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How fractionalisation and polarisation explain the level of government turn-over

Simon Otjes¹

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Abstract This article seeks to explain to what extent government composition changes in cabinet formations: it examines why some party systems tend to see wholesale turn-over (where all government parties were previously in opposition) and others only see partial turn-over (where some of the government parties were previously in government). This distinction has been described by many prominent political scientists. Yet there is limited research into the underlying causes. This article examines the importance of both party system characteristics and conditions specific to the cabinet formation: it finds that specifically the interaction between number of parties in a party system and their distribution over the political space matters for the level of party turn-over in government.

Keywords Party systems · Wholesale turn-over · Partial turn-over · Left–right politics · Polarisation

Introduction

In September 2011, Denmark elected a new parliament. The country had been governed by a right-wing minority cabinet of liberals and conservatives, supported by a radical right-wing populist party. The cabinet was led by liberal Prime Minister Lars Løkke Rasmussen. Even though the governing liberal party *Venstre* won three seats more than the Social Democrats, the social democratic

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leader Helle Thorning-Schmidt became prime minister of a new left-wing coalition government after the elections.

A year later in September 2012, the Netherlands elected a new parliament. Similar to Denmark, the country had been governed by a right-wing minority cabinet of liberals and Christian democrats supported by a radical right-wing populist party. The cabinet was led by Mark Rutte. And like in Denmark, the Liberal Party won three seats more than the social democrats. The sitting Prime Minister Rutte remained in office in a new Liberal–Labour coalition government.

How can two countries that seem so similar have such different outcomes in terms of cabinet formation? The Danish cabinet formation in 2011 is an example of wholesale turn-over: after the election all parties that were in government became opposition parties. The Dutch cabinet formation of 2012 is an example of partial turn-over: some parties move into government and some parties move out, but at least one party stays in office.

This phenomenon of wholesale and partial turn-over forms a striking difference between democratic systems. References to the difference between systems with wholesale turn-over that offer voters the opportunity to choose between ‘alternative teams of governors’ and systems with partial turn-over date to the 1970s (Rokkan 1970, p. 93). Empirical research into what explains the level of turn-over is limited (Ieraci 2012; Lundell 2011). As Ieraci (2012) described the patterns of government turn-over are ‘in search of explanations’. It is the goal of this article to further scientific understanding about what explains what share of government changes when governments change composition.

The extent to which government composition changes is seen as an important indicator of democratic quality and party system stability (Casal Bértoa and Enyedi 2014; Cheibub et al. 2009; Kaiser et al. 2002). Moreover, the distinction has been used to explain a range of political phenomena: from welfare state reform, via patterns of parliamentary decision-making to party-interest group relations (Anthonsen and Lindvall 2009; Green-Pedersen 2002; Meyer-Sahling and Veen 2012; Otjes and Rasmussen 2015; Louwerse et al. 2016; De Giorgi and Marangoni 2015).

The difference between wholesale and partial turn-over in government matters for democratic politics, but little is known about the conditions under which wholesale or partial turn-over is likely: the central question of this article is *what features of the party system may explain the level of government turn-over*. While this aspect of cabinet formation (to what extent does the government composition differ from previous governments?) has not been the subject of extensive study, this article can still draw from the literature concerning party systems and coalition formation. This article tests two explanations: first, wholesale government turn-over is more likely in two-party systems than in multiparty systems (Lundell 2011). Second, the distribution of parties in the policy space may affect the level of party turn-over in government. A polarised party multiparty system is likely to foster wholesale turn-over because of the stark programmatic differences between the parties of the left and right.

Wholesale and partial turn-over

The difference between wholesale and partial turn-over is an important difference between party systems: wholesale government turn-over or perfect alternation can be observed in two-party systems like the United Kingdom, but also two-bloc systems like Sweden, where social democratic minority cabinets have alternated with centre-right, bourgeois cabinets since the late 1960s (Green-Pedersen 2002). Partial government turn-over or limited alternation, is a feature of democratic politics in countries like the Netherlands, Italy and Belgium. One party often stays in government for long stretches of time: in Italy this was *Democrazia Cristiana*, which was in government continuously between 1946 and 1994. As the pivotal party in the system, it could govern with either the left or the right, or sometimes alone.

This article follows Ieraci (2012), who proposes to understand the level of turn-over as a continuum instead of as a binary typology¹: the basic idea is that if a party with a large number of MPs joins a small party that was already in government in a new cabinet, this represents a larger shift in government composition than when a party with a small number of MPs joins a large party in government. Consider the difference between the 1969 German government formation, when the Free Democratic Party (FDP) with 30 seats joined the Social Democratic Party of Germany (SPD) with 224 seats in government. This clearly was a smaller change in government composition than when the FDP, with 53 seats, stayed in government in 1983 but opted for the Christian Democrats of CDU/CSU (226 seats) as its coalition partner, instead of the SPD. Therefore, this paper will not look at this change from the perspective of binary typology but it will rather attempt to explain the level of party turn-over in government: the share of parliamentary seats in the government coalition held by parties that were previously not in government.

¹ An alternative understanding of government turn-over is ideological alternation. This has been used by Tsebelis (2002), Tsebelis and Chang (2002), Zucchini (2010) and Angelova (2017). These measures compare the ideological ideal points of successive cabinets. As two successive cabinets are further apart ideological alternation is greater. This is substantially different from the measure examined in this article as it concerns the ideological distance between cabinets, while this article looks changes in partisan composition. A government turn-over and an ideological alternation measure are conceptually and empirically different: when two centrist parties alternate in office, the government turn-over measure see this as wholesale alternation, while an ideological alternation measure sees very limited change. If a party makes a major ideological transition while it continues in government, when it switches prime ministers, an ideological alternation measure sees a marked change, while there would be zero turn-over in terms of government turn-over measure. These two variables speak to different theoretical questions: ideological alternation is a useful explanatory variable for those trying to explain changes in government policies, while government turn-over, as we will argue in greater detail in the conclusion maybe of more interest to those would want to study the performance of democracy institutions in terms of accountability for instance. The Appendix examines the relevance of the hypotheses formulated in this paper for this kind of alternation, they indicate that polarisation has direct effect on ideological alternation, while fractionalisation does not. The direct effect of polarisation is reasonable: when parties are not polarised, there cannot be a large difference between the ideal points of governments. This shows that this is a substantially different phenomenon.

The extent to which governments change composition is an important feature of a party system. As Sartori (1976, p. 44) stated ‘a party system is precisely the *system of interactions* resulting from inter-party competition’. What makes a set of parties a system is the way political parties interact when competing for government (Mair 1997). One can have two systems with an identical number of parties, but if the structure of interparty competition differs the political outcomes may be very different. For instance, if one thinks about party system change such as the transformation of the Italian party system in 1994, the essential change is not just visible in terms of electoral volatility or the success of new parties. The change in the party system was a shift in the interaction between parties. In this case, a party system that was characterised by partial turn-over was replaced by a system of wholesale turn-over (Verzichelli and Cotta 1999; De Giorgi and Marangoni 2015).

This distinction between wholesale and partial turn-over plays an important role in political science. Within democratic regimes turn-over is an important way in which one can see to what extent voters can actually hold governments accountable (Kaiser et al. 2002; Lundell 2011). Systems with wholesale turn-over foster democratic accountability, because voters have the opportunity to ‘throw the rascals out’ (Mair 2008, p. 237). Moreover, they are more responsive to election outcomes, because parties that lost seats are unlikely to enter government (Lundell 2011; Mair 2008). As Mair (1997) suggested and as Casal Bértoa and Enyedi (2014) have shown, systems with a high level of government turn-over tend to be more stable: as they show the level of party turn-over in government correlates with other indicators of party system closure and stability, such as the innovativeness of governing formulae and the openness of access to government.

The academic assessment of systems with partial turn-over is more mixed: systems with partial turn-over where one party is in government semi-permanently have been described as ‘toxic’ (Strøm and Bergman 2011, pp. 20–21): the semi-permanent government party may become corrupt. On the other side, the semi-permanent opposition parties may become frustrated with the democratic process and radicalise (Sartori 1976). Green-Pedersen (2004) shows that this is only one possibility: a strong, centrist, pivotal party may also cause the ‘wing’ parties to moderate their course in order to be able to govern with the centrist party. The existence of a strong centre party may have lasting effects on a political system even if that centre party weakens. If it has pulled the main parties of the left and right to the centre, this may open the possibility of a government of these moderate ‘wing’ parties without the pivotal party (Green-Pedersen 2004). Moreover, it is more likely that in systems with wholesale turn-over the party representing the median voter determines government formation and policy in such systems, leading to better democratic delegation (Strøm and Bergman 2011, pp. 30–31).

The political science literature has employed the difference between wholesale and partial turn-over in government composition as an *explanatory* variable for systemic differences on a large number of issues: from welfare state reform and public administration to party-interest group relations. It has been used to explain differences in outcomes of welfare state reform (Green-Pedersen 2002): in systems with wholesale turn-over, only left-wing governments can build a consensus for welfare state retrenchment, while in a system with partial turn-over, the pivotal party

determines welfare policy because parties of the left and the right are forced to govern with it. The distinction has also been used to explain the relationship between political parties and interest groups by Anthonsen and Lindvall (2009) and Otjes and Rasmussen (2015): these studies find that alternation between left-wing and right-wing blocs undermines the relationship between right-wing parties and trade unions. This difference may also affect levels of civil service politicisation (Meyer-Sahling and Veen 2012): wholesale changes of government were found to be associated with higher levels of civil service politicisation, as completely new governments have problems controlling bureaucrats that have served with an ideological opposite government. Louwerse et al. (2016) show that in systems with partial turn-over, parliaments are more consensual than in systems with wholesale turn-over. In the latter systems, the government and opposition parties can be more adversarial because they do not expect to cooperate in the future (but see De Giorgi and Marangoni 2015).

Explaining wholesale and partial turn-over

Explanatory studies of this phenomenon have been limited. Here two hypotheses that may explain this phenomenon will be discussed. First, the number of political parties may affect the level of turn-over. Wholesale government change is associated with two-party systems (Mair 1997): if there was single-party government in a two-party system and the government party lost its majority, the opposition party will have won a majority; in multiparty systems wholesale turn-over may occur, but there are many possible governments that involve some parties of the previous government and opposition. Wholesale turn-over is only *one* of a broad range of options.² Sartori (1976, p. 186) even went so far as to propose that wholesale turn-over is the distinguishing mark of the mechanics of ‘twopartism’. In his view, a system that has two political parties that govern together and therefore there is no wholesale turn-over (like Austria in the 1950s), is not a ‘real’ two-party system. The goal here is to disentangle concepts that are often closely related such as the number of parties in a system, the distribution of parties in a system and the level of turn-over. Therefore, throughout this paper a two-party system is defined as having an effective number of parliamentary parties of two and not by a specific dynamic in cabinet formation.

² Lundell (2011) offers a different argument for the same phenomenon. He draws on Sartori (1976) to argue that systems with differing numbers of political parties have different patterns of turn-over: two-party and moderate pluralist systems tend to see wholesale turn-over. Systems with higher levels of pluralism, what Sartori (1976) has characterised as polarised pluralism, see more partial turn-over. He argues that ‘since these systems usually consists of the bilateral opposition of highly ideological parties and anti-system parties, the number of potential governing parties becomes smaller’ (Lundell 2011, p. 151). The number of parties and polarisation are not the same (the Pearson’s *r* between polarisation and the ENPP in this data set is 0.14, significant at the 0.01-level). It *might* be the case that systems with a high number of parties have anti-systems parties that can never participate in the government, but this is not *necessarily* the case: post-Cold War Finland, for instance, has consistently had a high effective number of parties but no anti-system opposition.

Sartori's statement is seen here as a conjecture that there is likely to be strong correlation between the number of parties in a system and the level of turn-over:

Fractionalisation hypothesis the less fractionalised a party system is, the higher the level of party turn-over in government will be.

In addition to the number of parties, the way these parties are distributed in the political space may matter for the turn-over of government. Both rational choice and historical-comparative approaches to coalition formation agree that party positions are important for understanding which coalition will form: cabinets with ideologically distant parties are less likely to form, because the partners have to make policy compromises that are more costly for both sides (Martin and Stevenson 2001, p. 34; Laver 1998, p. 14; Dumont et al. 2011, p. 8). This idea that ideological proximity makes coalitions more likely, goes back to the pioneering work of Leiserson (1966) and De Swaan (1973). The underlying assumption is that parties strive for a coalition in which they are included and that is as close as possible to their own ideal point (De Swaan 1973, p. 111). Therefore parties would prefer to govern with their ideological neighbours. The more ideologically diverse cabinet parties are, the less likely the agreed policies of that coalition will be close to the desired outcome of these parties. The notion that coalitions are more likely to form if their members are more ideologically proximate is supported by large-N studies of coalition formation (Martin and Stevenson 2001, p. 41; Dumont et al. 2011).

A straightforward way to think about the distribution of parties is in terms of polarisation: are political parties spread out along the left–right continuum? Or are they concentrated on one point of the scale (Dalton 2008)? If parties in a multiparty system strive for coalitions that have a limited ideological range, this has implications for the level of turn-over between polarised and non-polarised party systems. In the least polarised systems, most parties, are concentrated in the political centre. Parties seeking to govern with parties that are ideologically close to them have a whole range of options, of which wholesale turn-over from the previous government is only one. If a system is very polarised, this means that there are less parties in the ideological centre. Parties are divided between those on the left and those on the right: governments with a smallest range are likely to include only parties of the left or parties of the right. After the elections, this left-wing or right-wing majority may either retain its majority or the parties on the other side may have a majority. Such patterns are common in countries like Sweden, Norway and Denmark, where governments are either formed by the parties of the left or the parties of the right (Mair 2001; Bale 2003; Laver and Schofield 1990, pp. 114–117).

Polarisation is only likely to affect the level of turn-over in multiparty systems. This variable is irrelevant for the level of turn-over in a two-party system: even if parties in a two-party system take an identical position, they are unlikely to govern together because there is no need to. Therefore, the two will alternate in office. If two major parties are ideologically distinct there will also be turn-over between left

and right. Independent of how far the two main parties are apart from each other, governments are likely to alternate completely. The difference between the distribution of parties only becomes relevant as one moves from two-party systems to multi-party systems. Therefore the hypothesis is that:

Fractionalisation-polarisation hypothesis at higher levels of fractionalisation, polarisation increases the level of party turn-over in government, while at lower levels of fractionalisation it does not affect the level of party turn-over in government.

In addition to fractionalisation and polarisation, this article will also employ three control variables mentioned in the literature before (Ieraci 2012). First, the size of the government majority: Ieraci (2012, p. 540) proposes that the difference between the share of the seats of the previous government and the share of the opposition during that government explains the likelihood of wholesale turn-over. If the government has a large share of the seats, wholesale turn-over is unlikely: it would be unrealistic to expect the opposition to gain enough seats to become the new majority. Minority governments are more likely to be replaced through wholesale turn-over because the only thing that needs to happen for them to be replaced is that the opposition unifies. Oversized majority cabinets are less likely to be replaced through wholesale turn-over because these governments would need to lose a substantial share of the votes before a majority that does not involve parties from this cabinet becomes possible. Ieraci (2012) looked at the seat share instead of vote share. This analysis uses vote share because seat share would overlook the fact that in disproportional systems only a small shift of votes can already result in a large change of seats, but as the Appendix shows a seat-based and a vote-based measure of the government–opposition differential yields very similar results.³ Second, whether a cabinet is formed just after an election or during a parliamentary term (Ieraci 2012, p. 538): if no new elections are held, the existing distribution of seats will remain intact. In that case, wholesale turn-over is unlikely: a majority cabinet cannot be

³ For instance, consider the French 1993 elections in which the RPR and UDF won a 82% majority in the *Assemblée Nationale* with 40% of the votes. There a Government–Opposition Differential measure based on seats would give them a comfortable +0.66, while the Government–Opposition Differential measure based on votes is –0.20. Such a comfortable majority in seats can be beaten in the electoral arena, as the PS, PCF, LV and allies showed in the 1997 elections, winning the elections by expanding their votes with only 7%. One should note that in systems with disproportional electoral systems a party can win a majority of the seats despite having a minority of the vote. So a score of –0.20 puts the RPR/UDF cabinet on the same level as the minority cabinet in a proportional electoral system where the opposition parties only need to band together in parliament to replace the government. So where the Government–Opposition Differential measure based on seats overestimates how difficult it is to change the change the government, the Government–Opposition Differential measure based on votes is likely to overestimate how easy it is to replace the government. Government–Opposition Differential measure based on seats is considered in the Appendix and yields generally similar results. The suggestion to examine vote share was gratefully taken over from one of the anonymous reviewers.

replaced through wholesale turn-over during the term by another majority cabinet. Third, electoral volatility: governing has its electoral costs and government parties tend to lose seats in elections (Rose and Mackie 1983; Strøm 1990). If the new election result is radically different from the pre-existing situation, it would be more reasonable to expect the opposition to gain enough seats to become the majority; and it is less likely that the existing coalition government can continue to govern by incorporating a single new party.

Methodology

For many variables, this study relies on the ParlGov database of Döring and Manow (2016). It provides detailed information about the composition of parliaments and governments in thirty-seven democracies (for a full list see Table 2): nineteen are in Western Europe, but the data set also includes eleven Central and Eastern European countries, four countries from around the Pacific Ocean and three from the Near East. The 2016 ParlGov database covers the period 1945–2015 for established democracies and the period since democratisation for countries that democratised during this period. This analysis will examine this wide range of countries. This study covers a wider range of countries than previous studies such as Ieraci (2012), who studied twenty-two European countries and Lundell (2011) who studied nineteen established democracies.

Dependent variable

The government turn-over index of Ieraci (2012) is employed as the dependent variable in this study:

$$GTI = \frac{\sum_{i=1}^n S_i \cdot G_{i,t} \cdot (1 - G_{i,t-1})}{\sum_{i=1}^n S_i \cdot G_{i,t}}, \quad (1)$$

where S_i is the seat share of a parliamentary party; G_i is a dichotomy that is one if a party is in government and zero if it is not during government period t or the previous period ($t-1$). If this measure is zero there are no new political parties in the coalition; if this is one, all government parties are new.

An important assumption in this study is that having no change in government is qualitatively different from having very little change in government. The assumption is that having no change in government composition is so fundamentally different from having some change that in the analysis we will exclude all cases of no change from the analysis. The theory discussed above does not propose that the conditions that make partial government turn-over more likely (a large effective number of political parties and the interaction between the effective number of parties and polarisation) also make maintaining the government's composition more likely: if

the electoral results allow a government to continue, it will continue to govern. The level of polarisation, for instance, is unlikely to affect this.⁴

Therefore, this study excludes all cases in which there is no government turn-over (i.e. the GTI is zero). Moreover, all cases involving non-partisan government are also excluded: the formation of a non-partisan government in times of political or economic crisis says little about changes in the partisan composition of the government. The data base consists out of 410 changes in government composition out of a total of 1052 governments included in the Döring and Manow data. The definition of Döring and Manow (2016) of what constitutes a new government is used here: that is a government changes if the prime minister changes, the party composition of the cabinet changes or if elections are held. An important element is to check for mergers and transformations: in some cases, a coalition party may not have governed before, but in reality it is only a merger or even a rebranding of an existing government party. This is meant to eliminate cases where some of the parties that were in government before and after the election merged, such as the formation of the Christian Democratic Appeal in the Netherlands in 1977: before the 1977 election the cabinet consisted out of PvdA, KVP, ARP, PPR and D66 after the election it consisted out of CDA and VVD. This creates the illusion of wholesale turn-over: none of the parties that were in government before 1977 were after 1977, but actually two parties that formed the CDA, namely KVP and ARP were in government before. So this is a case of partial alternation. Party shares of seats in parliament are used instead of the number of parties entering government: if two minor parties stay in government after the elections but the senior government parties changes, this is something different from a situation where the senior government party stays in office and shifts its coalition partners around (cf. Lundell 2011, p. 154).

The GTI is a proportion bounded between 0.01 and 1. Figure 1 shows the distribution. It shows that the distribution is quite uniform except for the fact that 41% of the cases has a value of 1. Therefore the error terms are unlikely to be normally distributed, one needs to use beta regression, which is specifically developed for non-parametric regression of proportional values. As the cases (changes in government composition) are embedded in countries, one needs to use cluster-robust standard errors. This specific combination of cluster-robust standard errors for beta regression is available in *Betafit* (Buis et al. 2011) in Stata. The interaction relationship

⁴ The Appendix shows that cases of zero change are not only conceptually and theoretically different from the different kinds of cases that have some change, but also empirically different: if one were to include all cases (including those in which there was no turn-over), the same substantive patterns are not present, in particular the relations with fractionalisation and polarisation are no longer present. The explanation for this is while a larger effective number of parties weakens the level of government turn-over, it appears to be the case that the effective number of political parties strengthens the likelihood of any change in government composition opposed to no change in government composition. Together these two tendencies cancel out any substantive effect of fractionalisation (including the interaction effect). A 'zero-inflated' model shows that the mechanism that supplies the zero values and the other values is indeed empirically different. The interaction between fractionalisation and polarisation matters for the other values but does not matter for the zero values, which are predicted mainly by electoral volatility and whether the government was the first formed after elections.

Fig. 1 Distribution of the government turn-over index

between polarisation and the effective number of political parties is visualised using Stata as well.⁵ Table 1 shows descriptives of all variables included in the study.

Independent variables

For the fractionalisation hypothesis, the standard measure of the effective number of parliamentary parties is used following the formula introduced by Laakso and Taagepera (1979). The application of this formula to seat shares is quite common in comparative politics (e.g. Lijphart 1999, p. 68):

$$ENPP = \frac{1}{\sum_{i=1}^n S_i^2}. \quad (2)$$

To measure polarisation, the second independent variable, Dalton (2008)'s formula is used:

$$PI = \sqrt[2]{\sum_{i=1}^n S_i \cdot \left(\frac{(LR_i - \sum_{i=1}^n S_i \cdot LR_i)}{5} \right)^2}, \quad (3)$$

⁵ Beta regression requires data to be bounded between 0 and 1. Therefore the value 1 was assigned the highest possible value that Beta regression could still deal with (0.9999).

Table 1 Descriptive variables

Variable	Abbr.	Mean	Median	SD	Min.	Max.	N
Government turn-over index	GTI	0.60	0.62	0.36	0.01	1.00	410
Electoral volatility	EV	0.16	0.21	0.17	0.02	0.94	404
Effective number of parliamentary parties	ENPP	4.16	3.85	1.55	1.68	10.89	410
Polarisation index	PI	4.17	4.20	1.25	0.23	7.35	338
Government–opposition vote differential	Δ_v	−0.00	−0.03	0.25	−0.83	0.99	408
Post-election dichotomy	PED	0.64	1.00	–	0.00	1.00	410

where LR_i is a party's position (measured from zero to ten). Left–Right positions are drawn from a broad range of expert surveys (Bakker et al. 2015; Benoit and Laver 2006; Castles and Mair 1984; Hooghe et al. 2010; Huber and Inglehart 1995; Steenbergen and Marks 2007). These are used to place the parties on the left–right dimension. Every party–government dyad is assigned the standard left–right position from the survey that was closest to the year the legislature was elected. These surveys were given a durability of ten years, going backward and forward. If the closest survey was held ten years before or after the election, a missing value was assigned. As the oldest survey was held in the early 1980s (Castles and Mair 1984), all cabinets formed before 1973 are excluded from the analyses using the polarisation variable. Not all parties are included in these surveys. All cases, where parliamentary parties that amount to more than a quarter of the seats had not been assigned a position, were removed.

As discussed above, a number of control variables are also included in the model. To control for the size of the previous government, the Government–Opposition Differential is calculated in the following way:

$$\Delta_v = \sum_{i=1}^n V_{i,t-1} \cdot G_{i,t-1} - \sum_{i=1}^n V_{i,t-1} \cdot (1 - G_{i,t-1}), \quad (4)$$

where $V_{i,t-1}$ is the share of the votes the respective party got in the previous election.

A dichotomy that differentiates between cabinets formed after an election and those formed during a parliamentary term is included in the analyses: this dichotomy is one for each new government that was the first to form after an election and zero otherwise.

To measure electoral volatility, the standard formula is used (Pedersen 1979). As before, special attention is spent on the elimination of mergers and transformations that may inflate electoral volatility. This variable is calculated per election.

$$EV = \sum_{i=1}^n \frac{|S_{i,t} - S_{i,t-1}|}{2} \quad (5)$$

Mapping wholesale and partial turn-over

Table 2 provides the average Government Turn-over Index for the countries included in this study. One can see that in some countries the average GTI is very low: in Germany, Italy, Israel, Switzerland and the Netherlands, on average less than 40% of the cabinet is replaced when a government is formed. In Latvia, the Netherlands and Switzerland there has been no wholesale turn-over at all. This is also the case in the French Fourth Republic and Italian 'First Republic' (pre-1994). Slightly higher levels of the GTI are found in Austria, Belgium, Czech Republic, Estonia, France, Romania and Iceland. These multiparty systems still have a below average GTI. On the other side, one finds countries that have exclusively wholesale turn-over: Australia, Canada, Hungary, Malta, Spain and the United Kingdom. Many of these are two-party systems. Countries that have high levels of turn-over are Bulgaria, Cyprus, Denmark, Greece, Ireland, Lithuania, New Zealand, Norway, Poland, Portugal, Slovakia and Sweden. In the middle, one finds Croatia, Japan, Slovenia and Turkey. In all these countries, on average two-thirds of the cabinet is replaced every time a government is formed. These descriptive results conform to results found by Ieraci (2012).

Explaining wholesale and partial turn-over

Table 3 shows three beta regression models: one without the polarisation variable, one model with polarisation as a simple variable and one model with an interaction between polarisation and the effective number of political parties; except for the variables involved in the interaction, the coefficients and significance levels are quite stable, despite the fact that the number of cases drops significantly due to data availability for the polarisation variable.

The first hypothesis proposed the higher the level of fractionalisation, the higher the level of party turn-over in government than multiparty systems. As shown seen in Models 1 and 2, the effective number of political parties has a negative effect on the Government Turn-over Index: multiparty systems tend to see lower levels of Government Turn-over. On itself, polarisation does not affect the level of party turn-over in government: the coefficient for polarisation is not significant in Model 2.

The second hypothesis concerned an interaction between polarisation and the effective number of political parties in a system: a polarised multiparty system would see lower levels of turn-over than non-polarised multiparty system. One cannot judge the extent to which there is a significant interaction relationship, merely on basis of the significance of the variables involved. One needs to visualise the relationship. This is the purpose of Fig. 2.⁶ Here, one can see the expected level of the Government Turn-over Index for different Effective Numbers of Parliamentary Parties for systems that are polarised and non-polarised. In party systems that have less than four effective parliamentary parties, systems with low levels of polarisation

⁶ Figure 3 in the Appendix provides an alternative visualisation, it supports the same substantive conclusion.

Table 2 Government turn-over index

#	Country	Mean GTI	Mean PI	Mean ENPP	N
1	Australia	1.00	3.62	2.57	7
2	Austria	0.46	3.62	2.79	6
3	Bulgaria	0.87	2.99	3.45	4
4	Belgium	0.44	4.48	5.25	19
5	Canada	1.00	2.91	2.52	8
6	Croatia	0.70	4.19	3.61	3
7	Cyprus	0.75	5.99	3.57	5
8	Czech Republic	0.52	4.84	3.69	5
9	Denmark	0.84	4.63	4.98	15
10	Estonia	0.49	3.27	4.62	9
11	Finland	0.44	4.83	5.08	20
12	France	0.48	5.23	3.98	23
13	Germany	0.39	3.42	3.40	10
14	Greece	0.83	3.69	2.61	8
15	Hungary	1.00	4.75	3.03	5
16	Iceland	0.54	5.63	4.02	16
17	Ireland	0.80	2.37	2.93	15
18	Israel	0.32	4.61	5.65	34
19	Italy	0.29	4.76	4.09	24
20	Japan	0.63	4.67	3.29	13
21	Latvia	0.42	4.21	5.64	11
22	Lithuania	0.78	2.87	5.00	9
23	Luxembourg	0.47	5.11	3.56	10
24	Malta	1.00	1.51	1.99	5
25	Netherlands	0.39	4.26	5.07	17
26	New Zealand	0.86	2.66	2.35	11
27	Norway	0.96	4.74	3.84	16
28	Poland	0.79	3.42	5.71	11
29	Portugal	0.90	3.29	3.23	11
30	Romania	0.57	2.71	4.32	12
31	Slovakia	0.87	2.89	4.53	8
32	Slovenia	0.64	3.22	5.37	10
33	Spain	1.00	4.20	2.68	4
34	Sweden	0.87	4.28	3.74	8
35	Switzerland	0.32	5.88	5.01	2
36	Turkey	0.65	3.19	3.87	9
37	United Kingdom	1.00	3.98	2.21	7

have higher levels of government turn-over compared to systems with high levels of polarisation. When it comes to systems with a limited number of political parties, the level of government turn-over is high (75–92%). Even in systems that are close to a two-party system, partial alternation is possible: take Austria in 1983, when it

Table 3 Three models explaining the government turn-over index

Variable	Model 1	Model 2	Model 3
Constant	1.17*** (0.37)	0.94** (0.42)	1.94*** (0.49)
Government–opposition vote differential (Δ_v)	– 2.25*** (0.25)	– 2.13*** (0.27)	– 2.13*** (0.27)
Post-election dichotomy (PED)	0.94*** (0.19)	1.04*** (0.22)	1.03*** (0.22)
Electoral volatility (EV)	0.38 (0.40)	0.66* (0.38)	0.79* (0.42)
Effective number of parliamentary parties (ENPP)	– 0.23*** (0.05)	– 0.20*** (0.05)	– 0.48*** (0.15)
Polarisation Index (PI)	–	0.00 (0.05)	– 0.27** (0.13)
Polarisation index $\times$ effective number of parliamentary parties (PI $\times$ ENPP)	–	–	0.07** (0.04)
Log pseudo-likelihood	819	600	601
Wald Chi ²	232	130	141
Phi	0.98 (0.09)	0.96 (0.09)	0.96 (0.09)
<i>N</i>	403	260	260
<i>N</i> countries	37	37	37

Fig. 2 Government turn-over index as a function of the effective number of parliamentary parties at different levels of polarisation. *Notes* Black lines are the predicted level of turn-over for different effective numbers of parliamentary parties for non-polarised systems (polarisation at 0.23) and the grey lines are the predicted level of turn-over for different levels of the effective numbers of parliamentary parties for polarised systems (polarisation at 7.35). Based on model 3. The dashed lines are 90% confidence intervals

effectively had 2.26 parties in parliament: the Austrian Freedom Party (FPÖ) joined the Social Democratic Party of Austria (SPÖ) in government, as the SPÖ was far larger than the FPÖ and it was already in government, the level of alternation was very small (0.12). When one moves to systems with a more substantial number of effective parliamentary parties, the level of government turn-over drops quite clearly and substantially for systems with low levels of polarisation. For systems that have between four and six effective parliamentary parties, the level of government turn-over is statistically the same for polarised and non-polarised systems. For systems that have more than six effective parliamentary parties, the difference between polarised and non-polarised systems follows the hypothesis: in systems with low levels of polarisation, a significantly larger share of the government parties stay in government than in systems with high levels of polarisation.

As hypothesised, the more parties a system has, the *less* likely wholesale turn-over is. In a two-party system, there is only one minimal winning majority cabinet (namely the majority party), leading to wholesale turn-over between the two parties. As hypothesised, the more polarised a multiparty system is, the *more* likely wholesale turn-over is. In a polarised party system, the programmatic differences between the parties of the left and right prevent them from forming a cabinet, leading to wholesale turn-over.

The control variables all are significant and in the expected direction: smaller differences between the seats held by the government and by the opposition, higher levels of electoral volatility and holding elections before forming a cabinet, are associated with higher levels of party turn-over in government.

Conclusion

This article analysed the difference between wholesale and partial turn-over. Prominent political scientists, such as Rokkan (1970), Mair (1997) and Strøm and Bergman (2011) have pointed to the importance of this distinction for understanding party systems. Other political scientists have shown that there is a relationship between this phenomenon and party-interest group relationships, legislative politics, public administration and social-economic policies (Anthonen and Lindvall 2009; Green-Pedersen 2002; Meyer-Sahling and Veen 2012; Otjes and Rasmussen 2015; Louwerse et al. 2016). This is one of the first studies, together with Ieraci (2012) and Lundell (2011), to cast its light on the reasons *why* governments change in the way that they do.

This article focused on party system characteristics: the number of parties and the way that they are distributed over the political space matters for the level of alternation. The empirical analysis sustained both hypotheses: first, the higher the level of fractionalisation in a party system, the lower the level of government turn-over. Second, we proposed an interaction relationship between the effective number of political parties in a system, the level of polarisation and the level of turn-over. Indeed, when the level of fractionalisation increases, the level of government turn-over drops sharply in non-polarised systems while it remains higher in polarised systems. The level of government turn-over is particularly low when one gets to non-polarised

systems with a high number of parties (more than six). The level of party turn-over in government is markedly higher in multiparty systems with higher levels of polarisation compared to multiparty systems with lower levels of polarisation. In polarised systems, parties that seek to form coalitions of likeminded parties are likely to alternate in office: sometimes the parties of the left have a majority and other times the parties of the right mode have a majority. In systems with lower levels of polarisation, the parties of the political centre can all govern together. After the elections, wholesale turn-over is only one of a smorgasbord of possible governments.

One puzzling outcome is that there is not just a difference between the level of turn-over in polarised and non-polarised systems with a large number of effective parties but also between polarised and non-polarised systems with a low number of effective parties (i.e. two-party systems): non-polarised two-party systems, where the two parties have centrist positions, see slightly higher levels of turn-over, compared to polarised two-party systems, with a clear left-wing and right-wing party. This goes in against the common sense expectation that polarisation ought to make wholesale alternation more likely. One should note that this pattern occurs in systems that have a very low number of parties. Most of these are two-party systems, with two very large parties and perhaps a few parties with a few seats; but these can also be systems where there is one party with a very large share of the seats and the rest of the seats fractionalised among other parties. Essentially, three kinds of partial government turn-over are possible here: a large party stays in office and is joined by one or more of the small parties (which would lead to an a very low level of government turn-over), one or more of the small parties stay in office and a large party enters government (which would lead to a very high level of government turn-over) and a large party stays in office and it is joined by a large party (which would lead to a GTI of 50%). The latter two kinds of government turn-over do not occur nearly as often as the first kind of government turn-over. This means that at low levels of fractionalisation, one tends to see a large number of cases with wholesale government turn-over and a few cases of very limited government turn-over. This limited government turn-over is more likely to occur in polarised systems: it may be that if polarisation is greater, the party that wins the elections but has a small majority, is more likely to co-opt a smaller party into the government. They may do this in order to ensure sufficient support because in case of defections in their own ranks they are unlikely to be able to rely on the opposition party on the other side of the political spectrum. In contrast, in systems that have low levels of polarisation the government parties can alternate in office while knowing that in case of defections 'her Majesty's loyal opposition', the large, centrist opposition party will be willing to support the government. This is however only a preliminary explanation future research may want to study in greater detail why and how some two-party systems deviate from the pattern of wholesale government turn-over.

This article has also shown that there is great diversity in the level of party turn-over in government between political systems: there are systems with no wholesale turn-over (such as the Netherlands) and systems with no partial turn-over (such as the United Kingdom). The implications that this has for the quality of democracy is an important but unanswered question: the extent to which partial turn-over is 'toxic' because it leads to corruption of the semi-permanent government parties and

radicalisation of the semi-permanent opposition parties has not been studied. Moreover, the effect of having partial or wholesale turn-over on voter satisfaction with democracy is not established. Does the possibility of ‘sending the rascals out’ boost satisfaction with democracy in systems with wholesale turn-over? Or does the fact that the party of the median voter is more likely to set government policy increase voter satisfaction in systems with partial alternation? Future research may want to examine this.

Appendix

This Appendix examines four issues:

- (1) a different visualisation of the main interaction relationship (see footnote 6 in the article);
- (2) an alternative operationalisation of the Government–Opposition Vote Differential (see footnote 3 in the article);
- (3) an alternative operationalisation of the GTI (see footnote 4);
- (4) and an alternative operationalisation of turn-over that incorporates the ideological difference between the government and the opposition (see footnote 1).

First, we examine Fig. 3 in Appendix. It shows the marginal effect of polarisation on the GTI for increasing effective numbers of political parties. It supports the same substantive conclusion as Fig. 2 in the paper: when the effective number of

Fig. 3 Marginal effect of polarisation as the effective number of political parties increases. Based on Model 1 in Table 3 (in the article)

political parties is low, polarisation has a significant negative effect on the Government Turn-over Index. In the mid-range there is no significant effect of polarisation. When the number of political parties is high, polarisation positively affects the Government Turn-over Index. This effect becomes significant when the effective number of political parties is greater than seven. Substantially, the conclusions are the same as those described in the paper, although the level of uncertainty is greater for these marginal effects.

Second, we examine the Government–Opposition Seat Differential. Where the Government–Opposition Vote Differential looks at the difference in votes between the previous government and opposition, this measure looks at their seats.

$$\Delta_s = \sum_{i=1}^n S_{i,t-1} \cdot G_{i,t-1} - \sum_{i=1}^n S_{i,t-1} \cdot (1 - G_{i,t-1}) \quad (\text{A.1})$$

where $S_{i,t-1}$ is the share of the seats the respective party got in the previous election.

Models 1, 2 and 3 in Table 4 in Appendix show the results. They are quite similar to those in Table 3 (in the paper). As shown in Models 1 and 2, there is a significant effect of the effective number of parties on the level of government turn-over in the model without and with polarisation. As Model 2 shows, polarisation in itself does not affect the level of alternation. The coefficients for the interaction are almost identical (and statistically indistinguishable) to those in Model 3 in Table 3 (in the paper). The key differences are in the size of the effect of the government–opposition differential; the seat differential (Δ_s) appears to have a weaker effect than the vote differential (Δ_v). At the same time, electoral volatility has a stronger effect in these models than in the paper. It seems likely that the vote differential (Δ_v) picks up on some of the variance that in the Models in Table 3 Electoral Volatility picked up. All in all, the alternative operationalisation of the Government–Opposition Differential does not markedly change the conclusions.

Next, we examine an alternative operationalisation of the dependent variable, the GTI. In the paper, all cases where the government composition did not change (where the GTI was zero) were excluded from the analysis. The reason for this is that the expectations that apply to different levels of government turn-over does not apply to why government stay in power. Models 4, 5 and 6 look at GTI_{All} , that is at alternative operationalisation, which does *not* exclude the cases where GTI did not change. This more than doubles the number of cases. This means that a large share of the variance is between the cases where there is no change and where there is some change. These analyses support the expectation that different patterns apply here: only the Post-election Dichotomy and Electoral Volatility have significant effects in Models 4, 5 and 6: the higher the electoral volatility the higher government turn-over is and the government formed after an election have a higher level of government turn-over, compared to governments formed during the term (which includes government change where for instance only the PM changes). The key variables of the paper (polarisation and its interaction with fractionalisation) do not affect this new variable at all. Model 7 provides an explanation for this pattern. It looks at GTI_{Any} , that is a measure that looks at whether there is any kind of

Table 4 Alternative operationalisations (beta and logistic regressions)

Variable DV model	Model 1 GTI beta	Model 2 GTI beta	Model 3 GTI beta	Model 4 GTI _{All} beta	Model 5 GTI _{All} beta	Model 6 GTI _{All} beta	Model 7 GTI _{Any} logistic	Model 8 GTI _{Any} logistic	Model 9 GTI _{Any} logistic
Constant	1.35*** (0.40)	1.25*** (0.10)	2.17*** (0.57)	-1.19*** (0.14)	-1.06*** (0.06)	-0.55 (0.50)	-1.90*** (0.38)	-1.60*** (0.45)	-1.67 (1.14)
Δ _s	-1.65*** (0.49)	1.50*** (0.46)	-1.48*** (0.44)	-	-	-	-	-	-
Δ _v	-	-	-	-0.17 (0.20)	-0.21 (0.28)	-0.21 (0.29)	0.71 (0.53)	0.90 (0.59)	0.90 (0.59)
PED	0.88*** (0.19)	0.90*** (0.21)	0.89*** (0.21)	0.62*** (0.09)	0.75*** (0.11)	0.75*** (0.11)	0.94*** (0.19)	1.07*** (0.23)	1.07*** (0.23)
EV	1.65*** (0.49)	1.74*** (0.43)	1.85*** (0.47)	1.48*** (0.28)	1.75*** (0.35)	1.80*** (0.35)	2.84*** (0.56)	3.60*** (0.75)	3.60*** (0.78)
ENPP	-0.32*** (0.06)	-0.26*** (0.06)	-0.52*** (0.16)	0.00 (0.03)	-0.01 (0.03)	-0.14 (0.12)	0.16* (0.08)	0.09 (0.09)	0.10 (0.32)
PI	-	-0.03 (0.05)	-0.27* (0.14)	-	-0.05 (0.04)	-0.17 (0.11)	-	-0.03 (0.09)	-0.01 (0.25)
PI×ENPP	-	-	0.07* (0.04)	-	-	0.03 (0.03)	-	-	-0.00 (0.07)
Log pseudo-likelihood	802	589	590	3718	2149	2149	-614	-358	-358
Wald Chi ²	122	88	93	94	160	171	57	65	67
Phi	0.90 (0.09)	0.89 (0.09)	0.90 (0.09)	0.36 (0.03)	0.35 (0.02)	0.35 (0.02)	-	-	-
N	403	260	260	967	566	566	967	566	566
N countries	37	37	37	37	37	37	37	37	37

alternation for all cases. In other words, it checks whether the GTI_{All} is equal to zero, if it has, it has value zero, if not, it has value one. These results are strikingly similar to those for GTI_{All} . Note that here logistic regression is employed so the coefficients are not directly comparable to other models presented in the paper or the appendix: here we also find significant effects for the Post-election Dichotomy and Electoral Volatility. What is also interesting is that there is a positive effect for fractionalisation, which is significant in Model 7. This implies that government turn-over at all is more likely in multiparty systems as opposed to two-party systems, while in the paper the finding is that fractionalisation leads to lower levels of government turn-over (in terms of the GTI). In two-party systems if there is alternation, which is marginally less likely than in multiparty systems, it is wholesale alternation, while in multiparty systems alternation occurs more often but then it is partial alternation. Wholesale alternation is the only option two-party systems, but it requires a change in the composition of parliament, while partial alternation can occur in a multiparty system if one junior government party is traded in for the other. Combining these results explain why in Model 4 fractionalisation has no effect on the GTI_{All} . Models 8 and 9 also show no effect of polarisation (other than reducing the N and weakening the effect of fractionalisation), which means that change of government is not more likely to occur in systems where parties stand far apart.

It appears to be the case that while the hypotheses discussed in the paper can explain the variance between 0.01 and 1, it cannot explain cases where the GTI_{all} is zero. There appears to be a different mechanism beneath the zero values and the other values. A zero-inflated negative binomial model is specifically meant for a situation where the theoretical mechanism beneath the generation of the zero values is different from the mechanism that generates the other values and where the distribution of the other values is not normal. There is one drawback, however, is that it is not meant for values bounded between zero and one. We address this by multiplying GTI_{All} with 10 into GTI_{10} . Models 10, 11 and 12 (in Table 5 in Appendix) show clearly that the mechanisms behind the generation of the zero values (lower half) and the other values (upper half) is different. Note that the signs in the lower half of the table are flipped compared to Models 7, 8 and 9, because it now predicts whether the value is zero: it decreases the likelihood of both non-alternation and wholesale alternation. Model 10 shows the same pattern for fractionalisation we observed above. The models indicate that electoral volatility makes non-alternation less likely: when the distribution of seats is similar to the outcome where the previous government was formed, it staying in power is more likely. Changing a government just after elections also makes non-alternation less likely: the only time non-alternation is picked up as a government changes is after elections. The mechanism for non-zero values shown in Table 5 in Appendix completely conforms to findings elsewhere in the paper, including the significant interaction between polarisation and the effective number of political parties.

Finally, we look at an alternative way to approach alternation, namely by looking at the ideological distance between the current and the previous government. The IA, which is employed by Tsebelis (2002), Tsebelis and Chang (2002) and Zucchini (2010), looks at the absolute difference between the ideological position

Table 5 Alternative operationalisations (zero-inflated negative binomial regressions)

Variable DV model	Model 10 GTI ₁₀ zero-inflated negative binomial	Model 11 GTI ₁₀ zero-inflated negative binomial	Model 12 GTI ₁₀ zero-inflated negative binomial
Non-zero values			
Constant	1.65*** (0.20)	1.59*** (0.22)	2.04*** (0.22)
Δ_v	-0.81*** (0.12)	-0.72*** (0.14)	-0.71*** (0.14)
PED	0.56*** (0.13)	0.61*** (0.13)	0.61*** (0.13)
EV	0.23 (0.18)	0.40** (0.16)	0.44*** (0.17)
ENPP	-0.08*** (0.02)	-0.06*** (0.02)	-0.19*** (0.06)
PI	—	-0.01 (0.02)	-0.13** (0.06)
PI×ENPP	—	—	0.03** (0.02)
Zero values			
Constant	1.96*** (0.57)	1.63*** (0.48)	1.74 (1.20)
Δ_v	-0.85 (0.55)	-0.99* (0.60)	-0.99 (0.60)
PED	-0.90*** (0.19)	-1.03*** (0.24)	-3.71*** (0.81)
EV	-3.00*** (0.60)	-3.72*** (0.79)	-3.71*** (0.81)
ENPP	-0.19* (0.09)	-0.10 (0.10)	-0.14 (0.34)
PI	—	0.03 (0.09)	0.00 (0.26)
PI×ENPP	—	—	0.01 (0.07)
Log pseudo-likelihood	-1692	-1054	-1052
Wald Chi ²	108	133	139
Alpha	0.15	0.07	0.07
N	967	566	566
N countries	37	37	37

of governments on basis of the average position of their most extreme parties in the government:

$$IA = \left| \frac{\max(LR_{G,t}) - \min(LR_{G,t})}{2} - \frac{\max(LR_{G,t-1}) - \min(LR_{G,t-1})}{2} \right|, \quad (A.2)$$

where LR_G is the set of left right positions of the parties in government (at t and $t-1$). The seat-weighted IA is the same idea but it looks at the average position of all parties in the government, weighted by their seat total. In terms of the variables introduced in the paper,

$$IA_{sw} = \left| \frac{\sum_{i=1}^n S_{i,t} \cdot LR_{i,t} \cdot G_{i,t}}{\sum_{i=1}^n S_{i,t} \cdot G_{i,t}} - \frac{\sum_{i=1}^n S_{i,t-1} \cdot LR_{i,t-1} \cdot G_{i,t-1}}{\sum_{i=1}^n S_{i,t-1} \cdot G_{i,t-1}} \right|. \quad (A.3)$$

This is another way of thinking about government turn-over. In the theory section, we essentially considered four cases:

- (1) when polarisation is high and the number of parties is high, the GTI would be high;
- (2) when polarisation is low and the number of parties is high, the GTI would be low;
- (3) when polarisation is high and the number of parties is low, the GTI would be high;
- (4) and when polarisation is low and the number of parties is low, the GTI would be high.

The expectation would need to be different for situation four when it comes to IA and the IA_{sw} : if polarisation is low, the IA cannot be high, because the government would be formed by the parties that, given the polarisation, stand close together. Consider the situation in Malta where the Labour Party and the National Party are very close together and therefore the polarisation is very low. In this situation one cannot expect a high IA, while one can expect a high GTI. There is no sound basis to expect an interaction relationship, it is still included in the model for consistency's sake.

The analyses for the IA and IA_{sw} (Table 6 in Appendix) support broadly the same conclusions: ideological alternation is higher when a government is formed after an election (as opposed to during the parliament's term), when Government–Opposition Vote Differential is lower and when electoral volatility is higher. As expected but contrary to the findings for the GTI, polarisation has a strong direct effect on the level of ideological alternation and the effective number of parties does not affect the level of ideological alternation. The interaction for the IA_{sw} is visualised in Fig. 4 in Appendix. It shows that at low levels of fractionalisation, low polarisation is associated with low levels of ideological alternation; while for the same levels of fractionalisation, high polarisation is associated with high levels of ideological alternation. When the number of parties becomes higher the uncertainty becomes such that the two are no longer distinguishable. That is when the number of parties is high the polarisation matters less, contrary to the pattern for the GTI.

Table 6 Alternative operationalisations (OLS regressions)

Variable DV model	Model 13 IA OLS	Model 14 IA OLS	Model 15 IA OLS	Model 16 IA _{SW} OLS	Model 17 IA _{SW} OLS	Model 18 IA _{SW} OLS
Constant	0.30** (0.21)	-0.49 (0.32)	-1.20 (0.73)	0.12 (0.21)	-0.71** (0.26)	-1.50** (0.65)
Δ_v	-0.67* (0.38)	-0.64* (0.36)	-0.67* (0.35)	-0.69* (0.38)	-0.68* (0.34)	-0.69* (0.34)
PED	0.82*** (0.14)	0.83*** (0.15)	0.83*** (0.14)	0.82*** (0.15)	0.82*** (0.14)	0.82*** (0.14)
EV	1.11** (0.54)	1.35** (0.52)	1.28** (0.54)	1.19** (0.53)	1.44*** (0.51)	1.36** (0.53)
ENPP	0.02 (0.04)	-0.02 (0.04)	0.18 (0.21)	0.03 (0.04)	-0.01 (0.04)	0.21 (0.20)
PI	-	0.23** (0.09)	0.42** (0.20)	-	0.25*** (0.07)	0.45** (0.17)
PI×ENPP	-	-	-0.05 (0.05)	-	-	-0.06 (0.05)
R^2	0.11	0.14	0.14	0.11	0.15	0.15
N	528	528	528	528	528	528
N countries	37	37	37	37	37	37

Fig. 4 Seat-weighted ideological alternation as a function of the effective number of parliamentary parties at different levels of polarisation. *Notes* Black lines are the predicted level of alternation for different effective numbers of parliamentary parties for non-polarised systems (Polarisation at 0.23) and the grey lines are the predicted level of alternation for different levels of the effective numbers of parliamentary parties for polarised systems (Polarisation at 7.35). Based on Model 12 in Table 6 in Appendix. The dashed lines are 90% confidence intervals

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