

## **Online Appendices**

“Fit for parliament: A new index of electability, assessing the electoral success of group-based parties.”  
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## **Appendix A: Data**

### **A1 Data sources**

#### **Coverage**

The dataset covers 57 heterogeneous democracies on six continents, for the period of 1990 to 2013. The cut-off point to qualify as a democracy is a Polity IV score of 6 or higher. We also include Bosnia and Herzegovina and Kosovo, which (in parts of the period considered) are not considered democratic by Polity IV, either due to the international prerogatives (Bosnia and Herzegovina), or before declaration of independence (Kosovo), although both have a (de-facto) independent political system, elections, and a distinct party system.

#### **Units of analysis**

We identify all politically relevant ethnic groups in these democracies using the EPR dataset (Vogt et al. 2015). The EPR dataset uses a constructivist definition of ethnic groups, whereby ethnicity can refer to different aspects of identity (this includes, among others, language, religion, race, regional belonging, or combinations thereof), which is based on the belief of a common descent, and its politicization. The catalogue of groups is expert-coded. We only include ethnic minorities, i.e. non-plurality groups.

#### **Population of ethnic groups: share of the overall population, territorial concentration**

The population size is coded by EPR. We have corrected it based on census data for countries where the population share for all groups summed up to more than 100%.

A binary-coded variable on the territorial concentration of ethnic groups is taken from EPR.

#### **Electoral success of ethnic parties**

We match this data with the election results for political parties based on the data in the Democracy Barometer (raw data from the WZB, not published).

To identify parties addressing ethnic minorities, we rely on two main sources: Hänni (2017) and Bochsler (2010). We consider ethnic parties to be any parties addressing ethnic minorities programmatically and/or in their party label. The relevant information was taken from qualitative, country- or region-specific literature. The list of parties was compared with Lublin’s dataset (who, though, relies on a slightly different operationalization). The information appears consistent and accurate for parties winning seats in parliament.

Some of the ethnic parties are small, and not covered by the WZB/Democracy Barometer dataset. We have completed the election results for these cases using official election results.

### **Classification of parties, validation**

We have matched our dataset with the Ethnoregional Parties in Competition (EPAC) data, at the level of groups, and for the countries and periods for which the two datasets overlap (we compare the closest election to the respective EPAC survey round. The EPAC data is not organised along groups, but associates political parties to specific ethnic groups that they claim to represent. Thus, we assess, for countries covered in both datasets, 1. whether groups that EPAC claims to be represented by ethnic parties are coded as represented by our data, 2. , whether EPAC lists an ethnic party for all groups that we claim to be represented, and 3. whether groups that our data lists as not represented are subject to representative claim by any of the parties in the EPAC dataset.

Type	N
Corresponding: Groups represented according to our data & EPAC	34
Corresponding: Groups not represented according to our data & EPAC	21
Corresponding: Groups not represented according to our data & EPAC lists a party that does not win any seat in national parliament	8
Conceptual difference: Groups not represented according to our data & EPAC lists a party represented in parliament that won the seat(s) in an electoral coalition with a non-ethnic party	3
Non-corresponding: Groups represented according to our data, EPAC does not list any party	2
Non-corresponding: Groups not represented according to our data, EPAC associates them with a party represented in parliament	3

We further scrutinise the non-corresponding cases.

Groups represented by own parties, according in our data, for overlapping countries and election years, but not according to the EPAC data: Hungarians in Croatia, whose reserved seat is won by the Union of the Hungarian Communities (SMU), Roma in Romania, who are represented on one out of 18 minority seats by the “Party of the Roma”. Both cases relate to reserved seats, won by parties with a

small vote share. While EPAC does not report a clear cut-off point, they only list a handful of parties below 0.1% of the national vote, and might therefore be less complete for parties with very small vote shares.

Represented ethnic parties (EPAC), not considered in our data: Bulgarians and Gagauz in Moldova and Serbs in Montenegro (3 groups). EPAC considers the 'Party of Communists of the Republic of Moldova' as a party representing all ethnic minorities. On the ethnopolitical dimension, however, the party is positioned by the EPAC experts only slightly towards the minority side (5.7). The party is characterised as one of the main parties on the reform-antireform dimension, the geopolitical dimension, and with a multiculturalist orientation. It capitalises from ethnopolitical mobilisation, among minorities generally more positively disposed to the old system. However, the literature does not discuss it as a party with strong ethnopolitical claims (March 2006); this also would diminish its electoral potential, as the party was the largest political party of Moldova in the period where the first EPAC survey was conducted, with 39% of the countrywide votes in the 2010 elections. In Montenegro, we differ with regards to the Socialist National Party, which was opposed to independence, and seeks political orientation at Serbia (Bieber 2010). Again, we consider these programmatic claims that match with the preferences of many ethnic Serbs, but not an explicit claim to represent Serbs in Montenegro.

### **Electoral systems**

For the entire set of countries, we have collected information on their electoral systems. This includes detailed information on the number of seats in parliament, district magnitude, in multi-tier systems the district magnitude and seat numbers for the different tiers of the electoral system, information on legal electoral thresholds, and the election formula. Coding information is based on the ACE project and various encyclopaedias by Nohlen, as well as information from electoral commissions (Merkel et al. 2018).

Electoral rules that are specific for ethnic minorities and their parties (e.g. threshold exceptions, quotas, party bans) were coded from Bochsler (2010), Bird (2014), and Freidberg and Došek (2016), and complemented by information from Electoral Commissions.

## Appendix A2: List of countries + elections included

Country	2005	2009	2013						
Albania	2005	2009	2013						
Australia	1990	1993	1996	1998	2001	2004	2007	2010	2013
Austria	1990	1994	1995	1999	2002	2006	2008		
Belgium	1991	1995	1999	2003	2007	2010			
Bolivia	1993	1997	2002	2005	2009				
Bosnia and Herzegovina	1996	1998	2000	2002	2006	2010			
Brazil	1990	1994	1998	2002	2006	2010			
Bulgaria	1990	1991	1997	2001	2009	2013			
Canada	1993	1997	2000	2004	2006	2008	2011		
Chile	1993	1997	2001	2005	2009	2013			
Colombia	1990	1991	1994	2002	2006	2010			
Costa Rica	1990	1994	1998	2002	2006	2010			
Croatia	2000	2003	2007	2011					
Cyprus	1991	1996	2001	2006	2011				
Czechoslovakia	1990								
Ecuador	1990	1992	1994	1996	1998	2002	2006		
El Salvador	1991	1994	1997	2000	2003	2006	2009	2012	
Estonia	1992	1995	1999	2003	2007	2011			
Finland	1991	1995	1999	2003	2007	2011			
France	1993	1997	2002	2007	2012				
Greece	1990	1993	1996	2000	2004	2007	2009	2012 (May)	2012 (June)
Guatemala	1999	2003	2007	2011					
Honduras	1993	1997	2001	2005	2009				
Hungary	1990	1994	1998	2002	2006	2010			
India	1991	1992	1996	1998	1999	2004	2009		
Israel	1992	1996	1999	2003	2006	2009	2013		
Italy	1992	1994	1996	2001	2006	2008	2013		
Japan	1990	1993	1996	2000	2003	2005	2009	2012	
Kosovo	2001	2004	2007						
Latvia	1993	1995	1998	2002	2006	2010	2011		
Lithuania	1992	1996	2000	2004	2008	2012			
Macedonia	1990	1994	1998	2002	2006	2008	2011		
Mexico	1997	2000	2003	2006	2009	2012			
Moldova	1994	1998	2001	2005	2009	2009	2010		
Montenegro	1998	2001	2002	2006	(April) 2009	(July) 2012			
New Zealand	1990	1993	1996	1999	2002	2005	2008	2011	
Nicaragua	1990	1996	2001	2006	2011				
Panama	1994	1999	2004	2009					
Paraguay	1993	1998	2003	2008	2013				
Peru	1990	2001	2006	2011					
Philippines	1992	1995	1998	2001	2004	2007	2010		
Poland	1991	1993	1997	2001	2005	2007	2011		
Romania	1996	2000	2004	2008	2012				
Serbia	2000	2003	2007	2008	2012				
Slovakia	1992	1994	1998	2002	2006	2010	2012		

Slovenia	1992	1996	2000	2004	2008	2011						
South Africa	1994	1999	2004	2009								
Spain	1993	1996	2000	2004	2008	2011						
Switzerland	1991	1995	1999	2003	2007	2011						
Taiwan	1992	1995	1998	2001	2004	2008	2012					
Thailand	1992	1992	1995	1996	2001	2005	2011					
	(March)	(Sept)										
Turkey	1991	1995	1999	2002	2007	2011						
Ukraine	1994	1998	2002	2006	2007	2012						
United Kingdom	1992	1997	2001	2005	2010							
United States	1990	1992	1994	1996	1998	2000	2002	2004	2006	2008	2010	2012
Uruguay	1994	1999	2004	2009								
Venezuela	1993	1998	2000	2005								

## Appendix A3: Data file

See xls file.

## Appendix B: Specifications of the Index of Electability

### B1: Variable notation

$E$	Index of electability, national-level
$E_D$	District-level index of electability
$E_Q$	Index of electability for quota seats or reserved seats
$g$	group population share (of national population)
$g_D$	group district population share (of district population)
$m$	district magnitude (national average)
$m_{PR}, m_{LOW}$	district magnitude, multi-level electoral systems: upper (PR tier) and lower tier
$m_Q$	number of seats allocated by quota or as reserved seats for a social group
$pop_D$	Electorate (total number), district
$pop_N$	Electorate (total number), national
$S$	number of seats in parliament
$S_{PR}, S_{LOW}$	number of seats in parliament, multi-level electoral systems: upper (PR tier) and lower tier
$T_D$	Threshold of exclusion at the level of the district
$T_L$	Legal threshold (vote fraction), national level
$T_{LD}$	District-level legal threshold (district vote fraction)
$T_{NG}$	Threshold of exclusion at the national level for dispersed groups
$T_G$	Threshold of exclusion at the national level for territorial groups

## B2: Mixed electoral systems, legal thresholds, quota rules and special districts

Table B1: Specification for the Index of Electability for territorial and dispersed groups, mixed electoral systems, groups not benefitting from quotas

	Territorial groups	Dispersed groups
Simple electoral systems (PR, FPTP, Majority Vote, AV, SNTV, STV) with national legal thresholds $t_L$	$E = \frac{g}{\max\left(\frac{1}{(m+1)} \cdot \frac{m}{S}, T_L\right)}$	$E = \frac{g}{\max\left(\frac{1}{(m+1)}, T_L\right)}$
Simple electoral systems (PR, FPTP, Majority Vote, AV, SNTV, STV) with district-level legal thresholds $t_{LD}$	$E = \frac{g}{\max\left(\frac{1}{(m+1)}, T_{LD}\right)} \cdot \frac{m}{S}$	$E = \frac{g}{\max\left(\frac{1}{(m+1)}, T_{LD}\right)}$
Mixed-member majoritarian (MMM) with national legal thresholds $t_N$ in the upper tier	$E = \frac{g}{\min\left(\frac{1}{2 \cdot S_{SSD}}, \max\left(\frac{1}{(m_{PR}+1)} \cdot \frac{m_{PR}}{S_{PR}}, T_L\right)\right)}$	$E = \frac{g}{\min\left(\frac{1}{2}, \max\left(\frac{1}{(m+1)}, T_{LD}\right)\right)}$
Mixed-member proportional (MMP) with national legal thresholds $t_N$ in the upper tier	$E = \frac{g}{\min\left(\frac{1}{2 \cdot S_{SSD}}, \max\left(\frac{1}{\frac{S \cdot m_{PR}}{S_{PR}} + 1} \cdot \frac{S_{PR}}{m_{PR}}, T_L\right)\right)}$	$E = \frac{g}{\min\left(\frac{1}{2}, \max\left(\frac{1}{\frac{S \cdot m_{PR}}{S_{PR}} + 1}, T_L\right)\right)}$
Quotas (see appendix D)	$E_Q = \frac{g}{T_D} = \frac{1}{\frac{1}{m_Q + 1}} = m_Q + 1$ <p>When the ‘regular’ rules are more favourable to a minority group than the party quotas, we assign the index based on the regular rules.</p>	

### B3: Uneven district magnitude

For any district  $i$ , with a district group population  $g_D$ , the district-based index  $E_D$  can be calculated as a function of the number of seats in the respective district  $m_i$ :  $E_D = g_D(m_i + 1)$ .

For *concentrated groups*, for which the entire group population lives in one electoral district,  $g_D = g \frac{S}{m_i}$ ,

we can express the index in function of the national group population share as  $E_D = g \frac{m_i + 1}{m_i}$ .

Thus, in electoral systems with uneven district magnitude, the maximal variation of the index across districts of different magnitude amounts to  $g \cdot (S - 1) < E_D \leq 2 \cdot g \cdot S$ . In cases of extreme unevenness (where the electoral territory is split into two districts, counting 1 and  $S - 1$  seats), the index will be almost twice higher in the smallest compared to the largest district.

For larger concentrated groups  $g > \frac{S}{m}$ , or those living in small electoral districts with a group population that covers more than a single electoral district, the group population in districts where they are present amounts to  $g_D = 1$ . Accordingly,  $E = E_D = \max(m_i) + 1$ , whereby  $m_i$  refers to districts where the group lives (where  $g_D = 1$ ).

For *dispersed groups*, for which we define  $g = g_D$  being equal across districts, the lowest threshold of exclusion at the level of districts is most relevant. Therefore,  $E = E_D = g \cdot (\max(m_i) + 1)$ .

In brief, in cases of uneven district magnitude, the Index of Electability may vary across districts, especially for a) larger concentrated groups, whose population covers multiple districts, or b) for dispersed groups. For smaller concentrated groups, whose population is smaller than the population share of an electoral district, the variation of the Index of Electability is limited.



## Appendix C: Additional analyses

### C1: A “naive” Index of Electability, not considering the group geography or quota rules

The Index of Electability, which we developed in sections 2.2 and 2.3 of the main text, distinguishes between territorially concentrated and dispersed groups, and considers quota rules specifically. To assess the empirical relevance of these two distinctions, this appendix reproduces the Index of Electability, first without distinguishing between territorial and dispersed groups, and second without consideration of quota rules.

Firstly (tables C1a and C1b), we calculate a “naive” Index of Electability disregarding the distinction between territorial and dispersed groups. We either employ the equation for dispersed groups, assuming that the group population is always evenly distributed across electoral districts, or for territorial groups, assuming that the group population is always concentrated on one or few electoral districts.

Table C1a and C1b replicate the analysis (table 2) from the main text.

*Table C1a: Index of Electability and ethnic party representation, non-territorial version of the index*

Index of Electability	territorial groups				dispersed groups			
	represented in parliament with own party				represented in parliament with own party			
	prob.	no	yes	N	prob.	no	yes	N
<1	0.21	362	95	457	0.01	270	2	272
1 to 2	0.39	22	14	36	0.00	18	0	18
2 to 10	0.40	73	48	121	0.09	48	5	53
>10	0.11	39	5	44	0.00	8	0	8
Total	0.24	497	161	658	0.02	344	7	351

Note: Units of analysis: ethnic minority groups by election. Analysis excludes groups which profit from electoral quotas and countries with ethnic party bans.

Table C1b: Index of Electability and ethnic party representation, territorial version of the index

Index of Electability	territorial groups				dispersed groups			
	represented in parliament with own party				represented in parliament with own party			
	prob.	no	yes	N	prob.	no	yes	N
<1	0.1	71	8	79	0.00	115	0	115
1 to 2	0.00	57	0	57	0.00	20	0	20
2 to 10	0.23	181	54	235	0.05	121	7	128
>10	0.34	188	99	287	0.00	88	0	88
Total	0.24	497	161	658	0.02	344	7	351

Note: Units of analysis: ethnic minority groups by election. Analysis excludes groups which benefit from electoral quotas and countries with ethnic party bans.

We find that the ‘naive’ index, which is blind for group geography, always leads to meaningful results for the subset of cases, which fits the operationalization. Thus the first version of the index (table C1a), assuming a dispersed population, only has explanatory power for dispersed groups (right part). The second version of the index (table C1b), assuming territorial concentration, only has explanatory power for territorial groups (left part).

We conclude that our theoretical distinction of groups according to their geographic settlement patterns is supported by the empirical evidence.

Second, we extend the analysis to groups benefitting from quota rules, although the naive version of the Index of Electability displayed in table C2 only considers the ‘general’ rules of the electoral system and does not take special rules (quota, ethnic party bans, etc.) rules into account. As a result, we increase the number of groups and elections where a group-related party wins parliamentary representation, even though the ‘general’ election rules would not allow for this. In the case of territorial groups, the number of such cases increases from 8 to 18 (see table 2 for the comparison), and in the case of dispersed groups from 2 to 13. Of all the 230 groups and elections where an ethnic party

wins representation in parliament, 21 observations (9%) fall into the category of cases where the ‘general’ election rules would not allow for such representation and only quotas can explain the result.

*Table C2: Index of Electability and ethnic party representation, naive index not considering quota rules or bans*

Index of Electability	territorial groups				dispersed groups			
	prob.	represented in parliament with own party			prob.	represented in parliament with own party		
		no	yes	N		no	yes	N
<1	0.19	76	18	94	0.04	298	13	311
1 to 2	0.10	57	6	63	0.11	25	3	28
2 to 10	0.27	188	70	258	0.14	51	8	59
>10	0.36	199	111	310	0.00	8	0	8
Total	0.28	520	205	725	0.06	382	24	406

Note: Units of analysis: ethnic minority groups by election.

Third, we calculate the Index of Electability separately for the upper and the lower tier, for mixed electoral systems and multi-tier PR electoral systems. Table C3 displays all cases where mixed electoral systems or multi-tier PR electoral systems differ with regards to the institutional opportunities offered for ethnic parties across tiers.

Table C3: Index of Electability and ethnic party representation, mixed electoral systems or multi-tier PR electoral systems with different institutional hurdles across tiers

a) Lower tier is permissive ( $index \geq 1$ ), upper tier restrictive ( $index < 1$ )

Index of Electability: lower tier	territorial groups				dispersed groups	
	represented in parliament with own party				represented in parliament with own party	
	prob.	no	yes	N	N	
1 to 2	0	7	0	7	0	
2 to 10	0.09	43	4	47	0	
>10	0.11	8	1	9	0	
Total	0.08	58	5	63	0	

Note: Units of analysis: ethnic minority groups by election. Elections with ethnic party bans or quota rules excluded.

b) Lower tier is restrictive ( $index < 1$ ), upper tier permissive ( $index \geq 1$ )

Index of Electability: upper	territorial groups			dispersed groups			
	represented in parliament with own party			represented in parliament with own party			
	N			prob.	no	yes	N
1 to 2	0			0	13	0	13
2 to 10	0			0.09	20	2	22
>10	0			n.a.	0	0	0
Total	0			0.06	33	2	35

Note: Units of analysis: ethnic minority groups by election. Elections with ethnic party bans or quota rules excluded.

For all seven cases, where minorities with representation opportunities only in one tier got represented by an ethnic party, we assess in which tier this was the case, and in which tier the respective party was running.

The five cases where ethnic minorities have the opportunity for party representation in the lower tier include four instances in Italy (German speakers, 1994, 1996, 2001, and Sardinians, 2001), one case in Poland (Germans, 1991).

In Italy, the South Tyrolean People's Party and the Sardinian Reformers won their seats exclusively in the lower tier.<sup>1</sup> For the Polish 1991 elections, the information could not be found.

The two cases where the institutions offer opportunities for minority representation in the upper tier refer to Asians in South Africa (2004 and 2009 elections), a dispersed group. Their party, the Minority Front, won a regional seat (KwaZulu-Natal) and a national seat in 2004, and a national seat in 2009. Asians in South Africa count 2% of the population, which puts them above the threshold of exclusion in the national tier. The Minority Front won 1.9% of the votes in KwaZulu-Natal in the 2004 elections. With 37 seats, KwaZulu-Natal was the second largest electoral district in the first tier, associated with a threshold of exclusion of 2.6%, slightly lower than the average lower-tier threshold of 4.3%. Thus the Minority Front reached only some 70% of the votes needed for a save seat. However, the Droop quota rule, which is used in South Africa, often in the allocation of seats to parties with a vote share slightly below the threshold of exclusion.

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<sup>1</sup>In other instances, Sardinian ethno-regional parties were winning upper-tier seats, when competing within larger electoral alliances.

## **C2: Assessing the empirical power of the index (multivariate models)**

Appendix C2 compares the empirical power of the Index of Electability to other models used in the literature.

First, the geographical model to assess the prospects of political parties to gain parliamentary representation relies on political institutions, but considers the differential effects of district magnitude for territorial and dispersed groups. Following Mozaffar et al. (2003) and Dancygier (2014), we operationalise it with a common interaction term between group geography and the electoral system.<sup>2</sup>

Second, we assess our index of electability.

Third, we analyse the explanatory power of our modified version of Rae's threshold of exclusion. We do so in two versions thereof, one that is geography-blind (assuming dispersed party support), and one that is adjusted to geographic support groups. Most of the applications of this model look at the interplay of ethnic diversity with institutions, and its effect on party proliferation (Amorim Neto and Cox 1997; Clark and Golder 2006; Lublin 2017, 379). Ishiyama & Stewart (2021) apply it to minority party representation.

In table C3, we compare the explanatory power of two more conventional operationalisations of electoral systems with our new index. In specifications 1-3, we rely on the geographic model, interacting electoral institutions with group geography.

A second set of models (specifications 4-6), analyses the effect of our Index of Electability. A third set of models instead analyses the modified Rae threshold of exclusion in its version for dispersed support (specifications 7-8) and for geographically concentrated support (specifications 9-10).

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<sup>2</sup> Similar: Trounstine & Valdini (2008); Moser (2008).

The three models are based on similar information (electoral system, geography). We conduct the Davidson & MacKinnon's (1981) J-test, which is suited for the comparison of multiple models that build on different transformations of the same variables (Wooldridge 2008, 283). Hence, for each of our three models,<sup>3</sup> we first calculate a synthetic prediction, which is a simulated probability score for a positive outcome as an explanatory term to each of the alternative models (cf. Collier and Hoeffler 2004). Second, we include these synthetic scores for the alternative explanations as control variables in all specification. In these new specifications, we see that the geographic model remains statistically significant, if we control for the synthetic score from the modified-threshold models (specifications 2-3). Also, the coefficient for the modified-threshold model remains statistically significant in its geography-aware version (specification 9) when we control for the geographic model.

Vice-versa, the effect of our Index of Electability is robust, and remains statistically significant after we include the synthetic controls for the three other models (geography and modified threshold of exclusion: specifications 4-6). Also, in any of the three models that includes synthetic predictions based on our Index of Electability (specifications 1, 8, 10), the other key coefficients become statistically insignificant.

Hence, we conclude that our Index of Electability empirically improves over previous approaches to explain the success of ethnic minority parties in gaining representation. It relies on the same information as the geographic model (group population size, territorial concentration, district magnitude, quota rules and legal thresholds), but combines them in a theoretically more meaningful way.

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<sup>3</sup> Table 4, specification 4, and table 4, specifications 1 and 3.

Table C3: Comparing the explanatory power: Geographical model, index models, and modified thresholds of representation

	Geographical model			Index of Electability			Modified threshold (dispersed)		Modified threshold (geographic)	
	b/se (1)	b/se (2)	b/se (3)	b/se (4)	b/se (5)	b/se (6)	b/se (7)	b/se (8)	b/se (9)	b/se (10)
Group population	-1.676 (3.894)	0.019 (8.429)	-1.005 (3.834)	-7.547 (5.991)	-0.362 (3.664)	-3.742 (4.536)	0.169 (4.035)	-0.596 (3.609)	0.985 (3.859)	1.041 (4.131)
Territorial conc. (bin)	1.802 (2.312)	2.714 (4.505)	2.221 (2.003)	-2.356 (2.939)	0.946 (1.260)	-0.368 (0.921)	0.097 (0.972)	-0.168 (0.977)	-0.22 (0.861)	0.293 (1.191)
<b>INSTITUTIONAL MODEL</b>										
Modified threshold of exclusion (log, dispersed)							-0.08 (0.268)	-0.332 (0.236)		
Modified threshold of exclusion (log, geographic)									-0.998* (0.402)	-0.306 (0.463)
Synthetic prediction (mod. threshold dispersed.)		1.078 (1.533)		1.522 (1.084)						
Synthetic prediction (mod threshold geographic)			1.185** (0.408)		0.332 (0.503)					
<b>GEOGRAPHIC MODEL</b>										
District magnitude (log)	1.096 (0.687)	0.975* (0.570)	1.221* (0.511)							
Terr. Concentration * magnitude	-0.749 (0.624)	-1.103* (0.453)	-1.048* (0.461)							
Synthetic prediction (geographic)						0.903* (0.472)	0.966* (0.431)		1.026** (0.387)	
<b>INDEX OF ELECTABILITY</b>										
Index of Elect. (geog.-aware), log				0.560** (0.190)	0.438* (0.225)	0.481* (0.209)				
Quota rules (bin)	-0.737 (1.126)	-0.36 (3.920)	-0.804 (1.234)	-2.043 (2.772)	1.169 (1.418)	-0.238 (1.181)	0.071 (1.179)	-0.297 (1.039)	0.342 (1.111)	0.467 (1.336)
Ethnic party ban (bin)	-0.42 (0.634)	-0.223 (1.575)	-0.44 (0.690)	-0.7 (1.195)	0.557 (0.732)	0.007 (0.610)	0.036 (0.544)	-0.074 (0.607)	0.228 (0.703)	0.216 (0.776)
Synthetic prediction (Index model)	1.235** (0.433)							1.106** (0.375)		0.865* (0.446)
<b>CONTROL VARIABLES</b>										
Region: Latin America	1.28 (1.995)	0.251 (6.190)	1.073 (1.979)	1.988 (4.644)	-2.907 (2.351)	-0.627 (2.116)	-0.087 (2.046)	0.622 (1.695)	-0.655 (2.003)	-0.773 (2.277)
Region: Middle East North Afr.	0.187 (1.572)	0.211 (3.160)	0.245 (1.659)	1.056 (2.486)	-1.09 (1.895)	-0.099 (1.852)	-0.064 (1.683)	0.142 (1.655)	0.064 (1.785)	-0.234 (1.962)
Region: Sub-Saharan Africa	-1.015 (1.138)	0.201 (3.672)	-0.57 (1.243)	-0.24 (2.083)	-2.072 (1.261)	-1.309 (0.814)	-0.147 (0.836)	-0.288 (0.932)	-0.727 (0.673)	-0.449 (1.158)
Region: W. Eur, N. Am, Oceania	0.162 (0.493)	-0.127 (1.043)	0.135 (0.564)	-0.957 (0.787)	-0.323 (0.578)	-0.66 (0.620)	0.091 (0.554)	0.301 (0.519)	-0.624 (0.650)	-0.14 (0.620)
Region: Asia	1.094 (1.069)	-0.147 (1.574)	0.737 (1.044)	-0.538 (1.639)	-1.765 (1.109)	-1.215 (0.884)	0.093 (0.928)	0.709 (0.842)	-0.742 (0.789)	-0.392 (1.031)
Ethn. polarisation (Reynal-Querol)	0.26 (1.068)	-0.106 (1.190)	0.201 (1.136)	-0.431 (1.081)	-0.271 (1.196)	-0.392 (1.149)	0.031 (1.240)	0.147 (1.097)	-0.069 (1.198)	-0.01 (1.256)
Constant	-2.554 (2.439)	-2.279 (6.513)	-2.609 (2.262)	2.792 (4.004)	-1.59 (1.824)	0.317 (1.539)	-0.014 (1.613)	0.751 (1.144)	1.131 (1.358)	-0.149 (1.195)
N	1131	1131	1131	1131	1131	1131	1131	1131	1131	1131
LL	-349.456	-370.603	-358.18	-356.65	-360.761	-354.03	-371.121	-356.65	-359.233	-360.761
Aic	724.912	767.206	742.361	737.3	745.522	732.061	766.242	737.3	742.467	745.522
Bic	790.313	832.608	807.762	797.67	805.892	792.431	826.612	797.67	802.837	805.892

Cases clustered at the level of countries. Reference category for regional variables Central & Eastern Europe + Former Soviet Union.



### Appendix C3: Discussion of outliers

The formalisation of the model allows us to trace back the outliers to the specific factors facilitating the representation of ethnic parties in parliament, where the institutional opportunities, as operationalised by our Index, are not in favour of representation. Table C4 lists cases with index values below 1, represented by their own parties in parliament, associated with two territorial minorities (Aosta French-speakers, Italy; Hungarians, Czechoslovakia), and one dispersed group (Roma, Macedonia). We analyse three factors, uneven district magnitude, malapportionment as well as voting patterns in electoral districts where large parts of the minorities live.

First, deviations from our model are possible for electoral systems with *uneven district magnitude*. As shown in appendix B3, in consideration of uneven district magnitude, the electorate needed to win a seat in parliament may vary by up to a factor two between the smallest electoral districts (lowest electorate needed) and the largest electoral districts.

In Italy, the French-speaking minority of the Aosta Valley regularly secures one seat in parliament for its ethno-regional party, the party of the Valdôtains (speakers of the local dialect of French). Our Index of Electability varies around 0.64-0.95, i.e. the group counts around 64%-95% of the population that would be needed, according to our index, to secure representation by an own party.

However, the Aosta valley forms an own single-seat electoral district. Until 2001, there are single-seat districts across Italy, so that district magnitude is even. However, as of 2006, Aosta (as six other constituencies across Italy) elects its representative in a single-seat district, whereas the average constituency counts 33 seats.<sup>4</sup> Single-seat districts are associated with an advantage for local parties, as the threshold of representation amounts to  $T_E = \frac{1}{2 \cdot S}$  of the national votes, the smallest theoretically

possible hurdle, whereas in any other electoral district, the threshold amounts to  $T_E = \frac{m}{(m+1) \cdot S}$  of the national votes. We calculate the Index of Electability based on national average district magnitudes, but the threshold of exclusion can also be calculated from data for individual districts. The district-level threshold of exclusion in single-seat districts amounts to 0.08% of the national electorate, which is lower than the 0.15% estimate for the average 33-seat district. The Aosta minority counts 0.1% of the national population. While this explains the deviations in the 2006 and 2008 Italian elections, it does not account for the deviations in four other election years (1992, 1994, 1996 and 2001), when district magnitude was even.

We do not have data about district magnitudes in the Czechoslovak elections. In the 1994 and 1998 elections in Macedonia, all constituencies were single-district seats, i.e. there was no unevenness.

Second, we assess *malapportionment*. It may affect the representation of territorial groups. We calculate a malapportionment index, at the district level, for the districts where our territorial groups are concentrated (see table C4). We multiply it with our Index of Electability. If the product is larger than

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<sup>4</sup> The Aosta valley is regularly represented by a . Whereas the Valdôtains remain below the threshold of entry, the valley has benefited from unequal district magnitude: In elections under PR, seven districts, including the Aosta valley, elected their deputies in single-seat districts, leading to a much lower threshold of exclusion in these districts,, compared to the 19 other districts, with an average magnitude of 33.

1, a group has the potential to be represented. Results show that the Aosta valley district is malapportioned, and Aosta-based voters underrepresented, compared to the remaining parts of Italy.

Czechoslovakia: Elections were conducted in territorial electoral districts of 12.5 seats (average) and with a 5% legal threshold, and Hungarians settled concentrated in the Slovak part of the federal Republic, where they count some 10% of the population. There is mild malapportionment (factor 1.05), however, the index score of 0.82 is a result of the 5% legal threshold, and not of the seat allocation to electoral districts. Thus, the slight malapportionment has no impact on the index score, and can not explain the deviation from the model.

Macedonia: Roma political parties gained their seat in parliament in the 1994 and 1998 in a largely Romani single-seat district in the capital Skopje (Friedman 2005, 392). Macedonia's Roma are not considered a territorially concentrated group in the EPR data, and therefore, the key issue is not malapportionment (in 1994 the heavily Roma-populated district in Skopje was overrepresented by a factor 1.45), but what matters more is the territorial distribution of the Roma population. The EPR data does not offer information on territorial concentration at the neighbourhood level.

Third, we analyse *further factors, in particular the distribution of votes.*

*Italy:* Elections in the Aosta electoral district are competitive, with multiple statewide parties running with their own candidates, so that parties can win seats with a vote share far below the district-threshold of exclusion of 50% of the district votes. Thus, the minority seat in Aosta is (with considerable variance over the elections) the result of the continuous fragmentation of the non-ethnic parties, allowing the ethnic party to win a seat, despite holding only a plurality of the votes, and an electoral system that does not make representation of the Aosta minority evident.

Czechoslovakia: the two-member federation applied a unique quasi-national legal threshold. Any party that reaches 5% of the votes in either of the two federal parts of the country participates in the seat allocation in the national parliament, for both federal parts. Each of the two federal parts consists of multiple electoral districts. Our index only distinguishes between district- and national-level legal thresholds, and does not offer a solution for this Czechoslovak hybrid. We coded it as national, and the Hungarian minority population is smaller than 5%. This misses the fact that the population share of Hungarians in the Slovak part of the federation is larger than 5%, which explains why an ethnic Hungarian party was represented in the Czechoslovak parliament.

Macedonia: In 1998, the Roma alliance won the seat in the runoff, with only 27% of the votes in the first round of the elections. After the change to proportional representation in 2002, the local concentration of Roma votes in the Skopje neighbourhood Shuto Orizari (60% of the neighbourhood population) was no longer relevant. With a mere 2-3% of the national population, and as the municipalities with significant Roma populations (though Roma count no more than a single-digit percentage share of the population local in any Macedonian municipality) are spread across the new 20-seat districts, Roma are no longer electorally viable. Roma parties win single seats in parliament as they are included in electoral alliances headed by the largest Macedonian political parties.

*Table C4: Groups below threshold with own representation*

Country	Group	Year	Index		Represented	Territorial group	Malapportionment <sup>a</sup>
			(territorial)	Index (non-territorial)			
Czechoslovakia	Hungarians	1992	0.82	0.55	yes	yes	1.05
Italy	Aostans (French speakers)	1992	0.66	0.02	yes	yes	0.76
Italy	Aostans (French speakers)	1994	0.95	0.02	yes	yes	1.01
Italy	Aostans (French speakers)	1996	0.95	0.03	yes	yes	1.01
Italy	Aostans (French speakers)	2001	0.95	0.03	yes	yes	1.01
Italy	Aostans (French speakers)	2006	0.64	0.03	yes	yes	0.76
Italy	Aostans (French speakers)	2008	0.64	0.03	yes	yes	0.76
Italy	Aostans (French speakers)	2013	0.64	0.03	yes	yes	0.76
Macedonia	Roma	1994	6.48	0.05	yes	no	1.45
Macedonia	Roma	1998	4.59	0.54	yes	no	0.93

<sup>a</sup> Index of malapportionment:  $mal = \frac{m_{dist}}{S} \cdot \frac{V_{nat}}{V_{dist}}$ , where S are the seats in parliament and  $V_{nat}$  is the national total electorate, while  $m_{dist}$  is the district magnitude of the district where the minority is concentrated, and  $V_{dist}$  its electorate.

Data: For the Czechoslovak elections of 1992, regional results (Czech and Slovak part of the federation). For the Czechoslovak 1992 elections & the Macedonian 1994 elections, the calculation is based on the valid votes (no electorate data available).

## Appendix C4: Comparison to Lublin's Ethnoregional Groups

One of the most similar approaches to ours, incorporating the political geography and population size in the assessment of the institutional opportunity structure, is David Lublin's index of Electorally Relevant Ethnoregional Groups (Lublin 2017). The empirical comparison of Lublin's index and ours allows us to cross-validate the empirical approach, but also points to a number of conceptual differences between Lublin's and our measure.

Both Lublin's and our approach deal with the properties of the ethnic minority populations. Lublin's index is a national-level aggregate measure, characterising the overall degree of ethnic diversity that matters for party formation, while our index applies to level of groups, and offers a continuous assessment of the degree of institutional opportunities that groups might capitalise from.

In more detail, there are five conceptual differences between the two approaches:

1. The index of Electorally Relevant Ethnoregional Groups (EREG) only looks at regional groups, whereas the Index of Electability is not only applicable for geographically concentrated groups but also for dispersed groups. Its empirical scores are available for ethnic groups with a politically salient identity. Empirically, the set of groups analysed across the two measures further differs: our empirical application builds on the EPR classification, with some changes for groups that appear as political allies, the ethnoregional groups included in the EREG index are driven by the politicisation of identities.
2. The EREG index relies on detailed district information about the ethnic population and electoral rules. It juxtaposes the geography of electoral districts with population numbers for the respective districts. Thereby, it also considers whether a specific ethnic group votes in small or in large districts (Lublin 2014, 60). This information is subsequently aggregated into an index at the country level. In contrast, the Index of Electability builds on more general information, about the degree of geographical dispersion of social groups and about the size of electoral districts at the country level.
3. The count of the group population differs: the EREG index only counts the part of the population of a group that lives in electoral districts where they are electorally viable. The Index of Electability does not require detailed information about the group population numbers by electoral district, and instead calculates with the overall (countrywide) group population. 2. With no detailed information about the group geography and the electoral district design, we have no possibility for such within-group differentiations, because we do not know how many of the group members reside in an electoral district where they would be available.
4. The EREG index is an aggregated country/election-level measure, whereas the Index of Electability is a country/election/group-level measure. An assessment at the level of groups is conceptually part of Lublin's construction of the EREG index, but data at the group-level is not available.
5. Groups matter in the EREG in an intermediary stage, for the calculation of the country-level index.<sup>5</sup> The assessment of the institutional opportunities for groups to gain party representation in parliament is dichotomous, whereas the Index of Electability offers a continuous measure

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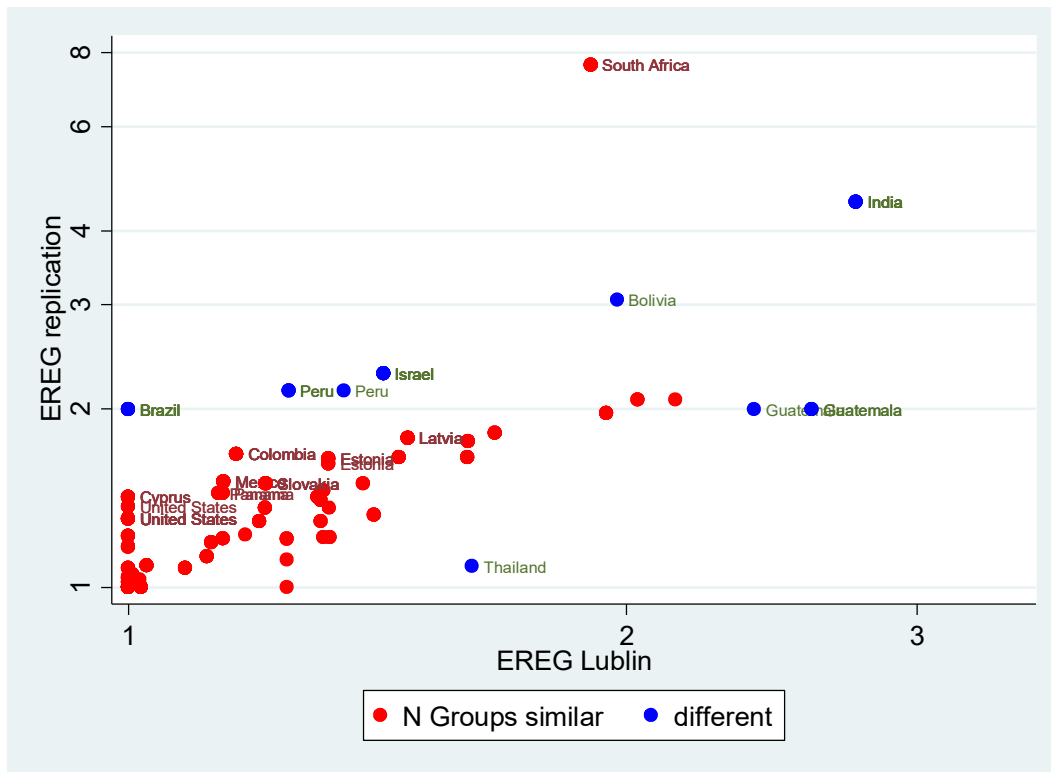
<sup>5</sup>Lublin's dataset lists which groups are considered electorally relevant, and it lists their electorally relevant share of the population. Also, Lublin provides a dataset with all ethnoregional groups and their population shares, but the two datasets can not be directly compared at the group level, because in many cases they do not refer to the same groups; instead the EREG version refers to alliances of groups, or to regional sub-groups.

thereof. A positive EREG result is conceptually equivalent to scores on the Index of Electability above 1, but there are differences in the measurement approach to it.

To compare the two indices empirically, we have converted the Index of Electability into a measure that is equivalent to the EREG index. First, we dichotomise the information contained in the Index of Electability (at the group level), and second, we aggregate it to countries/elections, so that the units of analysis become identical to the EREG index. This is associated with a loss of (continuous) information contained in the Index of Electability. Also, because we do not know whether the entire groups are electorally relevant, or only parts thereof, we are calculating the EREG index based on the full group population, assuming that all group members live in districts where they are electable.

There are also major differences in the empirical basis for this calculation, because in many countries, the list of ethnic groups differs between the EPR data (which is the basis of our index) and the EREG index. However, the EREG dataset does not make all information and/or intermediary calculation steps available at the group level, and therefore, we can not compare the two indices at the group level. Therefore, the empirical comparison of the two indices is only possible at the level of countries, and with not entirely identical groups included in the two datasets.

Figure C1: Electorally relevant ethnoregional groups index and replication based on Index of Electability.



For those elections, for which both data sources are available, we plot both versions of the EREG score in Figure C1. The two measures correlate at  $r=0.67$ . Many of the deviations between the two indices can be traced back to the differences in the concept and measurement. We discuss them exemplarily.

A first type of outliers emerges because of differences between Lublin's and the EPR data in the list of ethnic groups. We can not directly compare this for all 1260 groups in Lublin's dataset, because the groups and group labels are not identical.<sup>6</sup> However, a proxy that allows us to identify the countries and elections where the two data sources differ most is the degree of ethnic heterogeneity, which Lublin measures by the effective number of ethnic groups (calculated on the full population shares of these groups), at the level of countries; we have replicated this effective number of ethnic groups for the EPR data. In seven countries, including four Latin American states (Brazil, Bolivia, Peru, Guatemala), as well as India, Israel and Thailand, the datasets differ widely in the number of groups covered. We have marked such cases (where the absolute difference in the 'effective number of groups' is larger than 0.5) in blue. If we exclude these cases from the comparison, as well as South Africa (also with a very different set of groups covered by the two datasets), then the two versions of the EREG score are largely identical: for the subsample for which both dataset report approximately the same effective number of groups, Lublin's EREG score and our replicated EREG score correlate at  $r=0.87$  ( $N=246$ ). This means that the most important difference between the two scores is due to the different data (different set of ethnic groups included); the conceptual differences between the two approaches seem less important.

The countries where Lublin counts more ethnic groups than the EPR dataset include Thailand and Guatemala.

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<sup>6</sup>Lublin's data is best suited for analyses at the country level. Due to differences in the group names, we can not directly and systematically compare of the list of groups that Lublin considers for the calculation of the index, and the list of groups considered electorally relevant, for all countries covered in the sample.

In Thailand (1992 elections), Lublin identifies two ethnoregional groups, the regional Isan/Lao group and the Thai Malay. The large Isan/Lao group is electorally relevant and it is politically salient. Differently, the EPR data identifies Chinese, Malay Muslims, Hill Tribes, and Shan as politically relevant ethnic groups, but the large Isan/Lao group is not coded as an ethnic group. In Guatemala, Lublin identifies a larger number of smaller groups (Kaqchikel, K'iche', Q'eqchi', Mam, Q'anjob'al, Achi, Ch'orti', Ixil, Poqomchi'), whereas EPR lists one large salient umbrella identity, the Ladinos.

In some instances, Lublin's EREG score is much lower than the EREG score calculated based on the Index of Electability. This includes Guatemala, as well as Bolivia and Peru. In the latter two, we identify the same major groups as electable/electorally relevant (Aymara, Quecha)<sup>7</sup>, but the key difference between the two measures are the different population sizes that are associated with the indigenous groups. For instance, the largest minority group in Peru, the Indigenous groups of the Andes, count 36% of the population according to EPR, whereas Lublin's population estimates of the Quecha and Aymara populations amount to 16.5% and 2.3% or 13.0% and 1.7%, depending on the year. Smaller minority population numbers do not only explain the difference in the effective number of ethnic groups, but also lead to a lower EREG score in Lublin's version.

Such differences affect both the assessment whether groups are electorally relevant, as larger groups have usually the better opportunities to win representation, as well as the effective number of electorally relevant groups, as larger (umbrella) identities lead to a smaller effective number of groups. Because of these two countervailing effects, in some cases, relying on fewer, larger groups results in a higher EREG score (e.g. Thailand), in others in a lower score (e.g. Bolivia, Peru, Guatemala), depending on whether the electoral relevance is affected by the group size or not.

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<sup>7</sup>From the EPR dataset, we additionally list Guarani and other eastern indigenous groups as electable, for which Lublin does not identify any specific districts.

Analysing the cases, we identify two further reasons for the differences, some of which in the cases listed above (with a different number of size of groups), and others in countries where the ethnic groups are (almost) identical.

– Peru: While the main reason for the different EREG scores are the differences in the group population between the two datasets. However, this difference is slightly amplified by Lublin's exclusion of parts of the Quecha population from the calculation of the electorally relevant minority population, because some Quecha (1.2% in 1990; 1.7% in 2001-2011) live in districts where they have no chance of winning representation.

– United States: The most important source of differences is the treatment of Latinos and Native American. They get a positive Index of Electability, because EPR codes them as territorially concentrated, while Lublin does not consider any US non-majority group as electorally relevant (Lublin 2014: 60-62).<sup>8</sup>

In sum, the systematic comparison of the two dataset and indices shows that the main differences are unrelated to the different construction of the indices, but rather a consequence of the data analysed: the largest differences emerge in countries where the lists of groups included in the analysis do not match, or where their population size estimates differs widely across the two datasets. Smaller deviations may occur in cases, where Lublin does not consider the entire group population as electorally relevant (i.e. he excludes parts of the minorities living in non electorally relevant districts). The most important coding difference emerges in the United States, for Latinos.

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<sup>8</sup>Lublin does so, because none of them is a majority in a US state, and “groups that have majorities in only a few constituencies [rather than a regional majority] tend to have thinner local majorities than regional majority groups, necessitating greater cohesion for ethnoregional party success” (Lublin 2014, p.54). The same argument is not applied for ethnoregional groups under PR.



## Appendix D: Special rules (party quotas, special districts, party bans)

The main analysis, section 3.2, excluded 11 countries from the sample, because they use quotas or reserved seats to bolster the representation of ethnic minorities in their national parliaments, as well as two countries with bans on ethnic parties. This affects 120 of the 1131 observations. To incorporate quotas, reserved seats and party bans into the Index of Electability, we follow the same logic as for the usual district-based electoral systems.

Quotas or reserved seats are usually forms of affirmative action, and separate minority electorates from the general electorate in a fashion that may lead to their overrepresentation. The legal mechanisms in play differ widely among the cases. We distinguish between party-based quotas (applied, e.g., in Kosovo and Romania<sup>9</sup>), which directly relate to parties (or electoral lists of minority organizations), and special electoral districts (reserved seats), where minorities vote with a special ballot in a non-territorial district, to elect minority candidates (e.g., Bolivia since 2009, Colombia, Croatia, Cyprus, India, New Zealand,<sup>10</sup> Taiwan, and Venezuela). We do not consider candidate quotas.

Table D1 provides basic descriptive information on the success of ethnic minority parties (or minority organizations) via party quotas or reserved seats. Groups with quota rules or reserved seats have a higher level of electoral representation through an ethnic party (58%) than groups without such guarantees (17%).<sup>11</sup> However, the effect differs between the two types. As we might expect, ethnic specific party quotas are tantamount to election guarantees. Also, there is no large difference in the

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<sup>9</sup> (Sources: Bochsler 2010; Bird 2014; Freidenberg and Došek 2016).

<sup>10</sup> In New Zealand voters have two ballots, and vote with the first ballot for ethnic candidates, and with the second ballot vote for all parties. In four elections covered in our data (2005, 2008, 2011), a Maori party was elected from the reserved seats.

<sup>11</sup> We have deliberately excluded these party quota cases from the main analyses reported above in Table 2 and Figures 1 to 4. However, we have provided descriptive data on all cases in our data set in Table 1, with the party quota cases distinguished from the rest.

frequency at which minority parties are formed between permissive, ordinary (territorial) electoral districts (main analysis, table 2) and specially designed minority districts (table D1): in both cases approximately one in three groups is represented by an ethnic party. Groups with no (successful) ethnic party can gain representation for their members through being nominated by a mainstream party or by running as independent candidates. Hence, while party-based quotas are a sufficient condition for the representation of minority parties, special districts or reserved seats are not.

Turning to party bans, in contradiction to all logic, our sample does not only include examples where ethnic parties gained parliamentary representation despite formal rules to ban such parties, and even the frequency at which ethnic parties gain representation does not differ between countries with and with no party bans. This is consistent with earlier work has shown that these party bans are selectively applied to some minorities, or some minority parties (Juberías 2000). In our sample, all of the ethnic parties are de-facto exemptions, and all affected cases are large minorities.

*Table D1- Special electoral rules, group size, and ethnic representation*

Type of quota	all minorities				large minorities (>5%)			
	prob.	No	yes	N	prob.	no	yes	N
Party quota	1.00	0	31	31	1.00	0	8	8
Special districts	0.35	37	20	57	0.37	17	10	27
Total	0.58	37	51	88	0.51	17	18	35
Party bans	0.29	24	10	34	0.58	7	10	17

Note: Units of analysis: ethnic minority groups by election. Analysis only includes groups which profit from electoral quotas or the use of special districts, as well as groups in countries with bans on ethnic parties.

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