Coalition Prospects and Policy Change: an Application to the Environment*

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Abstract

In most developed democracies, parties adjust their positions to polls and public opinion. Yet, in a coalition government, the policy that emerges is often the outcome of negotiations between governing parties. We argue that the credibility of exit threats by current coalition members and the importance of outside parties for the formation of potential alternative coalitions both matter for policy adoption. Building on a new dataset measuring the expected coalition inclusion probabilities of parties in parliamentary democracies, we estimate the effect of coalition prospects on an important policy outcome – environmental policy stringency – in nine European countries between 1990 and 2012. Our findings demonstrate that only polling shifts that alter coalition probabilities affect outcomes. Changes in the coalition inclusion probability of green parties – regardless of whether they are in government – predict changes in the environmental policy stringency of sitting governments. Political polls, in contrast, do not. (149 words)

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1 Introduction

Policy-making is a complex process with numerous players, incentives and institutions that make parsimonious explanations, let alone predictions, difficult. Scholars have sought to understand it using approaches as varied as culture (Lodge, Wegrich and McElroy, 2010), election incentives (Abou-Chadi and Immergut, 2014), punctuated equilibrium (Baumgartner et al., 2009) veto points (Immergut, 1990) and veto players (Tsebelis, 2002). We argue here that a novel measure of parties' policy-making incentives developed by (Kayser, Orlowski and Rehmert, 2019) – *coalition inclusion probabilities* (CIP) – offers an especially promising means of explaining and predicting policy change and we present the first rigorous test of this measure on an important policy outcome – environmental policy stringency.

Given that parties are the key policy actors in most developed democracies, their incentives should be central to predicting policy. Parties may have multiple incentives to espouse a policy – it may attract voters or motivate their base, for example – but for parties that are not anti-system or purely protest oriented, inclusion in government is also an important goal. Both matter. Holding office offers benefits in the form of ego-rents and perks but it also offers direct access to the levers of policy making. Thus, for both office- and policy-seeking purposes, the prospect of joining government is included in most parties' objective function. This matters for policy-making in two ways.

For governing parties negotiating within a coalition over policy, a credible threat of leaving government greatly enhances bargaining leverage and exit threats are more credible when the given coalition member has a high probability of inclusion in an alternative governing coalition. For opposition parties, their likelihood of being needed for the formation of possible future government can also influence policy as potential partners in the current government shift policy to make themselves ideologically compatible with the potential future partner. Thus, *coalition inclusion probabilities* not only influence which

parties are able to push through their preferred policies within the government but they also affect the selection of those preferred policies in the first place.

We test the effect of coalition prospects on a policy variable, environmental policy stringency, that is both pragmatic and substantively important. Pragmatically, environmental policy stringency is strongly associated with environmental (green) parties, which saves us the step of associating parties with policy preferences. Substantively, climate change is undeniably one of the largest challenges of our time. A warming of 2 °C – the targeted limit on temperature change agreed to in the 2015 Paris Climate Agreement – compared to a milder increase of 1.5 °C, is predicted to expose 1.5 billion additional people to deadly heat extremes and hundreds of millions to climate influenced diseases such as malaria (Intergovernmental Panel on Climate Change, 2018). Entire ecosystems and the species that depend on them are threatened[1] and the date by which we will reach a warming of 2 °C is likely to occur much sooner than the IPCC predicts (Xu, Ramanathan and Victor, 2018).

Drawing on a detailed and cross-nationally comparable dataset on environmental policy stringency compiled by the OECD (Botta and Kozluk, 2014), we demonstrate in a sample of nine European parliamentary democracies between 1990-2012 that shifts in the coalition inclusion probabilities of environmental (green) parties strongly predict environmental policy change. Equally interestingly, polling and environmental public opinion do not. Polls and public opinion may motivate parties to shift their policy positions but they most often do not shift their bargaining leverage, leaving the coalition government's policy unchanged. This result suggests an important addendum to theories of government responsiveness (e.g., Stimson, MacKuen and Erikson, 1995; Wlezien, 1995) when applied in the context of coalition governments. Polls and public opinion matter most for environmental policy shifts when they increase the coalition negotiating leverage of green parties.

[1]For an assessment of the magnitude of the problem, see Intergovernmental Panel on Climate Change (2019).

2 Previous literature

This manuscript speaks to and builds on two separate literatures: environmental policy-making, in particular, and coalition bargaining over policy, in general. Research on why individual governments choose stricter or more lenient environmental policies has been developing quickly both on the international and domestic levels of analysis. Scholars studying international organizations and cooperation have done highly visible work in political science on such topics as mapping out the global regime complex seeking to govern climate change (Keohane and Victor, 2011) and linking variation in international climate cooperation to public support for climate agreements (e.g., Bechtel and Scheve, 2013). But even in the context of international influences, domestic-level actors play a critical role in national environmental policy-making (Knill, Debus and Heichel, 2010; Roger, Hale and Andonova, 2017). It is on this level that we focus.

Previous systematic work on the domestic political determinants of environmental policy that extends beyond specific case studies or narrow regulations focuses primarily on the influence of lobbying, institutions, election incentives and public opinion. The interest group and lobbying literature has sometimes employed environmental policy as an application to demonstrate more general interest group dynamics. Building on a Grossman and Helpman (1994) framework, for example, Aidt (1998) makes the important theoretical point that interest groups will lobby for or against environmental policies because of the distributional implications of both their financial and environmental costs, with the result that some externalities are internalized. Empirically, scholars have found evidence both in the United States (Cooper, Kim and Urpelainen, 2018) and internationally (Fredriksson et al., 2005) that environmental lobby groups influence policy outputs.

Institutions, of course, also structure equilibria (Ostrom, 1990) and have played a prominent role in the literature. Scruggs (2003) did some early and visible work in this area associating better environmental outcomes with 'neo-corporatist' institutions and the

field has expanded rapidly in recent years, especially, but not exclusively, in environmental policy journals, as best summarized by Dasgupta and De Cian (2018).

Where this manuscript differs is in its explicit focus on (a) the policy-making process by its main actors, parties, and (b) their policy-making leverage in parliamentary governments. Other research has focused on parties (e.g., Neumayer, 2003; List and Sturm, 2006; Knill, Debus and Heichel, 2010) and on shifts in public opinion that can influence the position of parties (e.g., Kim and Urpelainen, 2018) but has neglected the policy bargaining that determines which party's preference is adopted in a coalition government. Previous research on the role of parties and public opinion rests on a key assumption – that shifts in parties' policy preferences map directly onto shifts in policy – and neglects the fact that policies are often the outcome of bargaining and forward-looking positioning by strategic parties with varying degrees of leverage (e.g., Lupia and Strøm, 1995; Laver and Shepsle, 1996; Laver and Schofield, 1998).

Recently, Kayser, Orlowski and Rehmert (2019) offered a solution to this problem. Combining a large dataset of party polling data with a coalition formation model, they predicted the expected probability of inclusion in government, were a government to be formed at that time, for each party in most developed parliamentary democracies over multiple decades.[2] Because these coalition inclusion probabilities can also be calculated as a party's probability of inclusion in government *excluding* any other party, they can also pick up strategic calculations vis-a-vis specific other parties.[3] For example, a junior party in a coalition government that has a high probability of inclusion in an alternative government excluding the current PM party would likely have a lot of leverage over policy in the current government because of its credible exit threat.

[2]The overlap with the environmental policy stringency data yields the current nine-country sample.

[3]Of course, parties' objectives are not limited to entering government. They care about the allocation of portfolios and, specifically, which portfolios they receive. A rich literature examines these questions (e.g., Bäck, Debus and Dumont, 2011; Ecker, Meyer and Müller, 2015) but because of its complexity remains beyond the scope of the CIP measure and the application here. Moreover, as coalition inclusion probabilities translate most directly into bargaining leverage – one objective of which is favorable portfolio allocation – it is analytically advantageous not to extend CIP further to capture concepts that it should predict.

3 Why CIPs predict policy (and polls do not)

Central to our theoretical argument is the bargaining (policy) leverage of parties, that changes not only with each election but also varies between them. Theories of agenda setting power in coalitions differ in the degree to which policy influence – whether the ability to include cabinet members' preferred policies in joint legislative proposals of the cabinet or the frequency in which cabinet members can propose individual policies – vary between elections. Influenced by Gamson's Law (Gamson, 1961; Browne and Franklin, 1973) and intended to evaluate congruence between government policy outputs and the preferences of citizens (Huber and Powell, 1994), the simplest model assumes not only that cabinet seat allocations follow the parties' seat shares in parliament but, implicitly, that agenda setting power does as well (Powell, 2000). Thus, in this conception, policy influence does not change between elections. The election result and consequent cabinet composition should align with policy outcomes regardless of the time since the elections. Such a static view of coalition members' agenda setting power, however, conflicts with the idea of responsible and responsive government prominently found in the study of legislative responsiveness in the United States (Erikson, Wright and McIver, 1993; Stimson, MacKuen and Erikson, 1995; Wlezien, 1995) but not exclusively so (Calvo, 2007). While certainly not a theory of agenda setting power in coalitions – they assume a unitary executive – they present evidence that variation in public opinion over time influences the policy of government.

We build on a second model found in a formal-theoretical literature that conceives of governments as dynamic entities whose constituent parties bargain for influences over the life of a government (Lupia and Strøm, 1995). Cabinet members repeatedly bargain for cabinet seats in response to critical events – most often shifts in public opinion polls – which are treated as "common knowledge information about what would happen if parliament were dissolved and an election were held immediately" (Diermeier and Stevenson, 2000). Thus, changes in public support for specific parties alter parties' bar-

gaining weights in negotiations because they influence the credibility of parties' threats to form an alternative government via replacement or parliamentary dissolution (Becher and Christiansen, 2015).

If cabinet members do indeed bargain for seats between elections in response to shifts in their polling, it poses a puzzle because cabinet reshuffles that alter the proportion of seats between parties are rare. We resolve this contradiction between theory and empirics by noting that (a) agenda setting power can deviate from cabinet seat shares (Fortunato and Angelova, 2019) and (b) shifts in parties' polls, especially for smaller parties, map poorly onto their probability of being included in an alternative government – and, hence, the credibility of their exit threat that drives bargaining power (Kayser, Orlowski and Rehmert, 2019). Parties may repeatedly bargain in response to changing events but we argue that they bargain over policy priorities rather than seats.

In essence, we assume that politicians monitor political polling and even if polls are not perfectly predictive of elections, politicians, in absence of other information, treat them as if they were. Politicians are aware of past coalition patterns, the ideological compatibility of parties, the likely seat shares of parties given current polling, and other factors that make particular coalitions more or less likely. When parties' standing in the polls shift, politicians can reasonably infer the implications for potential coalitions. Thus, polling changes translate into bargaining party leverage as various parties in and out of government become more or less viable as future coalition partners. The more a party is needed as a coalition partner, the more influence it will have on policy. If it is in a governing coalition, it can more credibly threaten to exit if its policy preferences are not met when it could join an alternative governing coalition. If it is out of government, parties that would need to form a coalition with it may need to court it by shifting policy in its direction.

More precisely, what may matter most is the specific probability of inclusion in a governing coalition that excludes a particular other party. Junior coalition members wishing to influence the lead party in a coalition, usually that of the prime minister, will

have most leverage when they can credibly threaten to exit the coalition to join another one that excludes the party of the prime minister. Similarly, as we will examine below, a prime minister might gauge her need for a particular smaller party such as the Greens by calculating her probability of forming a new government without it. In general, parties that need other parties the least in order to form a government, have the most negotiating power.

So, why do not parties simply respond to polling swings? We argue that there is nothing to stop them from doing so. However, policy changes in coalition governments, in contrast to party positions, often require negotiations, the outcome of which depends on parties' leverage. Expecting policy in coalition governments to shift directly in response to changes in party polls or, for that matter, public opinion, is tantamount to neglecting the role of coalition negotiations in policy making. Some theories, however, predict change in governmental *policy*, not just party positions, in response to shifts in polls (e.g., Abou-Chadi and Immergut, 2014; Kayser and Lindstädt, 2015) or public opinion (e.g., Soroka and Wlezien, 2010). In circumstances such as single-party government, a dominant coalition party or all-party consensus, shifts in polls and public opinion should indeed be predictive of policy. In most coalition governments in which parties' preferences differ, it is policy leverage, as proxied by CIPs, that determines which policy emerges.

This distinction between *coalition inclusion probabilities* and vote shares (or polls or public opinion) matters because increases in vote shares and even in seat shares, do not map monotonically onto policy leverage. When a party shifts in seat shares, for example, from the third largest to the second largest, it may be viewed as the most likely challenger to the largest party for a seat plurality (and the prime ministership) and be preferred less as a coalition partner by the largest party. In practice, the correlation between poll percentage (similar to expected seat share in PR systems) and coalition inclusion probability actually varies by the type of party. For the largest party in each system, which most often is the formateur and, if successful, holds the prime ministership, polling percentage and CIP correlate reasonably well; for smaller parties, the correlation

is weak or absent. In essence, we argue that polls should not predict policy well, so long as parties other than the largest matter.

3.1 An illustration: the German nuclear phase-out

Following the 2011 Fukushima nuclear disaster in Japan, only one country in the world decided to phase out nuclear power generation. Surprisingly it was not Japan, but Germany. We argue that the reason for this and, indeed, for policy shifts in many domains, stems from the coalition politics of forward-looking strategic parties. In doing so, we deviate from previous explanations that tended to focus more exclusively on public opinion, interest groups and political movements (e.g., Jahn and Korolczuk, 2012; Schreurs, 2012; Bernardi et al., 2018).

The September 2009 German federal election resulted in a narrow minimum-winning governing coalition of Chancellor Angela Merkel's Christian Democrats (CDU/CSU) and the liberal Free Democratic Party (FDP). Following their entry into government, however, the Free Democrats' popularity began to erode under a series of policy mis-steps and personnel changes. By the end of 2010, the FDP was perilously close to the five percent national vote-share threshold for entry into the Germany parliament, having dropped nearly ten percentage points in the polls since the election. The Green party, in contrast, enjoyed a nearly inverse fortune over this period steadily gaining in the polls while the CDU/CSU's polling remained mostly steady.

Figure 1 plots the fortunes of the CDU/CSU over time as expressed by its polling average (top panel) and coalition inclusion probability (bottom panel). One sees that the CDU/CSU's polling average does not reflect the changing coalition context as the FDP's popularity wanes and that of a potential future coalition partner, the Greens, waxes. The coalition inclusion probabilities, however, do capture the changing strategic context, showing an approximately ten-point drop in the CDU/CSU's probability of being included in a new government if it were to form without the Greens (bottom panel). The

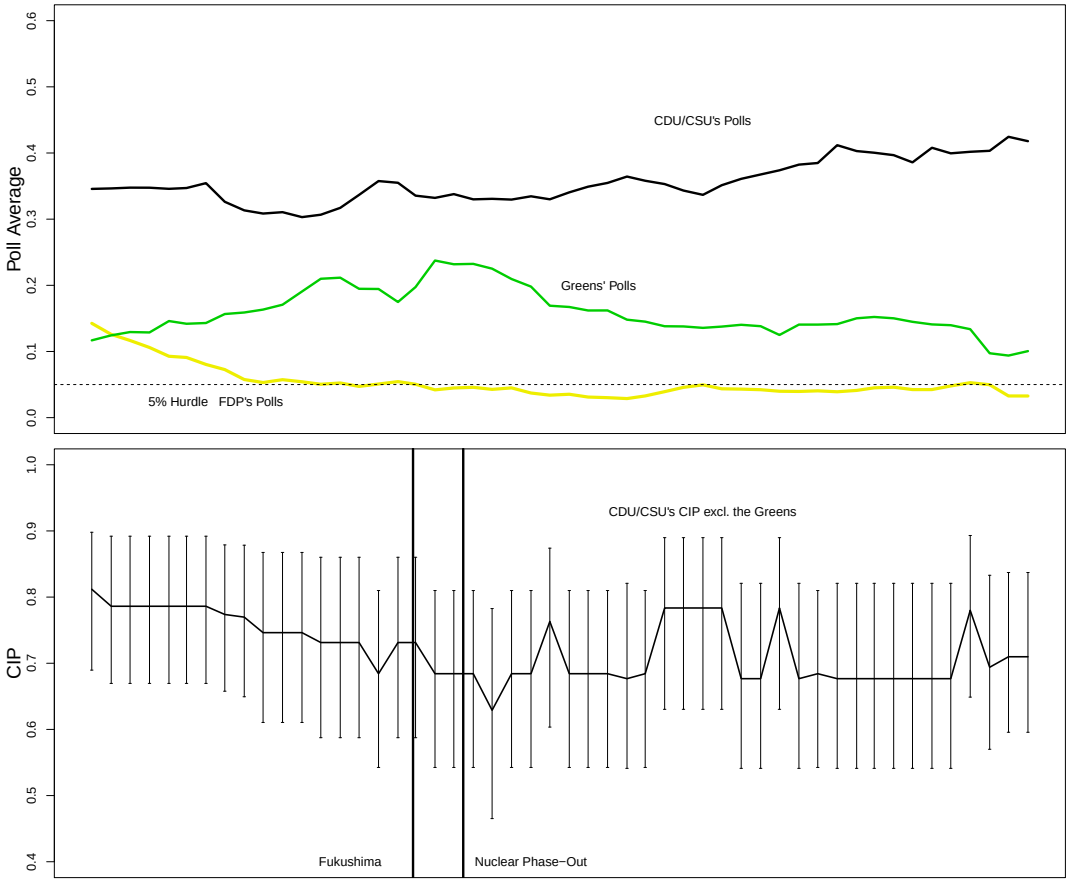


Figure 1: *Polling and CIPs over the Merkel II government, 2009 to 2013, for the CDU/CSU and two potential future junior coalition partners. The two vertical lines in the lower panel mark the dates of the Fukushima nuclear disaster and Merkel's announcement of the German nuclear phase-out.*

Greens were clearly becoming an important potential coalition partner for the CDU/CSU but policy differences, especially on environmental policy and the Green's demand for an immediate end to nuclear power generation, posed a barrier.

By March 2011 when the Fukushima nuclear disaster struck Japan – shown by the first vertical bar in the lower panel of Figure 1 – the CDU/CSU were likely already contemplating ways in which they could make themselves more compatible as future coalition partner for the Greens. Under pressure from the energy industry, they had agreed in the fall of 2010 to an extension of reactor service lifespans in the fall of 2010. On June 6, 2011, approximately three months after Fukushima, Angela Merkel seized the opportunity and announced (the second vertical line in Figure 1) that Germany would immediately shut down 8 reactors and complete the stepwise decommissioning of all remaining reactors by 2022 – accelerating the phase-out by roughly ten years. From the perspective of coalition politics, Merkel's reversal of her previous position on nuclear power and her decision to shut down atomic reactors appears quite calculated.

By changing policy, she both improved the odds of the CDU/CSU being able to form another governing coalition (with the Greens) in the future and increased her party's current bargaining leverage over the its junior coalition partner. The FDP, which opposed the accelerated nuclear phase-out, could not credibly threaten to exit the government without the risk of facing new elections when they were perilously weak in the polls; nor could they credibly threaten to refuse forming future governments with the CDU/CSU given their ideological distance from the the Social Democrats (SPD), the other large party at the time. While at the beginning of the term, the FDP had managed to push through a number of its policy priorities (such as the lowering of the hotel tax); for the remainder of the term, the CDU/CSU dominated policy.

4 Empirical overview

We, of course, are interested in a more general phenomenon than the political decision for the German nuclear phase-out. Does the pattern witnessed in Germany generalize to environmental policy-making in other settings? Does the importance of green parties as potential coalition partners influence environmental policy in a larger sample of countries and time periods? Will coalition inclusion probabilities enable the estimation of parties' policy influence in general?

The scope of application is at least partly governed by our ability to assign policy preferences and their intensity to parties. This is a non-trivial task. A party with high bargaining leverage will only negotiate to shift policy if its policy preference is strong and deviates from that of the other coalition members. Policy preferences and intensities can be estimated with manifesto data (Volkens et al., 2015; Merz, Regel and Lewandowski, 2016) or other data (Bakker et al., 2015) that estimate party policy positions, but most approaches are subject to trade-offs and methodological debate (Dinas and Gemenis, 2010). Estimating policy influence across multiple policies is even more complex.

We circumvent the challenge of estimating party policy positions and preference intensities by focusing on the influence of a single party family (green / environmental parties) on a single issue (environmental policy) on which we can plausibly assume it has the most extreme position in the legislature with maximum intensity. This simple and direct design, applied to a single, albeit important issue, thus allows us to adjudicate between the static proportional model of policy influence (e.g., Huber and Powell, 1994; Powell, 2000; Golder and Lloyd, 2014) and the party bargaining model (Lupia and Strøm, 1995). Moreover, the CIPs permit the first dynamic empirical test of the party bargaining model, as called for by Diermeier and Stevenson (2000), albeit with respect to agenda setting rather than seat reallocations.

No less importantly, our research design explicitly tests both the effect of polls, as foreseen in the party bargaining model, as well as coalition inclusion probabilities – effectively

testing the extent of parties' strategic thinking. Will simple changes in poll standings be sufficient for some parties to lodge policy agenda demands and other parties to accede to them or will parties respond only to those changes that influence coalition inclusion probabilities? The latter implies informed and strategic parties that anticipate other parties' responses to shifts in polling, given seat shares, ideological positions, coalition history and other variables that predict coalition formation (Kayser, Orlowski and Rehmert, 2019).

To support generalizability across countries, we assembled a time-series cross-national dataset of developed parliamentary democracies with a proportional electoral system, limited primarily by the availability of data on environmental policy stringency and the presence of a green party in parliament. Nine developed parliamentary democracies met these requirements.[4] The data are measured at an annual frequency between the years of 1990 and the end of the environmental time-series, 2012.

Given that the strategic calculation of parties is captured in the CIP measure, our expectations are straight-forward. Parties with greater CIP should be more able to push through their preferred policies, whether sincere or strategic. Because the use of green parties and environmental policy obviates the need for interactions with parties' policy positions and preference intensities, a simple linear model that predicts variation in the environmental policy stringency of a given government as a function of the CIP of environmental parties is possible. Moreover, because a shift in environmental policy stringency depends on both the green party's potential supply of coalition support (CIP) and the largest governing party's demand for coalition support (CIP net of the green party), we will also interact green CIP and the prime minister party's net CIP.

4.1 Coalition inclusion probabilities

To measure the dynamic bargaining leverage of parties, one needs to model their evolving coalition options and their dependence on other parties to enter government. A novel mea-

[4]The countries are Austria, Denmark, Finland, Germany, Ireland, Italy, Netherlands, Portugal, and Sweden.

sure of parties' bargaining leverage developed by Kayser, Orlowski and Rehmert (2019) and employed here does precisely this by estimating parties' *coalition inclusion probabilities* (CIPs) – their time-varying probability of entering government if an election were to be held at that moment and polls were predictive of election results. To estimate these CIPs, they first estimated, using coalition and election data from 20 developed parliamentary democracies, a random-coefficient conditional logit model of coalition formation optimized for out-of-sample prediction.[5,6] Random coefficient conditional logit allows for a different coefficient in each unit (i.e., sample country), a feature that improves prediction.

In a second step, in order to estimate CIPs between elections, they treated political polls, aggregated to monthly averages, as the expected seat share that a party would expect were an election to take place at that moment – a reasonable assumption for countries with proportional electoral systems to which this procedure was restricted. They plugged these expected seat shares into an equation with the coefficients obtained from the random-coefficient model and obtained predicted probabilities for all potential coalitions that could theoretically form from all parties expected to gain representation in parliament. By taking the sum of all predicted probabilities of those potential coalitions in which a given party is included, one can obtain that specific party's coalition inclusion probability. Because they took monthly means of each party's polls, the CIPs are also on a monthly frequency. For the purposes of our upcoming regression models that employ environmental policy stringency at an annual frequency as the dependent variable, we aggregate their CIPs up to an annual frequency by taking yearly averages.[7]

[5]These countries are Australia, Austria, Belgium, Canada, Denmark, Finland, Germany, Greece, Iceland, Ireland, Italy, Japan, Luxembourg, Netherlands, New Zealand, Norway, Portugal, Spain, Sweden and the United Kingdom. As they are interested in the formation of any form of government, they also include single-party governments from the Westminster parliaments in this sample.

[6]The model, from which the estimated coalition inclusion probabilities are derived, contains predictors for the largest party in the coalition, whether the government is a minority cabinet, whether it is a minimal winning coalition, whether it contains the median party, whether it contains an anti-system party following the conceptualization by Abedi (2004), the ideological range in the coalition, the number of parties in the coalition, the status quo government and the shared cabinet history. For more details, refer to Kayser, Orlowski and Rehmert (2019).

[7]Our sample, after accounting for the overlap of our dependent variable, the CIP measure and the presence of green parties in parliament will include only nine countries but we nevertheless use the CIPs

While this measure captures individual parties' overall probability of entering government, it does not give us a specific party's bargaining leverage vis-à-vis another party. Because Kayser, Orlowski and Rehmert (2019) estimated the probability of every single possible coalition that could form in each country on a monthly frequency, we can create a second measure in which we sum up the predicted probabilities of all potential coalitions in which party A is included but a second party – party B – is not. This type of CIP allows us to estimate party's A specific leverage vis-à-vis party B – specifically, the probability that party A can form or be included in a government that excludes party B. We will refer to this version of CIP as "net CIP" and first version, capturing the overall probability of entering government, as "gross CIP."

As parties of the ecological/green party family are central in advancing environmentally-friendly policies, we employ green parties' gross CIP. We omit their net CIP excluding the PM party, however, because we are interested in their inclusion in government, most likely with the PM party.[8] That is, we wish to measure green parties' likelihood of entering government given contemporaneous polls, including the PM party. With larger coalition inclusion probabilities, we argue, comes greater policy influence irrespective of actual government participation, as green parties are able to play multiple potential partners against each other and other parties may find it beneficial to position themselves as credible future partners for green parties.

The policy influence of a green party, however, is not independent of the standing of other parties. Because of this, we also include the probability of the current PM party entering a government that excludes all green parties in the polity. That is, we measure how independent PM parties are from green parties in forming alternative governments. When PM parties have a hard time forming governments excluding green parties, they are expected to court green parties by championing green policies. If they can easily form a government without a green party, they do not.

estimated by Kayser, Orwlowski and Rehmert on 20 countries, given the advantages of a larger number of units for random coefficient estimation.

[8]No prime minister party in our subsequent samples is a green party.

4.2 Environmental policy stringency

To gauge the impact of green parties' bargaining leverage on environmental policies we rely on the *Environmental Policy Stringency* (EPS) measure by the OECD on nine West European countries with proportional electoral systems and parliamentary presence of at least one green party for most of the 1990s and the 2000s.[9] Our data, thus, consist of country-years for these nine countries from 1990 to 2012. To match the yearly EPS data we aggregate the monthly CIP data to obtain yearly means.

The EPS variable is a composite measure based on multiple environmental policies, with a focus on air and climate policies. The indicator is focuses on environmentally-related taxes, support for renewables and energy efficiency (incl. feed-in-tariffs and R&D expenditures), and performance standards. Higher values indicate greater stringency, in the sense that greater prices are allocated to environmental damages (Botta and Kozluk, 2014). It is, to our knowledge, the only cross-national environmental policy data for which time-series are available.[10] Figure 2 shows the development of environmental policy stringency over time for the nine parliamentary democracies in our sample. In all countries we observe a clear trend over time towards more stringent environmental policies, though with some pushbacks in some countries. We will account for this in our fixed effects models below by adding a time trend.

[9] These countries are Austria, Denmark, Finland, Germany, Ireland, Italy, Netherlands, Portugal, and Sweden. The Portuguese green party *Ecology Party – Greens* (Partido Ecologista – Os Verdes, PEV) has for the most part been in an electoral alliance with the *Portuguese Communist Party* (Partido Comunista Português, PCP). We therefore count the whole alliance as one Green party. Excluding Portugal from the analyses does not essentially alter the results but decreases statistical efficiency.

[10] See https://stats.oecd.org/Index.aspx?DataSetCode=EPS.

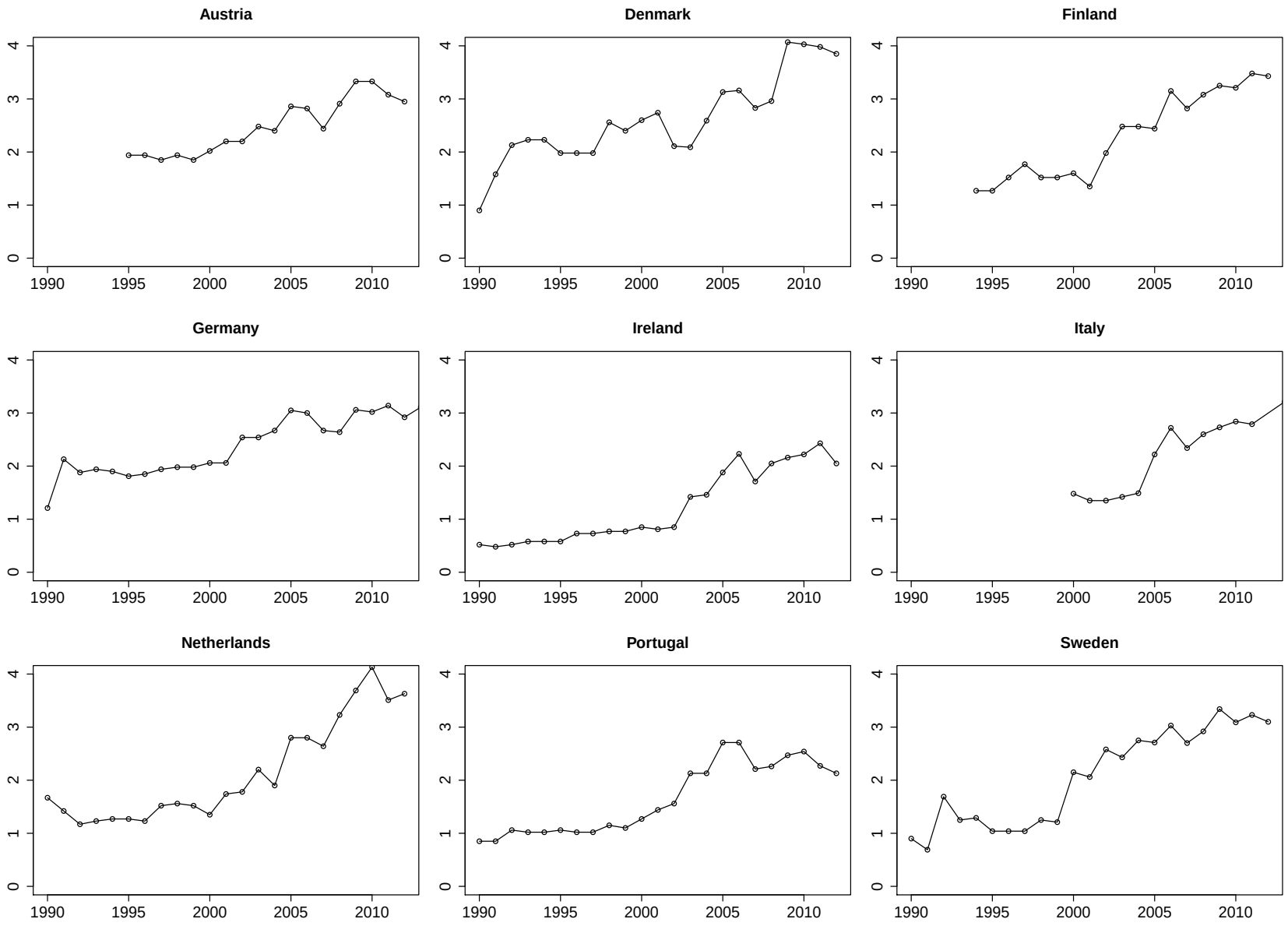


Figure 2: Environmental Policy Stringency in 9 Parliamentary Democracies, 1990-2012

Moverover, all countries see a surge around or shortly after the millenium, which might partly be a consequence of the signing (end of the 1990s) and ratification (May 2002 for all countries in our sample) of the Kyoto protocol. Below we elaborate on our estimation strategy given the clear time trend in the data.

4.3 Control variables

Next to our CIP measure, we include in our models a number of control variables that capture economic constraints and environmental pressure affecting the enactment of green policies, such as GDP growth (calculated as yearly averages of quarterly growth rates) and greenhouse gas emissions. Greenhouse gas emissions (energy use, agricultural and economic activity) are measured per capita and exclude emissions or removals from land-use and forestry. Both variables are provided by the OECD. For our political control variables we draw on the ParlGov (Döring and Manow, 2016) and the Manifesto Project (Volkens et al., 2015) data sources. We control for the cabinet structure (i.e. minority cabinets) and whether green parties are part of the government, and the cabinet's as well as green parties's environmental outlook, measured by item p501 *Environmental Protection: Positive* of the Manifesto Project.[11] We control for these to rule out that intrinsic motivations of PM parties to enact greener policies is what might drive our results. Finally, we control for those years for which the Kyoto protocol has been signed by any given state, as we expect that the negotiating and signing of the Kyoto protocol lead to higher environmental awareness of political actors.

Table 1 gives an overview of the variables and their distributions. Interestingly, the Danish green party – the Socialist Peoples Party (Socialistisk Folkeparti, SF) – scores a 0 on environmental protection in their manifesto for the 2001 election. In the election before and the one after, the party scores an above-average 22 and 20, respectively. Due to data limitations on political polls and, hence, our CIP measure, we have 175 country-year observations for analysis.

[11] See `http://www.parlgov.org/`; and `https://manifesto-project.wzb.eu/`.

	N	Mean	St. Dev.	Min	Max
Environmental Policy Stringency	175	2.117	0.827	0.580	4.130
Minority Cabinet	175	0.349	0.478	0	1
Kyoto Protocol	175	0.714	0.453	0	1
Quarterly GDP Growth (yearly mean)	175	0.560	0.752	−2.298	3.610
Cabinet's Mean Environmental Protection	175	5.808	3.204	0.000	15.900
Total Greenhouse Gas Emissions/Capita	175	11.858	3.136	5.970	18.050
Green Party in Government	175	0.160	0.368	0	1
Green Party's Environmental Protection	175	17.354	13.098	0.000	53.488
Green Party's gross CIP (yearly mean)	175	0.166	0.086	0.025	0.357
PM Party's net CIP excl. Green Part(ies) (yr. mean)	175	0.615	0.233	0.029	0.925
Green Party's Poll (yearly mean)	175	8.263	3.403	1.900	19.995

Data sources: OECD, Manifesto Project, ParlGov

Table 1: *Descriptive Statistics*

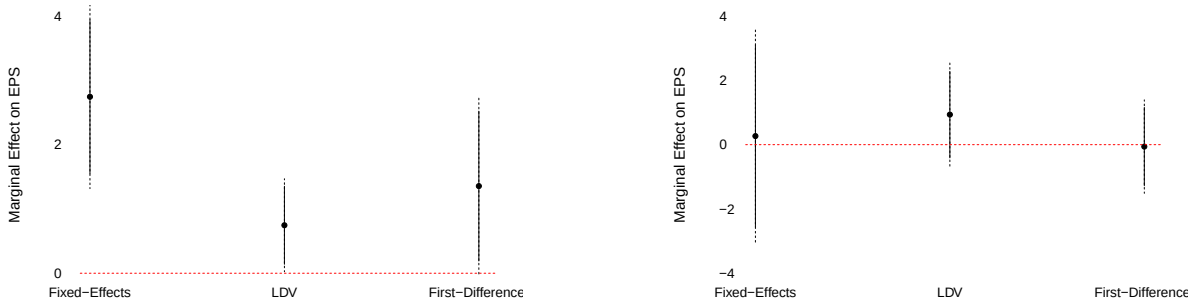
5 Analysis

In a first step, we show the value-added of our CIP measure compared to raw polling data. Table 2 presents three models for each of the two variables. We choose three different model specifications to account for the intricacies of time-series cross-sectional data in different ways. The first models include country fixed-effects to estimate within-country effects (FE). The second model employs lagged dependent variable along side a time trend variable (LDV), to account for persistence in time-series data. The third model estimates the first-difference, effectively looking at changes over time within countries and eliminating time trends and serial-correlation (but also a lot of variation). All model specifications are presented with standard errors clustered by country. The political polls variable has been rescaled to the unit interval to make coefficients more comparable.

As immediately visible, the CIP variable – but not the polling variable – exhibits a strong and significant effect on environmental policy stringency. As green parties' probabilities of entering a government increase, the more stringent green policies become. The fixed-effect and lagged dependent variable models, however, yield notable differences in the estimated size of the effect of Green Party CIP. As the bias from these two types of models usually run in opposite directions, it is reasonable to consider them upper and lower bounds for the unbiased effect (Wooldridge, 2002). Figure 3 plots the point

estimates and confidence bounds of a one-unit increase from the three types of models for both the CIP and Poll variables (the short-term effect in the case of the LDV models). The CIP coefficients display a strong positive effect while the effects of the polling predictors, in contrast, are not systematically different from zero. Coalition inclusion probabilities predict green policies but raw polling data are unable to do so.

Table A8 in the Appendix presents a number of additional models that rule out alternative explanations (e.g., is public opinion a confounder for the relationship between CIP and policy?[12]), explore the sensitivity of the CIP effects to model specifications, vary the type of standard errors employed, and demonstrate that the influence of Green Parties' CIP increases as elections draw nearer. Moreover, the table also presents additional evidence using an interaction that government participation is in fact not relevant for the Green CIP effects and that external shocks, such as the Fukushima disaster, did not alter the influence of Green Party's CIP. In all models, the effect of Green Party's gross CIP on environmental policy stringency remains significant. Table A9 similarly demonstrates the robustness of the prime minister party's net CIP.



(a) CIP (gross) (b) Polls

Figure 3: *Coefficient Plots for Green Party's CIP*

We argue that compared to polls and – given their high correlation with polls and vote share in proportional electoral systems – seat shares, the CIP measure is superior in at least three ways: (1) it is time-varying between elections, which sets it apart from

[12]We measure public opinion by an item in the International Social Survey Programme that ask how worried respondents are about the environment. See http://w.issp.org/menu-top/home/.

	Environmental Policy Stringency					
	CIP (gross)			Polls		
	(FE)	(LDV)	(FD)	(FE)	(LDV)	(FD)
EPS_{t-1}		0.792***			0.787***	
		(0.043)			(0.048)	
Minority Cabinet	−0.122	0.056	0.200***	−0.062	0.061	0.209***
	(0.106)	(0.053)	(0.062)	(0.139)	(0.054)	(0.070)
Kyoto Protocol	0.741***	0.039	0.127*	0.790***	0.040	0.119
	(0.087)	(0.061)	(0.077)	(0.088)	(0.061)	(0.076)
GDP Growth	−0.068	−0.104***	−0.002	−0.093*	−0.115***	−0.010
	(0.047)	(0.031)	(0.016)	(0.053)	(0.033)	(0.014)
Cabinet's Mean Environmental Protection	0.010	−0.005	−0.016	0.011	−0.003	−0.015
	(0.013)	(0.009)	(0.011)	(0.014)	(0.009)	(0.012)
Total Greenhouse Gas Emissions/Capita	−0.244***	0.010	−0.031	−0.257***	0.012	−0.029
	(0.033)	(0.009)	(0.034)	(0.035)	(0.008)	(0.034)
Green Party in Government	−0.352***	−0.148**	−0.209***	−0.163	−0.065	−0.142
	(0.131)	(0.068)	(0.075)	(0.127)	(0.060)	(0.087)
Green Party's Environmental Protection	0.002	0.002	0.008***	0.002	0.001	0.008***
	(0.003)	(0.002)	(0.002)	(0.004)	(0.002)	(0.002)
Green Party's gross CIP	2.745***	0.746**	1.356*			
	(0.729)	(0.369)	(0.709)			
Green Party's Polls				0.267	0.936	−0.060
				(1.722)	(0.818)	(0.742)
Intercept	4.132***	−34.955**		4.438***	−37.105**	
	(0.389)	(14.396)		(0.459)	(14.597)	
Observations	175	166	166	175	166	166
Number of Countries	9	9	9	9	9	9
Fixed-Effects	Yes	No	No	Yes	No	No
Lagged Dependent Vairable	No	Yes	No	No	Yes	No
Trend	No	Yes	No	No	Yes	No
R^2	0.695	0.885	0.072	0.669	0.883	0.059
Note:						*p<0.1; **p<0.05; ***p<0.01

Table 2: *Regressions of EPS on CIP and Polls*

static seat shares but not from polling data; (2) it takes into account the coalition calculus of parties, which makes it superior to seat shares and polling data – for instance, many second-largest parties in parliamentary systems have poorer prospects of government participation than do the third-largest parties; and (3) it allows for calculation of specific coalition inclusion probabilities – such as a party's probability of entering governments that exclude green parties – depending on the research question. This is neither possible with seat shares nor with polling data. In fact, in this case of green parties our (gross) CIP measure correlates with green parties' polls to -0.035 , i.e. not at all.

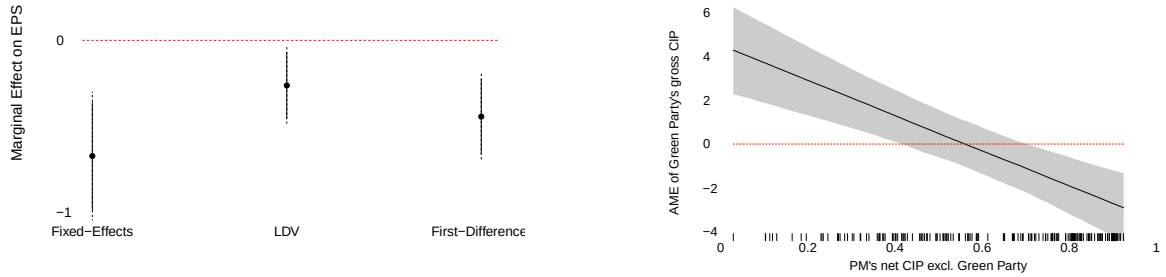
In the following section, we investigate how the independence of PM parties from green parties affects environmental policy stringency.

5.1 Prime Minister Parties in need of Green helpers?

Green party CIP has shown a strong positive effect on environmental policy stringency, but what role does the PM party's prospective dependence on a green coalition partner play? To investigate this, we calculate the prime minister party's probability of entering a government that excludes all green parties. Higher values of this PM's net CIP measure indicate greater independence from green parties and, hence, less political need to court green parties by, for instance, engaging in green policies.

Table 3 shows five model specifications that are, besides replacing the CIP variable and adding two models that include interaction effects, identical to the ones before. Again, we have three different specifications to test the effect of our CIP measure when accounting for time trends and persistency in the data. As expected, when PM parties become more independent from green parties in terms of forming a government, we tend to see less green policies. Figure 4a shows the marginal effects of PM parties CIP net of green parties for all three models.

Theoretically, we would expect the effect of green party CIP to be conditioned on how dependent the PM party is on the green party in order to form a potential government.



(a) PM Party's Net CIP

(b) Interaction between PM Party's and Green Party's CIP

Figure 4: *Effects of PM Party's CIP*

Higher green party probabilities of being included in government – they have a maximum of .36 in our sample – only matter when the PM's party is likely to need them to form a potential coalition. Exploring potential conditional effects between PM parties and green parties coalition fortunes, we run two separate models with an interaction between the PM party's net CIP excluding green parties and the green party's gross CIP. Both models are estimated as country fixed-effects models with standard errors clustered by countries (FE II and FE III in Table 3). In the second model (FE III), we have included a trend variable accounting for the years between 1990 and 2012 to time trends in the data. Based on the estimation from the second interaction model (FE III), Figure 4b plots the marginal effect of green party's gross CIP on environmental policy stringency conditional on the PM party's likelihood of being able to form a coalition excluding any green party in the polity. When green parties have a high probability of entering government and the PM party cannot exclude the green party from that government, we become significantly more likely to see green policy output. However, if the PM party can form a government that excludes the green party, the latter's probability of strengthening green policies evaporates.

But how do green parties' probabilities of government inclusion translate into greener policy enacted by a cabinet they are not necessarily part of? Two explanations are possible: (1) cabinet parties attempt to steal policy ideas from ascendant green parties in order

	Environmental Policy Stringency				
	(FE)	(LDV)	(FD)	(FE II)	(FE III)
EPS_{t-1}		0.789^{***}			
		(0.043)			
Minority Cabinet	-0.063	0.023	0.238^{***}	-0.131	-0.032
	(0.115)	(0.054)	(0.078)	(0.095)	(0.061)
Kyoto Protocol	0.791^{***}	0.057	0.148^{*}	0.772^{***}	-0.209^{***}
	(0.084)	(0.061)	(0.083)	(0.086)	(0.069)
GDP Growth	-0.083^{*}	-0.106^{***}	-0.011	-0.067	-0.006
	(0.049)	(0.031)	(0.015)	(0.048)	(0.031)
Cabinet's Mean Environmental Protection	0.003	-0.007	-0.022	0.011	0.028^{***}
	(0.013)	(0.009)	(0.015)	(0.013)	(0.010)
Total Greenhouse Gas Emissions/Capita	-0.236^{***}	0.016^{*}	-0.028	-0.220^{***}	0.042
	(0.032)	(0.008)	(0.032)	(0.034)	(0.026)
Green Party in Government	-0.301^{**}	-0.125^{**}	-0.199^{***}	-0.413^{***}	-0.110
	(0.133)	(0.062)	(0.077)	(0.141)	(0.076)
Green Party's Environmental Protection	0.003	0.002	0.009^{***}	0.003	0.004^{**}
	(0.003)	(0.002)	(0.003)	(0.003)	(0.002)
PM Party's CIP net of Green parties (PM CIP)	-0.675^{***}	-0.263^{**}	-0.445^{***}	0.228	0.785^{***}
	(0.191)	(0.117)	(0.133)	(0.378)	(0.245)
Green Party's gross CIP (Green CIP)				4.278^{**}	4.496^{***}
				(1.700)	(1.040)
PM CIP × Green CIP				-4.422^{*}	-8.035^{***}
				(2.642)	(1.622)
Intercept	4.807^{***}	-34.421^{**}		3.809^{***}	-253.688^{***}
	(0.386)	(14.571)		(0.504)	(15.803)
Observations	175	166	166	175	175
Number of Countries	9	9	9	9	9
Fixed-Effects	Yes	No	No	Yes	Yes
Lagged Dependent Vairable	No	Yes	No	No	No
Trend	No	Yes	No	No	Yes
R^2	0.691	0.886	0.092	0.703	0.886
Note:					*p<0.1; **p<0.05; ***p<0.01

Table 3: *Prime Minister Parties' CIP and EPS*

to capture their electoral support (Meguid, 2008); (2) cabinet parties and, in particular, PM parties, perceive ascendant green parties as possible future coalition partners worth courting. To gain this support, cabinet parties might shift toward greener policies to make themselves more viable coalition partners for the green party. We are partial to the second explanation for two reasons. First, if cabinet parties are afraid of the increasing electoral popularity of green parties, we should see a significant effect of raw polling data on green policy output – but we do not. Second, the interaction effect suggests that PM parties cease caring about green policies if they do not need green parties – irrespective of the green party's standing! Additional models in the Appendix (seeA9) show that combining Green Party's polls and PM net CIP in the same model results in negative effects for both variables, though we would expect Green Party's polls to be positive if they drive PM party behavior. This leads us to conclude that the mechanism underlying this empirical pattern works through the prospective coalition concerns of PM parties, a finding barely detectable without our coalition inclusion probabilities measure. Of course, neither our findings on PM parties nor on Green Party's CIP necessarily establish a causal link between CIP and policy-output. There are many potential time-varying confounders for which we cannot directly account. Nonetheless, by employing a range of additional checks (e.g., controlling for public opinion) and more rigorous models (i.e., inclusion of time trends) we are confident to have ruled out obvious alternative explanations.

6 Conclusion

Considerable empirical research into the effects of events on policy in parliamentary democracies with multi-party governments neglects the two-step nature of the process. Parties, as in any system, are free to adopt and amend policy positions in response to events, polls and public opinion but policy changes that emerge from coalition governments are the outcome of bargaining among coalition members. Environmental policy is no exception. Employing a new cross-national time-series measure of party leverage

developed by Kayser, Orlowski and Rehmert (2019) – coalition inclusion probabilities – we demonstrate its utility in predicting environmental policy stringency in nine developed democracies. We find that bargaining leverage from credible coalition exit threats and calculations about future coalition compatibility play an important role in environmental policy making. While increases in polling numbers for green parties do not predict more environmentally friendly policies, an increase in green coalition inclusion probability does. Most interestingly, this effect obtains regardless of whether the green party is in government or not. This suggests that even when environmental parties are out of government, governing parties may court them as future coalition partners when their coalition inclusion probability is high, by removing policy obstacles such as incompatible environmental positions. Coalition politics is central to understanding environmental policy-making and measures of party-level incentives are central to understanding coalition politics.

Our results also bear relevance for understanding agenda setting power in coalition governments. They suggest that policy priorities are dynamic, emerging from repeated bargaining between parties for agenda setting power in response, not to all shifts in the polls, but primarily to those that change the probability of alternative coalitions forming. We thus validate the core idea of the Lupia and Strøm (1995) model of coalition bargaining – that parties use common knowledge about shifts in public support to repeatedly negotiate during the life of a cabinet – but also extend it by considering and finding that parties bargain over policy priorities, not just seats, and not in response to all polling shifts but to those that change their leverage.

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Online Appendix

A Appendix

	Environmental Policy Stringency		
	(FE)	(LDV)	(FD)
EPS_{t-1}		0.764^{***}	
		(0.048)	
Minority Cabinet	-0.123	0.066	0.199^{***}
	(0.106)	(0.053)	(0.064)
Kyoto Protocol	0.743^{***}	0.039	0.126
	(0.088)	(0.061)	(0.078)
GDP Growth	-0.068	-0.103^{***}	-0.003
	(0.048)	(0.030)	(0.016)
Cabinet's Mean Environmental Protection	0.010	-0.006	-0.015
	(0.013)	(0.009)	(0.011)
Total Greenhouse Gas Emissions/Capita	-0.244^{***}	0.004	-0.031
	(0.033)	(0.009)	(0.035)
Green Party in Government	-0.356^{**}	-0.141^{**}	-0.210^{***}
	(0.140)	(0.068)	(0.075)
Green Party's Environmental Protection	0.002	0.001	0.008^{***}
	(0.003)	(0.002)	(0.002)
Green Party's gross CIP	2.753^{***}	0.856^{**}	1.362^{**}
	(0.733)	(0.353)	(0.689)
Green Party's Polls	-0.203	1.283	-0.203
	(1.632)	(0.813)	(0.773)
Intercept	4.158^{***}	-35.520^{**}	
	(0.432)	(14.338)	
Observations	175	166	166
Number of Countries	9	9	9
Fixed-Effects	Yes	No	No
Lagged Dependent Vairable	No	Yes	No
Trend	No	Yes	No
R^2	0.695	0.888	0.073

Table A1: *Original Green Party CIP Models including CIP and Polls simultaneously. SE clustered by country. $^{*}p<0.1$; $^{**}p<0.05$; $^{***}p<0.01$*

	Environmental Policy Stringency		
	(FE)	(LDV)	(FD)
EPS_{t-1}		0.792^{***}	
		(0.047)	
Minority Cabinet	-0.122	0.056	0.200^{**}
	(0.123)	(0.051)	(0.101)
Kyoto Protocol	0.741^{***}	0.039	0.127
	(0.099)	(0.084)	(0.112)
GDP Growth	-0.068	-0.104^{***}	-0.002
	(0.060)	(0.034)	(0.031)
Cabinet's Mean Environmental Protection	0.010	-0.005	-0.016
	(0.015)	(0.009)	(0.014)
Total Greenhouse Gas Emissions/Capita	-0.244^{***}	0.010	-0.031
	(0.039)	(0.009)	(0.038)
Green Party in Government	-0.352^{**}	-0.148^{**}	-0.209^{**}
	(0.140)	(0.073)	(0.102)
Green Party's Environmental Protection	0.002	0.002	0.008^{**}
	(0.004)	(0.002)	(0.004)
Green Party's gross CIP	2.745^{***}	0.746^{**}	1.356^{*}
	(0.746)	(0.346)	(0.711)
Intercept	4.132^{***}	-34.955^{**}	
	(0.454)	(17.574)	
Observations	175	166	166
Number of Countries	9	9	9
Fixed-Effects	Yes	No	No
Lagged Dependent Vairable	No	Yes	No
Trend	No	Yes	No
R^2	0.695	0.885	0.072

*p<0.1; **p<0.05; ***p<0.01

Table A2: *Original Green Party CIP Models without clustered Standard Errors*

	Environmental Policy Stringency				
	(FE)	(LDV)	(FD)	(FE II)	(FE III)
EPS_{t-1}		0.789***			
		(0.047)			
Minority Cabinet	−0.063	0.023	0.238**	−0.131	−0.032
	(0.123)	(0.052)	(0.100)	(0.124)	(0.077)
Kyoto Protocol	0.791***	0.057	0.148	0.772***	−0.209**
	(0.098)	(0.084)	(0.111)	(0.099)	(0.087)
GDP Growth	−0.083	−0.106***	−0.011	−0.067	−0.006
	(0.060)	(0.034)	(0.030)	(0.059)	(0.037)
Cabinet's Mean Environmental Protection	0.003	−0.007	−0.022	0.011	0.028***
	(0.015)	(0.009)	(0.014)	(0.015)	(0.009)
Total Greenhouse Gas Emissions/Capita	−0.236***	0.016*	−0.028	−0.220***	0.042
	(0.039)	(0.009)	(0.038)	(0.040)	(0.030)
Green Party in Government	−0.301**	−0.125*	−0.199**	−0.413***	−0.110
	(0.138)	(0.068)	(0.097)	(0.143)	(0.091)
Green Party's Environmental Protection	0.003	0.002	0.009**	0.003	0.004
	(0.004)	(0.002)	(0.004)	(0.004)	(0.002)
PM Party's CIP net of Green parties (PM CIP)	−0.675***	−0.263**	−0.445***	0.228	0.785***
	(0.200)	(0.112)	(0.163)	(0.467)	(0.291)
Green Party's gross CIP (Green CIP)				4.278**	4.496***
				(1.863)	(1.155)
PM CIP × Green CIP				−4.422	−8.035***
				(2.968)	(1.855)
Intercept	4.807***	−34.421*		3.809***	−253.688***
	(0.458)	(17.535)		(0.639)	(16.268)
Observations	175	166	166	175	175
Number of Countries	9	9	9	9	9
Fixed-Effects	Yes	No	No	Yes	Yes
Lagged Dependent Vairable	No	Yes	No	No	No
Trend	No	Yes	No	No	Yes
R^2	0.691	0.886	0.092	0.703	0.886

*p<0.1; **p<0.05; ***p<0.01

Table A3: *Original PM CIP Models without clustered Standard Errors*

	Environmental Policy Stringency		
	(FE)	(LDV)	(FD)
EPS_{t-1}		0.793^{***}	
		(0.042)	
Minority Cabinet	-0.168	0.076	0.219^{***}
	(0.117)	(0.053)	(0.073)
Kyoto Protocol	0.746^{***}	-0.013	0.124
	(0.085)	(0.065)	(0.075)
GDP Growth	-0.067	-0.102^{***}	-0.007
	(0.048)	(0.031)	(0.014)
Cabinet's Mean Environmental Protection	0.007	-0.002	-0.015
	(0.013)	(0.009)	(0.011)
Total Greenhouse Gas Emissions/Capita	-0.203^{***}	0.008	-0.042
	(0.042)	(0.009)	(0.044)
Green Party in Government	-0.304^{**}	-0.149^{**}	-0.229^{***}
	(0.135)	(0.068)	(0.081)
Green Party's Environmental Protection	0.003	0.001	0.008^{***}
	(0.003)	(0.002)	(0.002)
Post-Fukushima	0.318^{**}	-0.205^{**}	-0.143
	(0.142)	(0.086)	(0.141)
Green Party's gross CIP	2.517^{***}	0.794^{**}	1.440^{*}
	(0.770)	(0.352)	(0.806)
Intercept	3.705^{***}	-49.913^{***}	
	(0.458)	(16.726)	
Observations	175	166	166
Number of Countries	9	9	9
Fixed-Effects	Yes	No	No
Lagged Dependent Vairable	No	Yes	No
Trend	No	Yes	No
R^2	0.702	0.888	0.088

SEs clustered by country; *p<0.1; **p<0.05; ***p<0.01

Table A4: *Original Green Party CIP Models with post-Fukushima controls*

	Environmental Policy Stringency				
	(FE)	(LDV)	(FD)	(FE II)	(FE III)
EPS_{t-1}		0.791***			
		(0.042)			
Minority Cabinet	−0.117	0.041	0.257***	−0.172	0.017
	(0.128)	(0.055)	(0.090)	(0.107)	(0.062)
Kyoto Protocol	0.792***	0.007	0.146*	0.776***	−0.273***
	(0.082)	(0.065)	(0.082)	(0.084)	(0.071)
GDP Growth	−0.081	−0.105***	−0.015	−0.067	−0.003
	(0.049)	(0.031)	(0.016)	(0.049)	(0.031)
Cabinet's Mean Environmental Protection	0.0005	−0.004	−0.022	0.008	0.032***
	(0.013)	(0.009)	(0.014)	(0.013)	(0.010)
Total Greenhouse Gas Emissions/Capita	−0.194***	0.014*	−0.038	−0.185***	0.021
	(0.041)	(0.008)	(0.040)	(0.040)	(0.027)
Green Party in Government	−0.256*	−0.123*	−0.215***	−0.365**	−0.141*
	(0.134)	(0.063)	(0.080)	(0.146)	(0.076)
Green Party's Environmental Protection	0.004	0.002	0.009***	0.003	0.004**
	(0.003)	(0.002)	(0.003)	(0.003)	(0.002)
Post-Fukushima	0.339**	−0.195**	−0.138	0.295**	−0.304***
	(0.135)	(0.087)	(0.127)	(0.133)	(0.097)
PM Party's CIP net of Green parties (PM CIP)	−0.621***	−0.268**	−0.456***	0.207	0.840***
	(0.193)	(0.117)	(0.133)	(0.388)	(0.228)
Green Party's gross CIP (Green CIP)				3.948**	4.850***
				(1.823)	(0.945)
PM CIP × Green CIP				−4.115	−8.573***
				(2.749)	(1.433)
Intercept	4.297***	−48.701***		3.440***	−269.124***
	(0.494)	(16.858)		(0.531)	(16.436)
Observations	175	166	166	175	175
Number of Countries	9	9	9	9	9
Fixed-Effects	Yes	No	No	Yes	Yes
Lagged Dependent Vairable	No	Yes	No	No	No
Trend	No	Yes	No	No	Yes
R^2	0.699	0.889	0.108	0.708	0.892

SEs clustered by country; *p<0.1; **p<0.05; ***p<0.01

Table A5: *Original PM CIP Models with post-Fukushima controls*

	Environmental Policy Stringency		
	(FE)	(LDV)	(FD)
EPS_{t-1}		0.740^{***}	
		(0.061)	
Minority Cabinet	0.167	0.054	0.181^{**}
	(0.105)	(0.063)	(0.074)
Kyoto Protocol	0.387^{***}	0.071	0.073^{*}
	(0.111)	(0.069)	(0.041)
GDP Growth	−0.016	-0.105^{***}	−0.013
	(0.054)	(0.034)	(0.013)
Cabinet's Mean Environmental Protection	0.0005	−0.004	−0.022
	(0.015)	(0.013)	(0.017)
Total Greenhouse Gas Emissions/Capita	-0.378^{***}	−0.006	−0.038
	(0.038)	(0.014)	(0.055)
Green Party in Government	-0.472^{***}	-0.162^{**}	-0.338^{**}
	(0.161)	(0.078)	(0.140)
Green Party's Environmental Protection	0.011^{***}	0.002	0.011^{***}
	(0.004)	(0.003)	(0.002)
Share in Population worried about Environment	0.021^{***}	0.001	0.031^{***}
	(0.007)	(0.003)	(0.007)
Green Party's gross CIP	2.600^{***}	0.962^{**}	1.043
	(0.757)	(0.484)	(0.698)
Intercept	4.423^{***}	-39.651^{*}	
	(0.600)	(20.767)	
Observations	118	117	110
Number of Countries	8	8	8
Fixed-Effects	Yes	No	No
Lagged Dependent Vairable	No	Yes	No
Trend	No	Yes	No
R^2	0.791	0.892	0.111

SEs clustered by country; *p<0.1; **p<0.05; ***p<0.01

Table A6: *Original Green Party CIP Models with Environmental Attitude controls*

	Environmental Policy Stringency				
	(FE)	(LDV)	(FD)	(FE II)	(FE III)
EPS_{t-1}		0.759^{***}			
		(0.061)			
Minority Cabinet	0.257^{**}	0.040	0.211^{**}	0.139	0.060
	(0.122)	(0.066)	(0.087)	(0.086)	(0.081)
Kyoto Protocol	0.433^{***}	0.087	0.128^{***}	0.172^{*}	-0.290^{***}
	(0.119)	(0.074)	(0.049)	(0.097)	(0.077)
GDP Growth	-0.020	-0.114^{***}	-0.016	0.015	-0.010
	(0.056)	(0.034)	(0.013)	(0.051)	(0.034)
Cabinet's Mean Environmental Protection	-0.003	-0.002	-0.026^{*}	0.001	0.009
	(0.017)	(0.012)	(0.014)	(0.014)	(0.012)
Total Greenhouse Gas Emissions/Capita	-0.369^{***}	0.004	-0.035	-0.309^{***}	-0.002
	(0.038)	(0.013)	(0.053)	(0.039)	(0.040)
Green Party in Government	-0.432^{***}	-0.125^{*}	-0.342^{***}	-0.737^{***}	-0.248^{**}
	(0.157)	(0.075)	(0.095)	(0.173)	(0.101)
Green Party's Environmental Protection	0.013^{***}	0.002	0.012^{***}	0.010^{***}	0.009^{***}
	(0.003)	(0.003)	(0.003)	(0.003)	(0.002)
Share in Population worried about Environment	0.024^{***}	-0.001	0.030^{***}	0.037^{***}	0.009
	(0.008)	(0.003)	(0.007)	(0.007)	(0.006)
PM Party's CIP net of Green parties (PM CIP)	-0.697^{***}	-0.196	-0.351^{**}	1.839^{***}	1.404^{***}
	(0.198)	(0.128)	(0.148)	(0.449)	(0.372)
Green Party's gross CIP (Green CIP)				10.825^{***}	7.224^{***}
				(1.951)	(1.584)
PM CIP × Green CIP				-15.490^{***}	-11.081^{***}
				(2.940)	(2.406)
Intercept	4.886^{***}	-39.999^{*}		1.675^{**}	-224.358^{***}
	(0.563)	(20.458)		(0.793)	(23.135)
Observations	118	117	110	118	118
Number of Countries	8	8	8	8	8
Fixed-Effects	Yes	No	No	Yes	Yes
Lagged Dependent Vairable	No	Yes	No	No	No
Trend	No	Yes	No	No	Yes
R^2	0.788	0.890	0.119	0.831	0.910
Note:					*p<0.1; **p<0.05; ***p<0.01

Table A7: *Original PM CIP Models with Environmental Attitude controls*

	Environmental Policy Stringency							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Minority Cabinet	−0.002	−0.002	−0.002	−0.012	−0.001	0.039	0.080	−0.028
	(0.067)	(0.081)	(0.082)	(0.067)	(0.068)	(0.074)	(0.082)	(0.060)
Kyoto Protocoll	−0.221***	−0.221**	−0.221**	−0.236***	−0.221***	−0.272***	−0.188**	−0.210***
	(0.075)	(0.092)	(0.092)	(0.068)	(0.075)	(0.078)	(0.088)	(0.075)
GDP Growth	−0.012	−0.012	−0.012	−0.003	−0.011	−0.010	−0.033	−0.018
	(0.030)	(0.039)	(0.040)	(0.029)	(0.030)	(0.030)	(0.034)	(0.029)
Cabinet's Mean Environmental Protection	0.022**	0.022**	0.022**	0.026***	0.022**	0.025**	0.008	0.021**
	(0.010)	(0.010)	(0.010)	(0.010)	(0.010)	(0.010)	(0.013)	(0.010)
Total Greenhouse Gas Emissions/Capita	−0.001	−0.001	−0.001	0.0004	−0.001	−0.020	−0.015	−0.002
	(0.024)	(0.030)	(0.031)	(0.025)	(0.024)	(0.026)	(0.042)	(0.024)
Green Party in Government	−0.023	−0.023	−0.023	−0.086	0.017	−0.043	−0.025	−0.036
	(0.077)	(0.094)	(0.096)	(0.079)	(0.180)	(0.076)	(0.094)	(0.072)
Green Party's Environmental Protection	0.004**	0.004	0.004	0.005***	0.004**	0.004*	0.010***	0.003*
	(0.002)	(0.003)	(0.003)	(0.002)	(0.002)	(0.002)	(0.003)	(0.002)
Green Party's Polls				−3.862***				
				(1.062)				
Post-Fukushima						−0.242**		
						(0.118)		
Share in Population worried about Environment							−0.003	
							(0.005)	
Green CIP × Green Party in Government					−0.160			
					(0.833)			
Time to next Election (in Years)								0.095**
								(0.041)
Green CIP × Time to Election								−0.648***
								(0.225)
Green Party's gross CIP (Green CIP)	0.885*	0.885*	0.885*	0.921**	0.907*	0.967**	1.013**	1.953***
	(0.497)	(0.504)	(0.506)	(0.466)	(0.542)	(0.484)	(0.516)	(0.662)
Intercept	−245.051***	−245.051***	−245.051***	−258.337***	−244.881***	−256.872***	−245.228***	−240.067***
	(16.281)	(17.082)	(17.141)	(15.782)	(16.303)	(17.227)	(23.982)	(16.526)
Observations	175	175	175	175	175	175	118	175
Number of Countries	9	9	9	9	9	9	8	9
Fixed-Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Trend	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
SEs	Clustered	Not Clustered	Bootstrapped	Clustered	Clustered	Clustered	Clustered	Clustered
R^2	0.870	0.870	0.870	0.881	0.870	0.874	0.892	0.876

Table A8: *Original and auxiliary models with fixed-effects and trends using* ***Green Party CIP****. Models 1-3 vary the estimation of the standard errors; Model 4 includes Green party polls together with Green CIP; Model 5 tests for Green in-govt effect with a dummy interaction; Model 6 adds a post-Fukushima dummy; Model 7 includes public opinion on the environment; and Model 8 shows that Green CIP effects increase as elections approach.* $^{*}p<0.1$; $^{**}p<0.05$; $^{***}p<0.01$

	Environmental Policy Stringency						
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Minority Cabinet	0.017	0.017	0.017	0.010	−0.032	0.060	0.114
	(0.070)	(0.077)	(0.081)	(0.070)	(0.061)	(0.076)	(0.092)
Kyoto Protocol	−0.206***	−0.206**	−0.206**	−0.225***	−0.209***	−0.258***	−0.175**
	(0.074)	(0.089)	(0.092)	(0.067)	(0.069)	(0.076)	(0.089)
GDP Growth	−0.015	−0.015	−0.015	−0.008	−0.006	−0.013	−0.034
	(0.030)	(0.038)	(0.040)	(0.030)	(0.031)	(0.030)	(0.035)
Cabinet's Mean Environmental Protection	0.019*	0.019*	0.019*	0.023**	0.028***	0.021**	0.007
	(0.010)	(0.009)	(0.010)	(0.010)	(0.010)	(0.010)	(0.014)
Total Greenhouse Gas Emissions/Capita	0.005	0.005	0.005	0.006	0.042	−0.014	−0.008
	(0.023)	(0.029)	(0.030)	(0.024)	(0.026)	(0.025)	(0.039)
Green Party in Government	−0.025	−0.025	−0.025	−0.070	−0.110	−0.044	−0.008
	(0.073)	(0.089)	(0.092)	(0.073)	(0.076)	(0.074)	(0.080)
Green Party's Environmental Protection	0.004**	0.004*	0.004*	0.006***	0.004**	0.004**	0.010***
	(0.002)	(0.003)	(0.003)	(0.002)	(0.002)	(0.002)	(0.002)
Green Party's Polls				−0.036***			
				(0.011)			
Green Party gross CIP					4.496***		
					(1.040)		
PM net CIP × Green Party CIP					−8.035***		
					(1.622)		
Post-Fukushima						−0.247**	
						(0.115)	
Share in Population worried about Environment							−0.002
							(0.005)
PM CIP net of Green Parties	−0.313**	−0.313**	−0.313**	−0.260**	0.785***	−0.334**	−0.279*
	(0.130)	(0.128)	(0.132)	(0.126)	(0.245)	(0.131)	(0.145)
Intercept	−245.001***	−245.001***	−245.001***	−258.789***	−253.688***	−257.259***	−246.960***
	(16.062)	(16.700)	(16.769)	(15.755)	(15.803)	(17.018)	(22.853)
Observations	175	175	175	175	175	175	118
Number of Countries	9	9	9	9	9	9	8
Fixed-Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Trend	Yes	Yes	Yes	Yes	Yes	Yes	Yes
SEs	Clustered	Not Clustered	Bootstrapped	Clustered	Clustered	Clustered	Clustered
R^2	0.873	0.873	0.873	0.881	0.886	0.876	0.891

Table A9: *Original and auxiliary models with fixed-effects and trends using* ***PM Party CIP****. Models 1-3 vary the estimation of the standard errors; Model 4 includes Green party polls together with PM CIP net of Green Parties; Model 5 interacts Green Party CIP and PM CIP net of Green parties; Model 6 adds a post-Fukushima dummy; Model 7 includes public opinion on the environment. *p<0.1; **p<0.05; ***p<0.01*