

# **ELECTORAL SYSTEMS (GLM ch. 11, Lijphart ch. 8)**

(+ L&E, pp. 226-40; Powell II, ch. 4; Blais & Massicotte in LNN; Lijphart II)

## **WRAP-UP**

### **I. GLM: Assessing the Impacts of Electoral Systems**

#### **A. The Simple Standard Story**

1. Plurality/Majority => Disproportionality, but largest 2 parties take all/near-all seats & so => stable majority govts.
2. PR => Proportional, but parties proliferate => coalition governments, fractionalized & polarized legislature, & unstable governments.
3. Obviously more to it than that, but broad outline gen'ly supported by evidence.

#### **B. Many other questions, however:**

1. Which affords better “**constituency**” [n.b., not unambig. term] representation?
2. Which offers better **access for political & social minorities**?
3. **Redistricting/gerrymandering opportunities & incentives?**
4. [*etc.--see Powell, Blais & Massicotte, Lijphart I and II as well as GLM; OTHER QUESTIONS?*]

## C. GLM's Assessment of 6 possible effects electoral systems:

1. **Proportionality**: absolutely no doubt PR => more; in fact, tight relation w/  
District Magnitude (see graphs & regressions to follow)
2. **Number of parties (in legislature; parliament usually)**

- a. Effective (size-weighted) vs. raw number of parities

Taagepera&Laakso (n\*=**Effective # parties**,  $P_i$ =prt y i's share seats/votes):  $n^* = [\sum_i (1/P_i)^2]^{-1}$

- b. # parties in legislature or # contesting elects? Either way: **PR => ↑ # parties.**

- (1) **(direct, mechanical effects)** Non-P.R. => big mathematical bonus (penalty) to large (small) parties => fewer parties, especially fewer effective parties, esp. in legislature (as opposed in elects)
  - (2) **(indirect, psychological, strategic effects)** Non-PR => strategic voting & strategic party / candidate entry
  - (3) **QUESTION:** So, which relation stronger, DMag to # Parliamentary Parties or Electoral Parties?

- c. **Some counter-examples:**

- (1) Several countries: Belgium, Denmark, Germany, Norway had multiparty before P.R.;
  - (2) Number of parities in Austria reduced after 1919 switched to P.R.;
  - (3) Malta nearly pure 2-party but a P.R. system.
  - (4) => PR not always cause proliferation parties, more *necessary than sufficient condition*
  - (5) **GLM: "PR systems will give parliamentary expression to a multiparty system if other factors, such as the number of political or social cleavages, cause voters to create one I the first place, but PR does not by itself bring a multiparty system into being"**
  - (6) Still: Most fractionalized parliaments—Bel, Den, Fin, Ita, Net, & Swi—all P.R. systems; most plur-maj systems (almost all) effectively 2-party systems.

### 3. Coalition or Single-Party Government?

- a. Again no doubt **simple story broadly correct**: Single-party-maj govts in 10% PR, 60% P/M
- b. Again, many **exceptions**:
  - (1) Minority governments have occurred in UK & elsewhere in P/M systems;
  - (2) Single-party governments have occurred in Ger & elsewhere in PR systems;
  - (3) Four key parties in France (usually compete as 2-party coalitions).

### c. **Tradeoff: Clarity responsibility vs. accuracy electoral message**

### 4. Constituency (i.e., district/locality) Representation

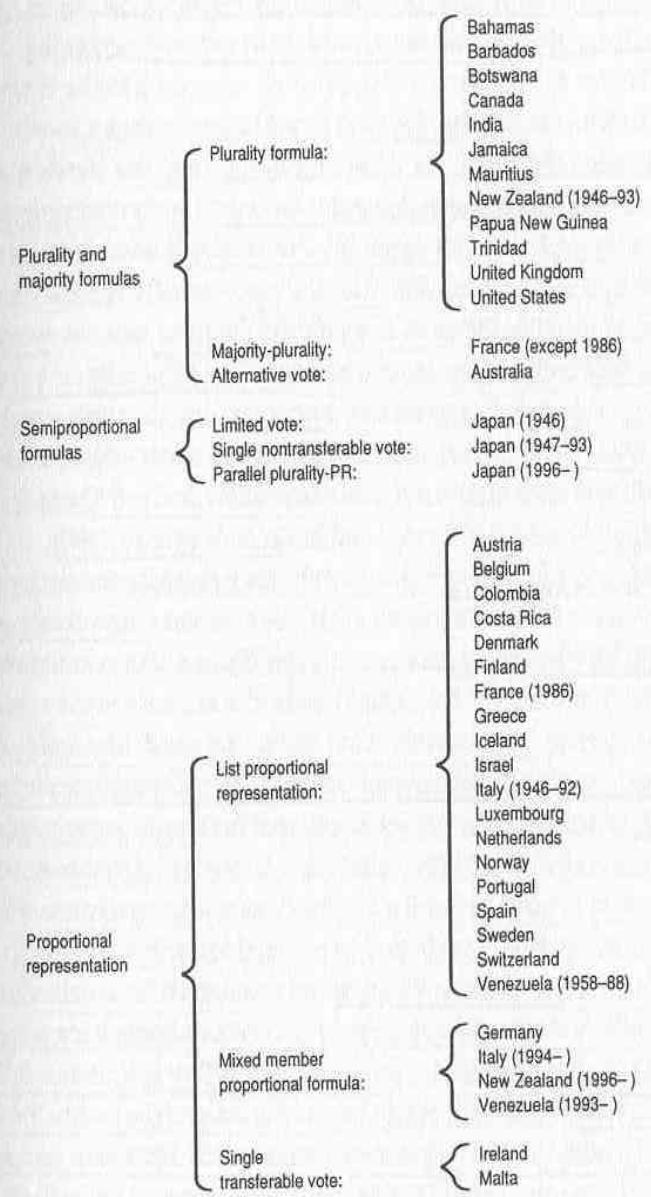
- a. Could argue: 1 rep per district facilitates constituent service
- b. Could counter: multiple rep's/district helps ensure at least 1 of own pol. persuasion approach
- c. **GLM conclude that what little evidence exists shows no discernible relationship**

### 5. **Backgrounds of Parliamentarians:** [E.g., what features of various elect sys do you suppose might affect probability of female &/or minority cand's being elected? Evidence: PR raises female representation in parliament. **Why?**]

### 6. **Gerrymandering possibilities & incentives:** Obvious that gerrymandering much more effective in P/M... [EXPLAIN?]

### 7. **GLM state differences in economic performance little relation to differences in electoral system.** [This somewhat misleading:

- a. Economic *policy* varies lot by electoral system, esp. insofar as produce diff types govts;
- b. Some evidence that some economic performance varies accordingly by elect sys too.]



**Fig 8.1** A classification of the electoral formulas for the election of the first or only chambers of legislatures in thirty-six democracies, 1945–96

II. Lijphart, *Electoral Systems* (ch. 8) [edited to highlight points not in GLM ch. 11]

A. *Electoral System* most central & direct difference *Maj* & *Cons* philosophies. [BUT NOTE: *Majoritarian* vs. *Consensus/Proportional Systems* MORE than just electoral system; also ‘rules of policymaking & governance’]

1. Majoritarian≡SMD, plurality or *majority* ; Consensus=MMD, proportional rep.
2. Δ cross type rare, & each ctry tends be attached to own

B. **7 Key Aspects (3 Especially) of Electoral Systems Produce 2 Key Outcomes:**

1. **Aspects:**

- a. *Electoral Formula+District Magnitude+Legal Threshold*  
 $\Rightarrow T_{eff}$
- b. Assembly Size [matters some for proportionality]
- c. Presidentialism [matters some for number of parties]
- d. Malapportionment [important other effects]
- e. Apparentment [not very critical]

2. **Outcomes:**

- a. 1. Proportionality & 2. Number of Parties
3. Electoral Formulae: Figure 8.1

## C. *District Magnitude [DEF]*

1. DMag the key factor in proportionality & other effects of PR
  - a. Proportionality  $\uparrow$  w/ DM in tight relation.
  - b. *Upper Tiers* common, very lrg M's, dom proportionality effect
2. Plurality/Majority not req. SMD, but usu.; Disproportionality  $\uparrow$  w/ DMag in Pl/Mj.

## D. *(Legal) Thresholds*

1. Purpose: to limit extreme fragmentation of very high DMag
2. To bite, need  $>$  effective thresh & usu. not (bite seems to start @ around 4-5%); b/c **effective threshold** depends heavily on DMag (&# cand's), roughly according to  $T_{eff} \approx .75/(M+1)$ , s.t. legal thresh minimum.

## E. *Assembly Size*

1. Size, gen'ly bit less than *cube-root-rule [def]*; esp  $< 100$ , consequential for disprop
2. [ $\uparrow$  Assy Size may  $\uparrow$  possibility disprop in districts cancels [EXPLAIN]]

## F. *Presidentialism*

1. Powerful popular-elected president, esp. if simultaneously or nearly so election w/ legislature,  $\Rightarrow$  own force toward 2-partism [*Why?*])
2. Esp. if president by plurality rather than majority-runoff [*Why?*])

## G. ***Malapportionment [DEF]***

1. Hard to avoid in plurality/majority w/ pre-existing geographic divisions as districts, easy in P.R. to accommodate both pre-exist dists & apportion (vary DMag w/ pop).
2. I.e., an issue in P/M, not PR; typically  $\Rightarrow$  rural over-representation [Examples]
  - a. US: Senate, Elect Coll, even House through '60s reapportionment. [*Other e.g.? Effects?*]
3. Rural over-representation not nec'ly  $\Rightarrow$  partisan disprop., but tendency rightward

## H. ***Apparentement [DEF]***

1. Possibility to link lists in list-PR (Switzerland, Israel, & Netherlands since 1977)
2. Should thereby offer some countervailing support for small parties.
3. Some rules similar cross-party linking pref's possible by nature: AV, STV, Runoff

## I. Gauging Disproportionality:

1. Gallagher Index:  $[\frac{1}{2}\sum(v_i - s_i)^2]^{.5}$  (i.e.,  $\frac{1}{2}$  the sum squared deviations)

**Table 8.1** Average disproportionalities in legislative and in presidential elections, the numbers of elections on which these averages are based, and the geometric means of the two disproportionalities in six presidential systems, 1946–96

	Legislative disproportionality (%)	Legislative elections (N)	Presidential disproportionality (%)	Presidential elections (N)	Geometric mean (%)
Israel <sup>a</sup>	1.65	1	49.51	1	9.05
Colombia	2.96	14	38.04	10	10.62
Costa Rica	4.13	11	45.11	11	13.65
Venezuela	4.28	8	48.49	8	14.41
United States	4.90	25	45.38	12	14.91
France <sup>b</sup>	11.34	8	46.23	6	22.90

Notes: <sup>a</sup>Only the 1996 election, in which the prime minister was directly elected

<sup>b</sup>Not including the 1986 and 1993 elections, which led to parliamentary phases

Source: Based on data in Mackie and Rose 1991; Mackie and Rose 1997; Nohlen 1993; Goldey and Williams 1983; and data provided by Michael Coppedge, Brian F. Crisp, Gary Hoskin, Mark P. Jones, and J. Ray Kennedy

## J. Presidential Elections in Presidential Systems & Disproportionality (Tab 8.1)

1. Pres, almost by definition, SMD  $\Rightarrow$  highly disprop. (e.g., in 2-candidate contests, disproportionality = losing candidate's vote share). Lijphart uses geometric mean pres & leg disprop for system disprop in pres. sys

## K. Emp Eval: Table 8.2. [Explain relatively low US legislative disprop:

1. Weak party + open primaries  $\Rightarrow \downarrow$  3<sup>rd</sup> party (run as dissident w/in party)
2. Very large # districts.]

**Table 8.2** Average electoral disproportionality and type of electoral system (used in legislative elections) in thirty-six democracies, 1945–96

	Disproportionality (%)	Electoral System		Disproportionality (%)	Electoral system
Netherlands	1.30	PR	Spain	8.15	PR
Denmark	1.83	PR	Australia	9.26	Maj.
Sweden	2.09	PR	Papua New Guinea	10.06	Plur.
Israel	2.27	PR	United Kingdom	10.33	Plur.
Malta	2.36	PR-STV	Colombia	10.62	PR*
Austria	2.47	PR	New Zealand	11.11	Plur.
Germany	2.52	PR	India	11.38	Plur.
Switzerland	2.53	PR	Canada	11.72	Plur.
Finland	2.93	PR	Botswana	11.74	Plur.
Belgium	3.24	PR	Costa Rica	13.65	PR*
Italy	3.25	PR	Trinidad	13.66	Plur.
Luxembourg	3.26	PR	Venezuela	14.41	PR*
Ireland	3.45	PR-STV	United States	14.91	Plur.*
Portugal	4.04	PR	Bahamas	15.47	Plur.
Iceland	4.25	PR	Barbados	15.75	Plur.
Norway	4.93	PR	Mauritius	16.43	Plur.
Japan	5.03	SNTV	Jamaica	17.75	Plur.
Greece	8.08	PR	France	21.08	Maj.*

\*Presidential systems

Note: The number of elections on which these averages are based may be found in Table 5.2

Source: Based on data in Mackie and Rose 1991; Mackie and Rose 1997; Nohlen 1993; Singh 1994; Lijphart 1994; and data provided by Pradeep K. Chhibber, Michael Coppedge, Brian F. Crisp, Gary Hoskin, Mark P. Jones, J. Ray Kennedy, Hansraj Mathur, Shaheen Mozaffar, Ben Reilly, and Andrew S. Reynolds

## L. Electoral Systems & Party Systems: Duverger's Law; Mathematical & Behavioral Effects

1. Rae: Three things all electoral systems do (to differing degrees):
  - a. Yield disproportional results;
  - b. Reduce effective # parliamentary parties relative to electoral parties;
  - c. Can thereby manufacture seat-majority for non-electoral-majority.
2. All 3 effects ↑ strength w/  $T_{eff}$ , & all essentially produced via disproportionality.
3. Note: Do these 3 things by 2 strategic/behavioral mechanisms & 1 mathematical:
  - a. Strategic behavior of Parties [EXPLAIN]
  - b. Strategic behavior of Voters [EXPLAIN]
  - c. Mathematical operation electoral formula in districts of mag M on vote distrib
4. Disprop systematic, not random: pro-larger prtys [*w/ basically 1 sort exception...?*].

5. **[ D E F ]**  
**Manufactured & Earned Majorities, Natural Minorities**  
 Empir. Eval.: Tab 8.3,  
 Fig 8.2

**Table 8.3** Manufactured majorities, earned majorities, and natural minorities in three types of electoral systems, 1945–96

	Manufactured majority (%)	Earned majority (%)	Natural minority (%)	Total (%)	Elections (N)
Plurality and majority systems (14 countries)	43.7	39.1	17.2	100.0	151
Semiproportional systems (Japan)	42.1	15.8	42.1	100.0	19
Proportional representation (22 countries)	9.4	8.3	82.3	100.0	265
All legislative elections in 36 democracies	22.8	19.3	57.9	100.0	435

Source: Based on data in Mackie and Rose 1991; Mackie and Rose 1997; Nohlen 1993; Singh 1994; Lijphart 1994; and data provided by Pradeep K. Chhibber, Michael Coppedge, Brian F. Crisp, Gary Hoskin, Mark P. Jones, J. Ray Kennedy, Hansraj Mathur, Shaheen Mozaffar, Ben Reilly, and Andrew S. Reynolds

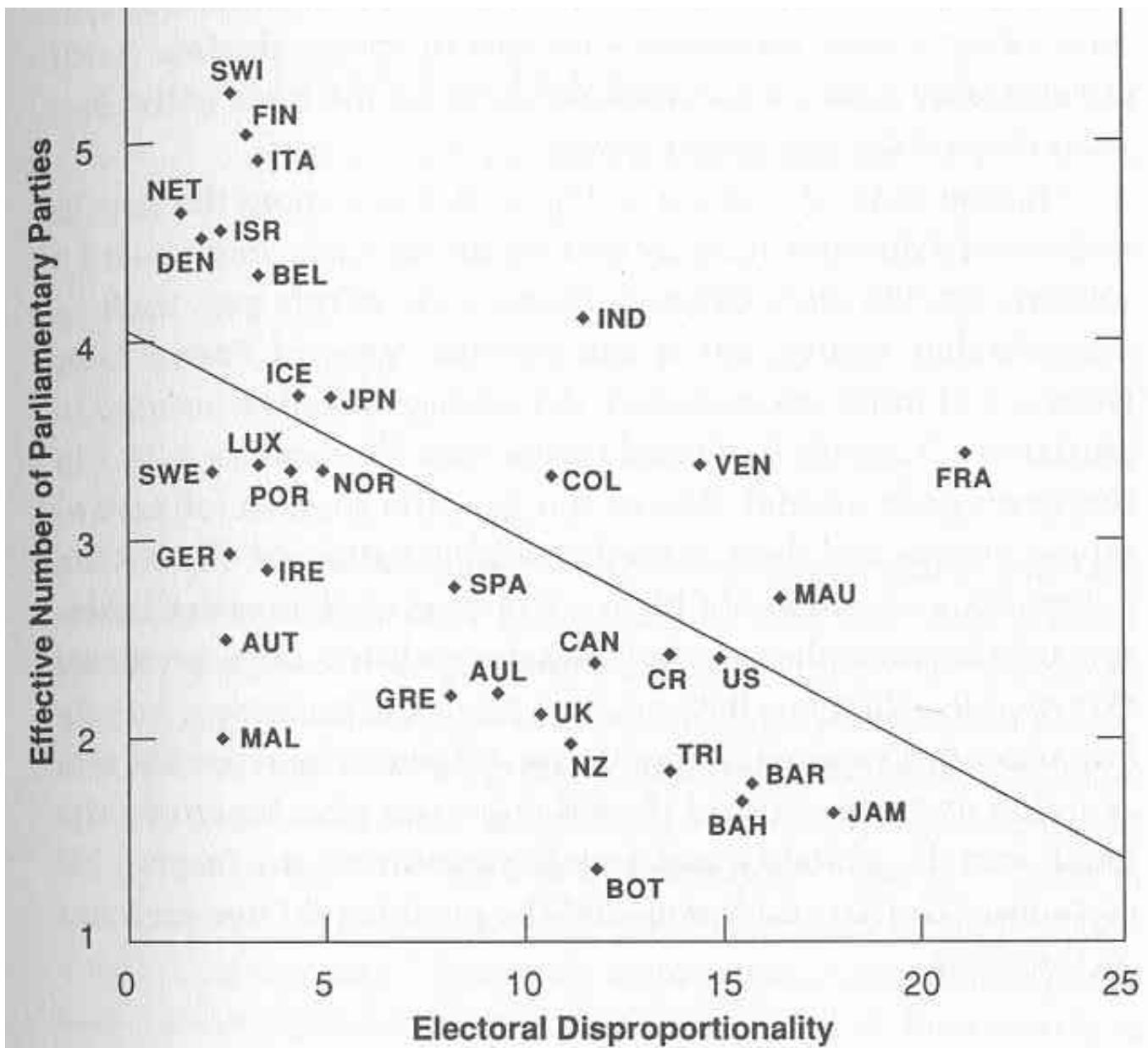


Fig. 8.2 The relationship between electoral disproportionality

### III. Elaboration, Clarification, & Further Topics:

#### A. Effective Thresholds: roughly set by DMag (or exactly legal thresh if higher)

1. Most effects elect.sys. operate through proportionality; crucial contribution thereto summarizable by *Effective Threshold*, which in turn largely determined by DMag
2. Three Problems in determining  $T_{eff}$ :
  - a.  $\exists$  lower threshold [DEFINE] & upper threshold [DEFINE];
  - b. Both these effective thresholds also depend on specific formula, & # parties competing;
  - c. # parties, DMag, etc., all matter, & therefore  $T_{eff}$  can vary district-to-district w/in system.
3. Roughly equal to the larger of:
  - a. *Legal Threshold* or
  - b. Approximately:  $T_{eff} \approx .75/(DM+1)$
  - c. Except in SMP, where Lijphart assumes it 35% by assumption

#### B. [Interesting Fact & so a Question:

1. US has had 100% congressional majorities, only 8.7% manufactured;
2. UK has had 92% majorities, all manufactured.
3. [What produces this huge difference?]]

## IV. Refining Questions drawn from material in Lijphart II:

- A. Why relationship  $T_{eff}$  (DMag) to # parties not stronger still, esp. re: # electoral parties? [relation exists; pretty strong; asking only why not stronger still]
1. Bi-directional causality [# elect parties  $\rightarrow$  ↑ Disprop, even as Disprop  $\rightarrow$  ↓ #ele prtys]
  2. Effect on # elect parties purely “behavioral”: in a democracy, parties never *forced* to leave electoral arena; can keep losing as long as want.
  3. Multiple other factors involved here (e.g., geographic concentration of support).
  4. Can be statistical artifact of Lijphart’s design:
    - a. Unit of observation = “an electoral system”, which is average over a period in country operating under a stable set of electoral rules.
    - b. Systems performing oddly (too many or too few parties relative to designers’, who’d tend to be the current protagonists at least in early going, aims) may tend to be changed...
    - c. If so, then way Lijphart uses data may weaken this relation: E.g., US plurality = 1 case of elect sys; Greece’s “reinforced” PR =many cases.

## B. Refining Q: Why eNpp so much more responsive to elect sys than eNep?

1. Takes Time for Effects of Expectations (Strategic-Behavioral Effects) to Manifest;
  - a. Politicians presumably know expected effects electoral systems, voters need learn them.
  - b. Historicity: (effective) 2-party system won't become 3-party system over-night, etc.
  - c. Uncertainty over elect support for various potential new parties, or over who will lose by new rules, & whose support now vulnerable
    - (1)  $\Rightarrow$  risk-aversion  $\Rightarrow$  less changing of rules & less change in response to rules
    - (2)  $\Rightarrow$  "winner's curse"  $\Rightarrow$  excessive net party entry as rules change
  - d. Spurious/Endogeneity: when do electoral rules change? Perhaps likely that same conditions that trigger electoral-law change would also be producing party-system changes?
2. Which expect higher:  $R^2$  from regression eNpp on DMag or from eNep on DMag?  
[Hint: what is  $R^2$  in words? Then consider: strategic-behavioral v. mathematical effects.]

## C. **Lijphart's Core Conclusions:** Some support for most expected effects:

1.  $T_{eff}$ =key factor (n.b. subsumes PR/PM & DMag, which very strong predictors)
2. Disproportionality is dependent variable most fully explained by elect.sys. (and then rest of chain – number of parties, then type & durability of government – in sequence of declining explanatory power).

## V. Summary of Lijphart II's empirical results from closer, more-sustained analysis of *Political Consequences of Electoral Laws* (Rae's classic title):

Table of Correlations Dependent Variables:

	LSq	ENEP	ENPP	ParlMaj	ManMaj
LSq	1.00	-0.11	-0.45	0.55	0.59
ENEP	-0.11	1.00	0.91	-0.52	-0.30
ENPP	-0.45	0.91	1.00	-0.67	-0.49
ParlMaj	0.55	-0.52	-0.67	1.00	0.83
ManMaj	0.59	-0.30	-0.49	0.83	1.00

A. **Grand Summary of Findings:** Tables 6.2 & 6.3 (next slides), though these tables perhaps understate strength of conclusion in favor of the Elect Formula & Assembly Size links to eNpp. Broad conclusion remains that  $T_{eff}$  the main explanatory factor & Disproportionality the most completely determined.

Table 6.2: Effect of 5 key electoral-system features on 5 key political-system outcomes [n.b., Step (Un)Wise Regression]

Independent variables	Disproportionality	Effective number of elective parties	Effective number of parliamentary parties	Frequency of parliamentary majorities	Frequency of manufactured majorities
Effective threshold <sup>a</sup>	0.35** 0.90 (12.62)	-0.03** -0.30 (2.63)	-0.05** -0.54 (5.29)	0.02** 0.64 (7.00)	0.02** 0.70 (7.43)
Assembly size (log)	-2.32** -0.23 (3.26)	—	—	—	—
<i>Apparentement</i>	-2.34** -0.22 (3.08)	—	—	—	—
Presidentialism	-4.66** -0.21 (3.04)	-1.25* -0.22 (1.90)	—	0.32* 0.17 (1.87)	—
Ordinal ballots	—	—	—	—	-0.14* -0.17 (1.82)
Intercept	7.49	4.34	3.91	0.04	0.01
R <sup>2</sup>	0.71	0.15	0.30	0.46	0.46
Adjusted R <sup>2</sup>	0.70	0.13	0.28	0.44	0.44

Notes:

<sup>a</sup> The estimated regression coefficients are listed first, followed by the standardized coefficients; absolute t-values are in parentheses.

TABLE 6.3. Stepwise regression analyses of the effect of six electoral system variables on disproportionality and party system variables in 57 PR systems

Independent variables	Disproportionality	Effective number of elective parties	Effective number of parliamentary parties	Frequency of parliamentary majorities	Frequency of manufactured majorities
Effective threshold <sup>a</sup>	0.42** 0.68 (8.67)	-0.06* -0.27 (2.07)	-0.09** -0.42 (3.43)	0.03** 0.52 (4.63)	0.03** 0.54 (4.49)
d'Hondt and LR-Imperiali dummy	2.14** 0.35 (4.45)	—	—	—	—
Assembly size (log)	-2.08** -0.31 (3.83)	—	—	—	—
<i>Apparentement</i>	-1.53** -0.20 (2.48)	—	—	—	—
Presidentialism	—	—	—	0.33* 0.19 (1.68)	—
Ordinal ballots	—	—	—	—	-0.15* -0.24 (1.96)
Intercept	5.03	4.50	4.13	-0.03	-0.03
R <sup>2</sup>	0.68	0.07	0.18	0.33	0.28
Adjusted R <sup>2</sup>	0.66	0.06	0.16	0.30	0.25

Notes:

<sup>a</sup> The estimated regression coefficients are listed first, followed by the standardized coefficients; absolute t-values are in parentheses.

## **Blais & Massicotte “Electoral Systems,” in LNN, eds., Comparing Democracies.**

VI. Mostly covered by GLM, & Lijphart, but Blais & Massicotte also:

- A. Describes Various Types of Electoral Systems: Plurality, Majority, P.R.
- B. Defines some keys: Magnitude; Tiers; Thresholds;
- C. Also mention **candidate-selection mechanisms**, which also have important implications (and neglected here in GLM in favor of covering under *Parties*)
- D. Also Elaborate on Some of the Positive Political Consequences:
  1. *Psychological* (a.k.a. Strategic-Behavioral) & *Mechanical* (a.k.a. Math’al) Effects:
    - a. Psychological (Strategic, Behavioral) Effects:
      - (1) P/M/PR [DMag] & the number of [electoral] parties
      - (2) Electoral System & ideology / cohesion
      - (3) Electoral System & strategic voting – Obvious in plurality elects: more generally, Gunther (1989) finds small-party supporters less likely vote for them in smaller-mag districts [Explain logic?].
    - b. Mechanical (Mathematical) Effects
      - (1) Formula & DMag effect on Vote-seat proportionality; Legal thresh have their obvious effects too
      - (2) Duverger’s Law and number parties (raw # electoral vs. effective number parliamentary)
      - (3) Lijphart finds: Plurality  $\Rightarrow$  about 2.0 effective parties , Majority  $\Rightarrow$  ca. 2.8, PR  $\Rightarrow$  ca. 3.6
      - (4) **Ordeshook & Shvetsova** find: relation b/w # parties & ethnic het. increases & tightens w/ DMag; **Cox** also; later **Clark & Golder** improve the analysis.
      - (5) Presence/absence of single-party parliamentary majority: Lijphart II: Plur  $\Rightarrow$  maj 93% of cases, Majority  $\Rightarrow$  50%, PR  $\Rightarrow$  20-30% depending on threshold

## VII. Normative Discuss–informed by Positive Theory & Evidence

Some Data: Raw Correlations of Various Socioeconomic Conditions & Political Outcomes

	lpop	lrgdpc	ethind	relind	gini	edsec	lmag	vpart	prop	enpp	dgov80	psupg80	npgov80	attopp
lpop	1.0000													
lrgdpc	0.2121	1.0000												
ethind	0.2919	0.4089	1.0000											
relind	0.3915	0.5090	0.4680	1.0000										
gini	0.0742	-0.3997	-0.0288	-0.2382	1.0000									
edsec	0.0173	0.5804	0.1929	0.0905	-0.2585	1.0000								
lmag	-0.1310	-0.0565	-0.4859	-0.0592	0.0261	-0.1147	1.0000							
vpart	-0.3360	-0.1393	-0.4735	-0.1867	-0.1405	-0.0934	0.3422	1.0000						
prop	-0.1885	0.1740	-0.0715	-0.1855	-0.2574	0.0654	0.4178	0.0582	1.0000					
enpp	-0.2744	0.0873	-0.3626	-0.0874	-0.0724	-0.0256	0.6698	0.0398	0.4062	1.0000				
dgov80	0.2125	0.1954	0.5897	0.5222	-0.0760	0.1199	-0.2862	-0.5699	-0.3684	-0.1180	1.0000			
psupg80	-0.1414	-0.1086	0.2782	0.1825	-0.0981	-0.2837	0.0666	-0.2439	0.2347	-0.1192	0.2400	1.0000		
npgov80	-0.2504	0.1249	-0.0328	-0.2107	0.0856	-0.0468	0.3536	-0.0776	0.8342	0.3345	-0.3579	0.3393	1.0000	
attopp	0.2792	0.0093	0.1424	0.1441	0.2152	-0.0428	-0.2643	-0.1296	-0.2204	-0.2986	0.4303	0.0928	-0.2025	1.0000

**lpop:** natural log of population

**lrgdpc:** natural log real GDP per capita

**ethind:** ethnic fragmentation index

**relind:** religious fragmentation index

**gini:** GINI index of income inequality

**edsec:** index primary &

secondary enrollment.

**lmag:** natural log electoral district mag.

**vpart:** voter participation rate

**prop:** proportionality of legislative seat distribution to vote distribution

**enpp:** effective # parliamentary parties

**dgov80:** average duration

of govts (months) 1980s

**psupg80:** average percent seats parliament supporting government in the 1980s

**npgov80:** average number of parties in government in 1980s

**attopp:** natural log of number political attacks & oppressions in 1980s

## Determinants of the Proportionality of Electoral Outcomes

					R-squared	= 0.6983
	prop	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]
	<i>lmag</i>	<b>2.568204</b>	<b>.7283494</b>	<b>3.526</b>	<b>0.004</b>	<b>.994701</b> <b>4.141707</b>
	<i>lpop</i>	<b>-1.886149</b>	<b>.9376368</b>	<b>-2.012</b>	<b>0.065</b>	<b>-3.91179</b> <b>.1394918</b>
	lrgdpc	2.941667	4.083722	0.720	0.484	-5.880679 11.76401
	ethind	-5.946238	6.171297	-0.964	0.353	-19.27851 7.386038
	edsec	-.0141931	.0961284	-0.148	0.885	-.2218658 .1934797
	<b>US</b>	<b>13.95252</b>	<b>5.210637</b>	<b>2.678</b>	<b>0.019</b>	<b>2.69562</b> <b>25.20941</b>
	SZ	4.030246	5.213686	0.773	0.453	-7.233238 15.29373
	_cons	80.45612	31.88155	2.524	0.025	11.58023 149.332

					R-squared	= 0.6303
	prop	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]
	<i>lmag</i>	<b>2.394217</b>	<b>.681835</b>	<b>3.511</b>	<b>0.003</b>	<b>.9556706</b> <b>3.832763</b>
	<i>lpop</i>	<b>-.9292101</b>	<b>.5964194</b>	<b>-1.558</b>	<b>0.138</b>	<b>-2.187545</b> <b>.3291249</b>
	ethind	-7.55057	5.362998	-1.408	0.177	-18.86551 3.764366
	<b>US</b>	<b>12.91222</b>	<b>4.860203</b>	<b>2.657</b>	<b>0.017</b>	<b>2.658084</b> <b>23.16635</b>
	SZ	6.514613	4.677849	1.393	0.182	-3.354785 16.38401
	_cons	96.9738	5.687898	17.049	0.000	84.97338 108.9742

## Determinants of Effective Number Parties in Parliament

Number of obs = 21 R-squared = 0.2939

enpp	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]
<b>lmag</b>	<b>.4464824</b>	<b>.3087327</b>	<b>1.446</b>	<b>0.172</b>	<b>-.220494</b>
lpop	-.1250728	.3974454	-0.315	0.758	-.9837014
lrgdpc	.925385	1.731008	0.535	0.602	-2.81423
ethind	.5329234	2.615889	0.204	0.842	-5.118361
edsec	.0055997	.0407469	0.137	0.893	-.0824286
US	-1.144733	2.208684	-0.518	0.613	-5.916305
SZ	1.341764	2.209977	0.607	0.554	-3.432601
_cons	-4.88439	13.51395	-0.361	0.724	-34.0795

Number of obs = 21 R-squared = 0.2581

enpp	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]
<b>lmag</b>	<b>.5087292</b>	<b>.285378</b>	<b>1.783</b>	<b>0.095</b>	<b>-.0995395</b>
lpop	-.2890912	.324563	-0.891	0.387	-.9808809
lrgdpc	1.046867	1.603379	0.653	0.524	-2.370654
ethind	1.081365	2.262387	0.478	0.640	-3.740798
edsec	-.0026652	.0366468	-0.073	0.943	-.0807759
_cons	-3.897634	12.48691	-0.312	0.759	-30.51286

					R-squared	= 0.2460
enpp	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]	
<b>lmag</b>	<b>.4435446</b>	<b>.2316949</b>	<b>1.914</b>	<b>0.073</b>	<b>-.0452888</b>	<b>.9323781</b>
lpop	-.2552405	.2989749	-0.854	0.405	-.8860225	.3755414
lrgdpc	1.237125	1.12866	1.096	0.288	-1.144139	3.61839
_cons	-5.798764	10.07684	-0.575	0.573	-27.05904	15.46151

					R-squared	= 0.1745
enpp	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]	
<b>lmag</b>	<b>.4554715</b>	<b>.2272422</b>	<b>2.004</b>	<b>0.059</b>	<b>-.0201518</b>	<b>.9310948</b>
_cons	2.907758	.5454194	5.331	0.000	1.766182	4.049333

## Determinants of the Number of Parties in Government

Number of obs = 21			R-squared = 0.7386		
npgov80	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]
lpop	-.0857474	.1697331	-0.505	0.623	-.455564 .2840692
lrgdpc	.126545	.7444957	0.170	0.868	-1.495572 1.748662
ethind	.0155078	1.114686	0.014	0.989	-2.413185 2.4442
edsec	-.0084333	.0173481	-0.486	0.636	-.0462315 .0293649
lmag	.0064405	.1415198	0.046	0.964	-.3019047 .3147857
<b>enpp</b>	<b>.5247365</b>	<b>.1179966</b>	<b>4.447</b>	<b>0.001</b>	<b>.267644 .781829</b>
US	.1011615	.9493274	0.107	0.917	-1.967245 2.169568
SZ	.7775238	.9534556	0.815	0.431	-1.299877 2.854925
_cons	.5166641	5.778226	0.089	0.930	-12.07301 13.10634

Number of obs = 21			R-squared = 0.6960		
npgov80	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]
<b>enpp</b>	<b>.5604526</b>	<b>.0849834</b>	<b>6.595</b>	<b>0.000</b>	<b>.3825802 .738325</b>
_cons	.0025308	.3487783	0.007	0.994	-.7274705 .7325321

## Determinants of Voter Participation

						R-squared	= 0.8380
	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]		
vpart							
lpop	-4.246587	1.577331	-2.692	0.021	-7.71827	-.7749051	
lrgdpc	13.62715	6.147855	2.217	0.049	.0958134	27.15849	
ethind	.3665997	9.440726	0.039	0.970	-20.4123	21.1455	
edsec	-.3292375	.141427	-2.328	0.040	-.6405162	-.0179588	
lmag	2.831868	1.509369	1.876	0.087	-.4902306	6.153967	
prop	-.4603597	.4176456	-1.102	0.294	-1.379591	.4588722	
enpp	.0927027	.9852923	0.094	0.927	-2.075911	2.261316	
US	-10.9058	9.83255	-1.109	0.291	-32.54709	10.7355	
SZ	-41.28559	7.886355	-5.235	0.000	-58.64333	-23.92784	
_cons	64.44762	58.44081	1.103	0.294	-64.17974	193.075	

						R-squared	= 0.8379
	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]		
vpart							
lpop	-4.235734	1.446679	-2.928	0.012	-7.361094	-1.110374	
lrgdpc	13.77331	5.398993	2.551	0.024	2.109492	25.43712	
edsec	-.3283281	.1299159	-2.527	0.025	-.6089943	-.0476618	
lmag	2.838158	1.356566	2.092	0.057	-.0925245	5.76884	
prop	-.4568824	.3620822	-1.262	0.229	-1.239114	.3253487	
US	-11.0263	8.544266	-1.290	0.219	-29.48507	7.432461	
SZ	-41.02204	6.447957	-6.362	0.000	-54.95201	-27.09208	
_cons	63.03857	52.37633	1.204	0.250	-50.11361	176.1907	

# Determinants of Government Durability

Number of obs = 21 R-squared = 0.7844

dgov80	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]
lpop	-.3782034	2.813301	-0.134	0.896	-6.865687 6.10928
lrgdpc	-4.091615	9.845209	-0.416	0.689	-26.79471 18.61148
ethind	15.2347	12.93021	1.178	0.273	-14.58243 45.05183
edsec	.1928452	.2382477	0.809	0.442	-.356555 .7422454
lmag	1.058475	2.369944	0.447	0.667	-4.406626 6.523576
prop	.0176297	.5973344	0.030	0.977	-1.359826 1.395085
vpart	.0248729	.4148886	0.060	0.954	-.9318619 .9816077
enpp	-.605193	2.177049	-0.278	0.788	-5.625478 4.415092
psupg80	.2608685	.2983566	0.874	0.407	-.4271431 .94888
npgov80	-4.543667	3.260021	-1.394	0.201	-12.06129 2.973955
US	19.76192	14.06015	1.406	0.197	-12.66086 52.18469
SZ	24.22542	19.60525	1.236	0.252	-20.98437 69.4352
_cons	36.34008	90.46144	0.402	0.698	-172.2644 244.9445

Number of obs = 23 R-squared = 0.5847

dgov80	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]
ethind	9.006614	10.86274	0.829	0.419	-13.91175 31.92498
<b>psupg80</b>	<b>.6395543</b>	<b>.2689653</b>	<b>2.378</b>	<b>0.029</b>	<b>.0720871 1.207021</b>
<b>npgov80</b>	<b>-4.939279</b>	<b>1.973245</b>	<b>-2.503</b>	<b>0.023</b>	<b>-9.102461 -.7760958</b>
<b>US</b>	<b>22.63304</b>	<b>11.39794</b>	<b>1.986</b>	<b>0.063</b>	<b>-1.414514 46.68059</b>
SZ	11.60115	11.95508	0.970	0.345	-13.62187 36.82416
_cons	-.8834984	14.97185	-0.059	0.954	-32.47134 30.70434

Number of obs = 23 R-squared = 0.5680

dgov80	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]
<b>psupg80</b>	<b>.7023434</b>	<b>.2558337</b>	<b>2.745</b>	<b>0.013</b>	<b>.1648566 1.23983</b>
<b>npgov80</b>	<b>-5.21179</b>	<b>1.928714</b>	<b>-2.702</b>	<b>0.015</b>	<b>-9.263868 -1.159712</b>
<b>US</b>	<b>26.66925</b>	<b>10.21622</b>	<b>2.610</b>	<b>0.018</b>	<b>5.205769 48.13274</b>
SZ	13.71925	11.57712	1.185	0.251	-10.60337 38.04186
_cons	-1.972604	14.78407	-0.133	0.895	-33.03278 29.08757

## Determinants of Political Attacks & Oppressions

Number of obs = 16 R-squared = 0.6223

lattopp	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]
<b>lpop</b>	<b>1.421063</b>	<b>.5419046</b>	<b>2.622</b>	<b>0.039</b>	<b>.09507</b> <b>2.747056</b>
lrgdpc	.3458066	1.710578	0.202	0.846	-3.839827    4.53144
ethind	-3.110833	2.794551	-1.113	0.308	-9.948853    3.727188
relind	-2.244102	2.512261	-0.893	0.406	-8.391384    3.90318
gini	9.470207	15.16302	0.625	0.555	-27.63238    46.57279
edsec	.0360057	.0400388	0.899	0.403	-.0619657    .133977
lmag	-.3206208	.2987685	-1.073	0.324	-1.051681    .4104394
US	-3.668315	1.954821	-1.877	0.110	-8.451588    1.114959
SZ	3.554796	2.143322	1.659	0.148	-1.689725    8.799317
_cons	-22.13167	16.97318	-1.304	0.240	-63.66356    19.40021

Number of obs = 16 R-squared = 0.5978

lattopp	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]
<b>lpop</b>	<b>1.515946</b>	<b>.4647737</b>	<b>3.262</b>	<b>0.011</b>	<b>.4441763</b> <b>2.587716</b>
ethind	-2.959762	2.430442	-1.218	0.258	-8.564372    2.644847
relind	-2.342026	2.101011	-1.115	0.297	-7.186966    2.502914
edsec	.0315434	.0312592	1.009	0.342	-.0405405    .1036272
lmag	-.3256798	.2626285	-1.240	0.250	-.9313023    .2799428
US	-3.735173	1.734805	-2.153	0.063	-7.73564    .2652943
SZ	3.346048	1.882843	1.777	0.113	-.9957944    7.687891
_cons	-15.94199	5.526296	-2.885	0.020	-28.68565    -3.198325

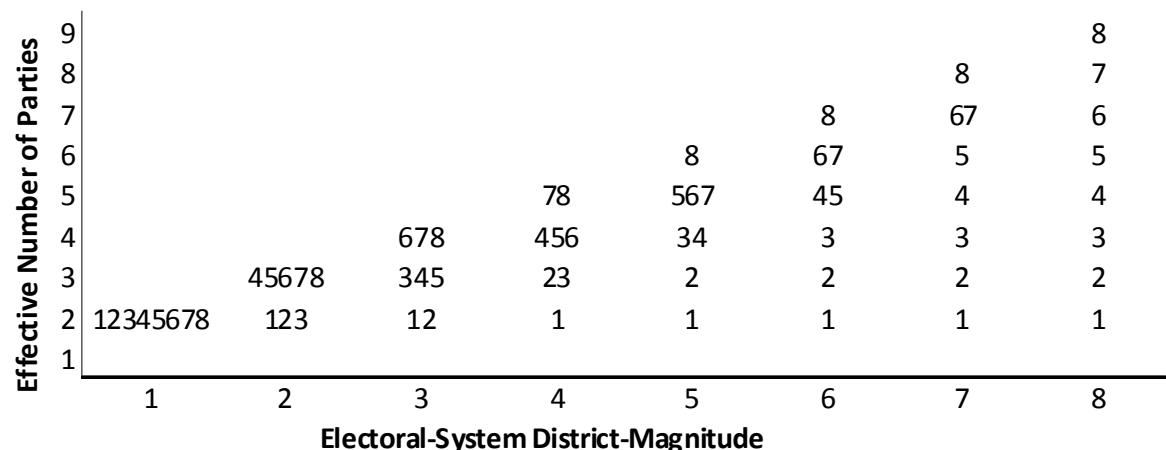
# The Interaction of Socio-politico-economic Cleavage Structure and the Electoral System in Shaping the Party System

As previously noted, the set of societal groups in a polity (as determined by the salience-weighted set of cleavage lines) can be seen as the set of potential parties.

The number (& “location”) of these societal groups, could therefore represent the potential number (& “location”) of parties in the party system.

The electoral system, then, and in particular DMag (& it’s closely related  $T_{eff}$ ), would govern (by strategic-behavioral & mathematical effects) how many of these potential parties emerge and survive in party system. DMag effectively governs #Parties emerging & surviving from # Soc Grps, down toward 2 as DMag decreases down toward 1. This suggests DMag & SFrag (Societal Fragmentation) have Interactive Effects on Party-System Fractionalization.

Notice how, as # SocGrps increases, # Parties increases, more & more-certainly so at higher DMag.



Symmetrically, as DMag increases, E(# Parties) increases, more & more-certainly so.

This implies an interactive effect, which can be modeled as shown next.

Cell entries give the number of societal groups in 8 observations at each DMag.

Linear-Interactive Model:

$$EN = \beta_0 + \beta_{SF} SF + \beta_{DM} DM + \beta_{SFDM} SF \times DM + \dots + \varepsilon$$

Effect of SFrag on ENPP (is a function of DMag):

$$\text{Effect}(SF) \equiv \frac{\partial EN}{\partial SF} = \beta_{SF} + \beta_{SFDM} DM$$

$$\Delta EN = \beta_{SF} \Delta SF + \beta_{SFDM} DM \cdot \Delta SF$$

$$\equiv \frac{\Delta EN}{\Delta SF} = \beta_{SF} + \beta_{SFDM} DM$$

Effect of DMag on ENPP (is a function of SFrag):

$$\begin{aligned} \text{Effect}(DMag) &\equiv \frac{\partial ENPP}{\partial DMag} = \beta_{DM} + \beta_{SFDM} SFrag \\ &\equiv \Delta ENPP = \beta_{DM} \Delta DM + \beta_{SFDM} SFrag \cdot \Delta DM \\ &\equiv \frac{\Delta ENPP}{\Delta DM} = \beta_{DM} + \beta_{SFDM} SFrag \end{aligned}$$

“Interactive Effect”: Effect of DMag on the Effect of SFrag on ENPP (equals Effect of SFrag on the Effect of DMag on ENPP because interactions, being cross-derivatives, are symmetric):

$$\frac{\partial \left\{ \frac{\partial ENPP}{\partial SFrag} \right\}}{\partial DMag} \equiv \frac{\partial \left\{ \frac{\partial ENPP}{\partial DMag} \right\}}{\partial SFrag} \equiv \frac{\partial^2 ENPP}{\partial SFrag \partial DMag} \equiv \frac{\partial^2 ENPP}{\partial DMag \partial SFrag} = \beta_{SFDM}$$

Empirical Analysis from Clark, W.R., Golder, M. 2006. "Rehabilitating Duverger's Theory," *Comparative Political Studies* 39(6):679-708.

$$\begin{aligned}
 \text{ElectoralParties} = & \beta_0 + \beta_1 \text{Ethnic} + \beta_2 \ln(\text{Magnitude}) + \beta_3 \text{UppertierSeats} \\
 & + \beta_4 \text{PresidentCandidates} + \beta_5 \text{Proximity} \\
 & + \beta_6 \text{Ethnic} \times \ln(\text{Magnitude}) + \beta_7 \text{Ethnic} \times \text{UppertierSeats} \\
 & + \beta_8 \text{PresidentCandidates} \times \text{Proximity} + \epsilon.
 \end{aligned}$$

Table 2  
The Strategic Modifying Effect of Electoral Laws

Regressor	Dependent Variable: Effective Number of Electoral Parties									
	Cross-Sectional Analysis						Pooled Analysis			
	1980s		1980s		1990s		1946 to 2000		Established Democracies <sup>b</sup>	
Regressor	Amorim Neto & Cox Data <sup>a</sup>	Amorim Neto & Cox Data <sup>a</sup>	Amorim Neto & Cox Data <sup>a</sup>	Whole Sample	Established Democracies <sup>b</sup>	1946 to 2000 Whole Sample	Established Democracies <sup>b</sup>	1946 to 2000 Whole Sample	Established Democracies <sup>b</sup>	1946 to 2000 Established Democracies <sup>b</sup>
Ethnic			-0.05 (0.28)	0.06 (0.37)	-0.70 (0.68)	0.19 (0.13)	0.11 (0.14)			
ln(Magnitude)			-0.08 (0.30)	0.51 (0.44)	-0.61 (0.59)	0.33* (0.20)	0.08 (0.23)			
UppertierSeats	0.04** (0.01)	-0.07 (0.04)	0.01 (0.02)	-0.02 (0.06)	0.05*** (0.02)	-0.06* (0.03)				
PresidentCandidates			0.22 (0.27)	0.36 (0.26)	0.07 (0.22)	0.35** (0.16)	0.26* (0.15)			
Proximity	-6.05*** (0.88)	-5.88*** (0.84)	-4.19*** (1.26)	-4.95*** (1.24)	-3.42*** (0.55)	-3.10*** (0.46)				
Ethnic × ln(Magnitude)	0.39*** (0.07)	0.37* (0.20)	-0.09 (0.17)	0.63* (0.34)	0.08 (0.12)	0.26 (0.17)				
Ethnic × UppertierSeats		0.07*** (0.02)	-0.005 (0.01)	0.01 (0.04)	-0.02** (0.01)	0.06*** (0.02)				
PresidentCandidates × Proximity	2.09*** (0.26)	1.84*** (0.43)	0.99** (0.46)	1.42*** (0.44)	0.80*** (0.23)	0.68*** (0.23)				
Constant	2.40*** (0.21)	2.60*** (0.51)	4.08*** (0.95)	5.15*** (1.32)	2.81*** (0.34)	2.92*** (0.35)				
Observations	51	51	62	39	555	487				
R <sup>2</sup>	.71	.77	.29	.48	.30	.40				

Note: Standard errors are given in parentheses for cross-sectional models; robust standard errors clustered by country are used for the pooled models.

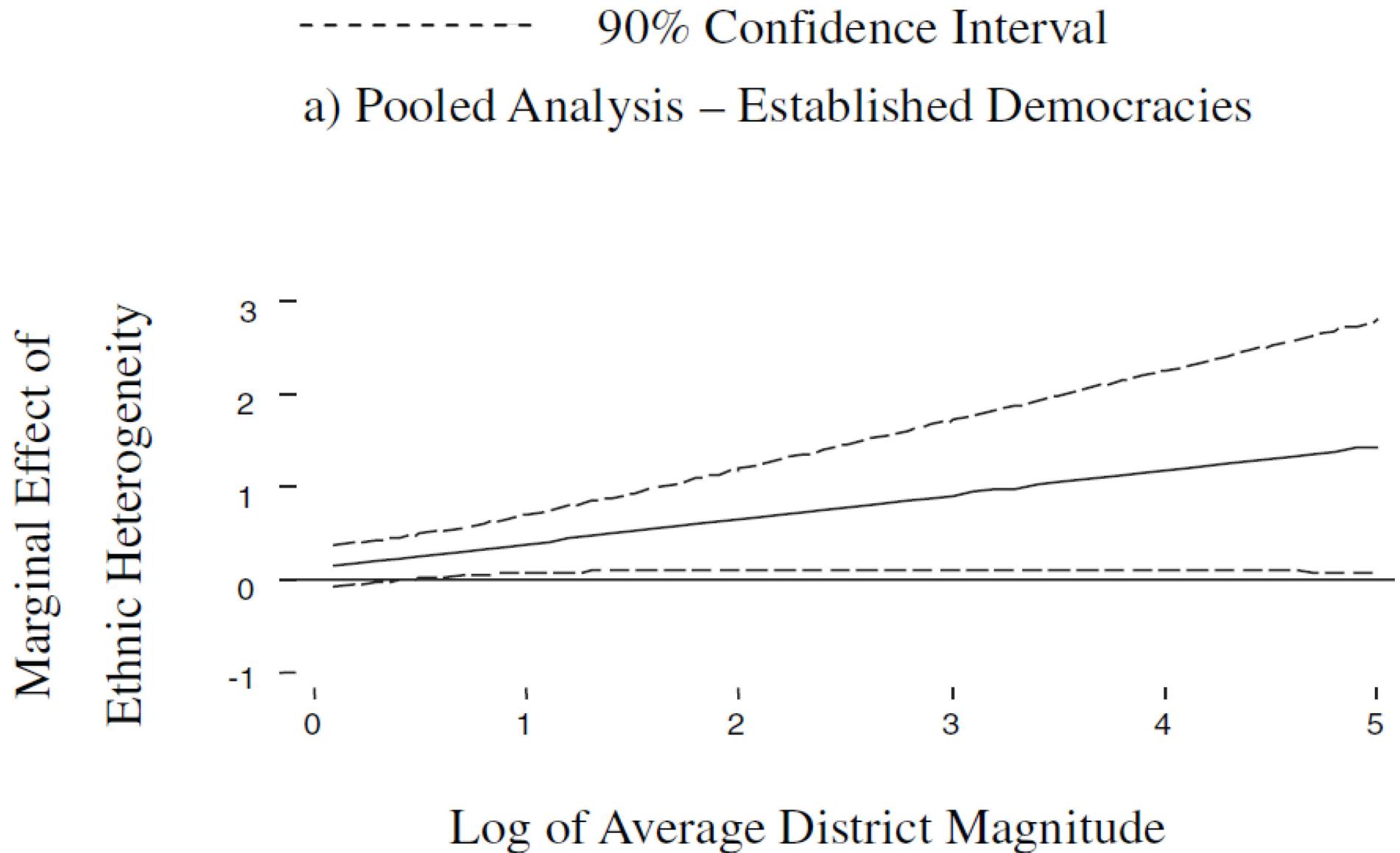
a. See Amorim Neto and Cox (1997).

b. Established Democracies omits elections from countries that transitioned to democracy after 1989.

\*p < .10. \*\*p < .05. \*\*\*p < .01.

# The Marginal Effect of Ethnic Heterogeneity on the Effective Number of Electoral Parties

---



## The Marginal Effect of Temporally Proximate Presidential Elections on the Effective Number of Electoral Parties

---

