German political parties in the run-up to the collapse of the Schmidt cabinet in 1982.

Figure F3: **Predicted probabilities to enter government. Schmidt III, 1980-1982.**



The top panel depicts the monthly gross Coalition Inclusion Probabilities for each of the four (non-) parliamentary parties in Germany throughout Schmidt’s third Cabinet. The bottom panel shows vote intention polls for the same parties during the same time period.

The upper panel in Figure F3 shows the predicted gross CIP for four (non-) parliamentary parties, while the lower panel depicts each parties’ support in opinion polls. Two patterns stand out. First, CIP is much more volatile than polls; when polling shifts

slightly and certain coalitions become viable, CIPs change markedly. One sees this, for instance, in the early months of the government: whenever the SPD was polling at a level that would make a coalition with the FDP possible, the CIP of the CDU/CSU plummeted. CIP picks up this important shift while polling barely changes. Second, CIP shows different levels than polls. The FDP, for example, regularly enjoyed higher CIP than the SPD despite polling lower. These are both important aspects of coalition politics that are picked by CIP but not by the only dynamic alternative, polling.

### F.3 Predictive validity of CIPs

As CIPs are supposed to measure parties' bargaining leverage through their probability of being included in government, CIP should predict actual government participation. We use election-based CIP and not dynamic CIP here for two reasons: first, governments do not form at a monthly frequency. Second, while it would be possible only to look at polling-based CIP shortly before scheduled elections, there is little difference from actual elections results, because polls normally converge with election results as elections near. Table F1 presents the results of a logit model explaining the (binary) government participation of parties as a function of their CIP.

Table F1: Predicting Government Participation of Parties

	Government Participation
	Logit
CIP	5.543*** (0.147)
Constant	-2.785*** (0.067)
Observations	5,590
Countries	31
Formation Opportunities	797
Log Likelihood	-2,394.365

*Note:* \*p<0.1; \*\*p<0.05; \*\*\*p<0.01

The coefficient, once exponentiated, indicates an extremely large effect: the odds of inclusion in government increase by a factor 255 when CIP changes from 0 to 1.

## G Robustness to use of logRILE

One may wonder about the use of an sequential party family measure instead of the more conventional logRILE measure of party ideological position. Party family after all does not pick up changes in party positions over time and is less sensitive to the determinants of party position used to estimate logRILE scores. Our answer is twofold: (1) in conditional logit estimation party family – or any other variable – only matters within the choice-set, so over time changes don't matter; and (2) logRILE is not available for many parties and periods and would greatly restrict our coverage.

The two tables below illustrate two points. Table F2 demonstrates that when one restricts the sample to formation opportunities for which complete logRILE scores exist beginning with the sample and model from Table 4, the coefficients from the party family model are very similar to those from the logRILE model. Table F3 shows the huge loss of observations (potential cabinets) when one replaces party family (PF) with logRILE in both our "Western" and Central and Eastern European (CEE) samples, starting with our maximum sample used to estimate CIPs. The parties missing logRILE scores are often small parties but their absence can influence coalition probabilities and, consequently, CIPs, notably.

Table F2: Manuscript Table 4; Original and with log RiLe

	<i>Dependent variable:</i>	
	(1)	(2)
Largest Party in Coalition	0.744** (0.299)	0.599** (0.287)
Singe Party Gov't	-0.658 (0.584)	-0.547 (0.588)
Largest Party × Single Party Gov't	3.158*** (0.605)	3.433*** (0.611)
No-Majority Situation × Largest Party × Single Party Gov't	2.828*** (0.566)	2.762*** (0.554)
No-Majority × Minority Government	-0.928*** (0.299)	-1.064*** (0.300)
No-Majority × Minority Gov't × Investiture vote	-0.547* (0.293)	-0.314 (0.303)
No-Majority × Minimal Winning Coalition	1.123*** (0.264)	1.139*** (0.263)
No-Majority × Number of Parties in Coalition	-0.006 (0.119)	-0.078 (0.119)
No-Majority × Median Party in Coalition	0.445** (0.185)	0.311* (0.187)
Ideological Range in Coalition (Party Family)	-0.610*** (0.087)	
Ideological Range in Coalition (RiLe)		-4.854*** (1.048)
Status Quo Government	2.169*** (0.174)	2.250*** (0.171)
Anti-Establishment Party in Coalition	-2.316*** (0.352)	-2.853*** (0.348)
No-Majority × Second Largest Party	0.348 (0.212)	0.218 (0.205)
No-Majority × Third Largest Party	1.001*** (0.212)	0.938*** (0.206)
Cabinet History	1.331*** (0.476)	1.853*** (0.470)
Country	20	20
Formation Opportunities	352	352
Observations	81,208	81,208
R <sup>2</sup>	0.016	0.016
Max. Possible R <sup>2</sup>	0.032	0.032
Log Likelihood	-668.841	-683.419

*Note:*

\*p&lt;0.1; \*\*p&lt;0.05; \*\*\*p&lt;0.01

Table F3: Final Estimation Model comparing PF and logRILE

	"Western" Sample			CEE Sample		
	PF	logRILE	PF on logRILE sample	PF	logRILE	PF on logRILE sample
Largest Party	1.213*** (0.203)	0.938*** (0.203)	1.129*** (0.218)	1.627*** (0.266)	1.757*** (0.270)	1.687*** (0.280)
Single Party Gov't	-1.443*** (0.361)	-1.450*** (0.381)	-1.665*** (0.393)			
Largest Party × Single Party Gov't	2.530*** (0.388)	2.650*** (0.402)	2.940*** (0.419)			
No-Majority Situation × Largest Party × Single Party Gov't	1.273*** (0.350)	1.290*** (0.358)	0.816** (0.372)			
No-Majority × Minority Government	-0.812*** (0.272)	-0.400 (0.278)	-0.611** (0.295)	0.317 (0.378)	0.693* (0.385)	0.296 (0.405)
No-Majority × Minority Gov't × Investiture Vote	-0.330 (0.224)	-0.261 (0.229)	-0.433* (0.234)			
No-Majority × Minimal Winning Coalition	0.965*** (0.188)	1.044*** (0.191)	1.021*** (0.199)	1.709*** (0.285)	1.817*** (0.294)	1.669*** (0.299)
No-Majority × Number of Parties in Coalition	-0.552*** (0.079)	-0.348*** (0.087)	-0.281*** (0.096)	-0.195 (0.120)	-0.185 (0.125)	-0.199 (0.136)
No-Majority × Median Party in Coalition	0.696*** (0.138)	0.400*** (0.143)	0.508*** (0.142)	0.537** (0.222)	0.539** (0.220)	0.609*** (0.233)
Ideological Range in Coalition	-0.649*** (0.063)	-0.480*** (0.085)	-0.673*** (0.069)	-0.441*** (0.081)	-0.668*** (0.188)	-0.401*** (0.085)
Status Quo	2.700*** (0.132)	2.640*** (0.129)	2.523*** (0.131)	2.394*** (0.263)	2.364*** (0.257)	2.437*** (0.266)
Cabinet History	0.084 (0.335)	0.126 (0.344)	-0.404 (0.350)	1.469** (0.597)	1.587*** (0.590)	0.919 (0.616)
Anti-Establishment Party in Coalition	-1.780*** (0.200)	-2.595*** (0.210)	-2.034*** (0.225)	-0.215 (0.297)	-0.359 (0.291)	-0.380 (0.304)
No-Majority × Second Largest Party	0.659*** (0.153)	0.423*** (0.150)	0.663*** (0.161)	0.045 (0.220)	-0.082 (0.223)	0.006 (0.230)
No-Majority × Third Largest Party	0.963*** (0.151)	0.812*** (0.146)	0.868*** (0.159)	0.245 (0.205)	0.291 (0.203)	0.296 (0.213)
Pot. Cabinets	739282	162704	162704	170830	45104	44976
Form. Opp.	633	618	618	165	164	164
Coalition Level AUPR	0.544	0.542	0.542	0.165	0.181	0.171
Party Level AUC	0.885	0.873	0.883	0.763	0.772	0.766
Log Likelihood	-1452.137	-1323.681	-1178.092	-613.517	-570.458	-526.143

\*p&lt;0.1; \*\*p&lt;0.05; \*\*\*p&lt;0.01

Note: Samples for the CEE sample differ between the "logRILE" and the "PF on logRILE sample" models as we could not assign a proper party family value to "Drasos kelias - The Way of Courage" (DK) in Lithuania in the 2012 election for which however a logRILE score exists. This is the only case where logRILE exists for a party but not a party family value. Unfortunately, in 779 cases the opposite is true.

## H Robustness Tests for our Applications

### Government spending

For our linear models we have conducted a series of classical diagnostic tests to further underscore the robustness of our model findings. Table G1 reports statistics on the central models' variance inflation factors (vif), Cook's distance of influential observations, the heteroskedasticity in residuals and the root mean squared error (RMSE). Overall, model performance is similar across all specifications. However, the model using our CIP variables exhibits improvements in terms of multicollinearity, heteroskedasticity (though still present in the data) and in predictive accuracy using the Root Mean Squared Error (RMSE).

Table G1: Diagnostics for government spending analysis

Statistic	Model 6, Table ?? (CIP)	Model 2, Table ?? (Polls)	Model 4, Table ?? (Seat shares)
VIF	1.331	1.362	1.447
Cook's Distance	0.0037	0.0037	0.0036
Heteroskedasticity (Breusch-Pagan)	0.0004	0.0003	0.0003
RMSE	2.563	2.582	2.581

*Numbers for vif show the averages over all covariates and the average over all observations for Cook's Distance. Breusch-Pagan figures are p-values for rejecting the null hypothesis of constant variance in the residuals.*

Table G2, moreover, presents our original CIP models with additional control variables capturing the cabinets and relevant parties' financial policy stances. Specifically, we use the CMP's item 409 "Keynes Demand Management", with which we calculate the positional range over financial policy instruments in the cabinet and to measure the PM and the FIN parties' positive attitude toward Keynesian financial policy. We use this item to proxy for the demand of greater government spending. Overall, our results hold up. Only our CIP indicator of the PM party exceeds marginally the 10% threshold of significance.

Table G2: Government Spending Robustness Test

	$\Delta$ Government Spending						
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
GDP Growth <sub>t-1</sub>	-0.066 (0.089)	-0.081 (0.092)	-0.066 (0.089)	-0.079 (0.092)	-0.067 (0.089)	-0.088 (0.093)	-0.079 (0.069)
Minority Cabinet	0.016 (0.457)	0.049 (0.454)	0.125 (0.465)	0.149 (0.455)	0.103 (0.458)	0.174 (0.451)	0.089 (0.297)
Time to Next Regular Election	0.008 (0.139)	-0.016 (0.137)	0.007 (0.139)	-0.015 (0.137)	-0.011 (0.137)	-0.062 (0.136)	-0.020 (0.109)
Number of Cabinet Parties	0.079 (0.211)	0.082 (0.208)	0.087 (0.214)	0.069 (0.207)	0.194 (0.213)	0.313 (0.213)	0.090 (0.239)
Ideological Range in Cabinet	-0.500 (0.340)	-0.452 (0.335)	-0.514 (0.346)	-0.456 (0.339)	-0.778** (0.354)	-1.001*** (0.371)	-0.542** (0.235)
CIP PM (yearly average)	-2.069 (1.322)		-1.915 (1.310)		-2.013 (1.289)		
CIP FIN (yearly average)		-1.785** (0.845)		-1.653** (0.814)		-1.455* (0.783)	-1.615* (0.892)
Keynesian Policy: Range in Cabinet	-0.226 (0.141)	-0.285* (0.150)					
Keynesian Policy: PM Position			-0.301* (0.178)				
Keynesian Policy: FIN Position				-0.344** (0.170)			
RiLe PM					-0.701*** (0.261)		
RiLe FIN						-0.944*** (0.303)	
Intercept	1.918 (1.487)	1.706 (1.097)	1.680 (1.474)	1.425 (1.048)	1.830 (1.474)	2.206** (1.120)	1.604 (1.154)
Observations	333	334	333	334	332	332	334
R <sup>2</sup>	0.052	0.055	0.053	0.057	0.069	0.081	0.050
Number of Countries	19	19	19	19	19	19	19
Country Fixed-Effects	✓	✓	✓	✓	✓	✓	✓
Period Fixed-Effects	✓	✓	✓	✓	✓	✓	✓
Robust Standard Errors	✓	✓	✓	✓	✓	✓	×
Standard Errors clustered by country	×	×	×	×	×	×	✓

*Note: Observations differ because we include cabinets with non-partisan PMs. OLS with country and 5-year period fixed-effects. Standard errors in parentheses. Keynesian Policy based on CMP item 409 Keynes Demand Management; \* $p < 0.1$ ; \*\* $p < 0.05$ ; \*\*\* $p < 0.01$ .*

## Environmental policy stringency

Table G3 presents the results for the same tests of heteroskedasticity, multicollinearity, influential observations and the RMSE in our models on environmental policy stringency. All models have on average low vif values, with all coefficients below 2 except for Gas House Emissions per capita with a value of over 4. The second indicator, Cook’s Distance, shows a marginal improvement of the model using our CIP measure over the other two model alternatives. The Breusch-Pagan test indicates that the models using polls and seat shares suffer from heteroskedasticity in their residuals. Finally, the RMSE is lowest in our CIP model. Hence, our CIP measure outperforms the other two measures in more accurately predicting observations and thus eliminating heteroskedasticity in the residuals. This result indeed reflects our initial goal to create a measure that more accurately captures parties’ bargaining leverage in multi-party systems and hence their influence on policy, something that raw polling data cannot do.

Table G3: **Diagnostics for environmental policy stringency analysis**

Statistic	Model 1, Table ?? (CIP)	Model 2, Table ?? (Polls)	Model 3, Table ?? (Seat shares)
VIF	1.838	1.786	1.791
Cook’s Distance	0.0059	0.0061	0.0063
Heteroskedasticity (Breusch-Pagan)	0.146	0.023	0.014
RMSE	0.290	0.298	0.297

*Numbers for vif show the averages over all covariates and the average over all observations for Cook’s Distance. Breusch-Pagan figures are p-values for rejecting the null hypothesis of constant variance in the residuals.*

Table G4 additionally shows models with a series of new control variables, such as the post-Fukushima period, the PM party’s CIP excluding any Green party in the polity which shows an expected significant and negative sign – something that is not reported for PM polls – as well as the time to the next election and the PM party’s position on environmental protection and its party family. None of the latter covariates show any effect and, more importantly, do not affect our original measure for green parties’ CIP.



Table G4: Environmental Policy Stringency Robustness Tests

	<i>Environmental Policy Stringency</i>					
	(1)	(2)	(3)	(4)	(5)	(6)
Minority Cabinet	0.068 (0.088)	0.044 (0.083)	-0.095 (0.068)	0.046 (0.079)	0.060 (0.083)	0.024 (0.095)
Kyoto Protocol	0.161** (0.070)	0.173** (0.070)	0.160** (0.079)	0.174** (0.070)	0.163** (0.070)	0.181** (0.078)
Quarterly GDP Growth (yearly mean)	-0.067* (0.037)	-0.054 (0.034)	-0.034 (0.038)	-0.056 (0.034)	-0.059* (0.035)	-0.065* (0.035)
Cabinet's Mean Environmental Protection	-0.010 (0.012)	-0.010 (0.012)	0.001 (0.013)	0.009 (0.017)	-0.009 (0.012)	-0.010 (0.014)
Total Greenhouse Gas Emissions/Capita	-0.015 (0.028)	-0.009 (0.027)	-0.011 (0.029)	-0.001 (0.028)	-0.011 (0.027)	-0.010 (0.031)
Green Party in Government	-0.110 (0.091)	-0.122 (0.088)	-0.081 (0.097)	-0.103 (0.090)	-0.099 (0.088)	-0.081 (0.098)
Green Party's Environmental Protection	0.006*** (0.002)	0.006*** (0.002)	0.005** (0.002)	0.006*** (0.002)	0.006*** (0.002)	0.005* (0.003)
Green Party's gross CIP (yearly mean)	1.031*** (0.341)	0.709** (0.353)	0.823** (0.336)	0.960*** (0.320)	1.035*** (0.338)	1.071*** (0.330)
Post-Fukushima	-0.126 (0.172)					
PM's CIP excl. Green Parties		-0.235** (0.111)				
PM Polls			-0.001 (0.007)			
PM Environmental Protection				-0.019 (0.019)		
Time to Election (Years)					0.006 (0.020)	
PM is Christian Dem.						-0.101 (0.184)
PM is Conservative						-0.234 (0.184)
PM is Liberal						-0.187 (0.208)
PM is Social Dem.						-0.150 (0.171)
Constant	1.685*** (0.334)	1.792*** (0.331)	1.614*** (0.363)	1.526*** (0.320)	1.628*** (0.333)	1.789*** (0.447)
Observations	176	176	153	176	176	176
No. of Countries	9	9	9	9	9	9
Country Fixed-Effects	✓	✓	✓	✓	✓	✓
Period Fixed-Effects	✓	✓	✓	✓	✓	✓
R <sup>2</sup>	0.878	0.880	0.882	0.879	0.878	0.880

*Note: OLS with country and 5-year period fixed-effects. Robust standard errors in parentheses. \* $p < 0.1$ ; \*\* $p < 0.05$ ; \*\*\* $p < 0.01$ .*

## References

- Abedi, Amir. 2004. *Anti-political establishment parties: A comparative analysis*. London and New York: Routledge.
- Bergman, Torbjörn. 1995. Constitutional rules and party goals in coalition formation: an analysis of winning minority governments in Sweden. PhD thesis Umeå universitet.
- Hanley, Seán and Allan Sikk. 2016. “Economy, corruption or floating voters? Explaining the breakthroughs of anti-establishment reform parties in eastern Europe.” *Party Politics* 22(4):522–533.
- Jennings, Will and Christopher Wlezien. 2016. “The timeline of elections: A comparative perspective.” *American Journal of Political Science* 60(1):219–233.
- Kayser, Mark A, Matthias Orłowski and Jochen Rehmert. forthcoming. “Coalition Inclusion Probabilities: A Party-Strategic Measure for Predicting Politics and Policy.” *Political Science Research and Methods* .
- Loomes, Gemma. 2012. *Party Strategies in Western Europe: Party Competition and Electoral Outcomes: Routledge Advances in European Politics*. Taylor & Francis.
- Martin, Lanny W. and Randolph T. Stevenson. 2001. “Government Formation in Parliamentary Democracies.” *American Journal of Political Science* 45(1):33–50.
- Martin, Lanny W. and Randolph T. Stevenson. 2010. “The Conditional Impact of Incumbency on Government Formation.” *American Political Science Review* 104(03):503–518.
- Seki, Katsunori and Laron K Williams. 2014. “Updating the Party Government Data Set.” *Electoral Studies* 34:270–279.
- Tavits, Margit. 2008. “The role of parties’ past behavior in coalition formation.” *American Political Science Review* 102(04):495–507.
- Woldendorp, Jaap J, Hans Keman and Ian Budge. 2013. *Party government in 48 democracies (1945–1998): Composition—duration—personnel*. Springer Science & Business Media.