Lecture 3

What is electoral competition and how can it be measured?

Economic versus political competition

- *Economic competition in a capitalist market economy*: Rivalry among consumers and producers in the pursuit of income, wealth and wellbeing. This process induces cooperation among agents to satisfy wants.

- *Political competition in a liberal democracy:* Rivalry among political agents for control of governmental authority and resources. Since only one political party or coalition can be successful at any given moment, the win/lose character of elections, in contrast to the sharing of a market by different firms, imparts a zero-sum character to political rivalry that market competition does not have.

- *From an evolutionary perspective*, politics was, and is, more competitive than economics: economic success depended on nature, which is not a strategic player. Political success depended on outplaying other human beings, who did behave strategically (Rubin 2000).

- The degree of economic rivalry depends on: substitutability of products; barriers to entry; and bargaining power of buyers and sellers (Porter 1999).

- The degree of political competitiveness depends on.....? And when is it 'perfect'?

Determinants of competitiveness in a particular spatial probabilistic voting model: (Besley, Persson and Sturm 2010)

- As in Lecture 2, the probability that citizen *j* will support the incumbent is

$$\pi_j^i = \begin{cases} \mathbf{1} & \boldsymbol{if}\ v^j(s^i) - v^j(s^o) > \beta_j \\ \mathbf{0} & \mathbf{otherwise} \end{cases} ; \quad \textbf{with } \pi_j^o = \textbf{1-} \pi_j^i.$$

where the party bias β_j is a random variable with a uniform distribution over the interval $[-1/2\varphi_j, 1/2\varphi_j]$.

- There are two types of voters:

  1) a fraction committed to one of the two competing parties regardless of policy platforms, $1-\sigma$;
  2) a fraction who are uncommitted, swing voters, σ.

- Suppose a fraction $\frac{\mathbf{1}+\boldsymbol{\lambda}}{\mathbf{2}}$ of committed voters favour the incumbent
  --> the fraction of all voters committed to the incumbent
  $(\mathbf{1}-\boldsymbol{\sigma})\,(\mathbf{1}+\ \boldsymbol{\lambda})/\mathbf{2}$, where $\boldsymbol{\lambda}$ can be > or < 0.

- The probability a swing voter votes for the incumbent is

$$\boldsymbol{\varphi}\{(\boldsymbol{v^i}-\boldsymbol{v^o})+\mathbf{1}/\mathbf{2}\boldsymbol{\varphi}\}.$$

  where the individual subscript is omitted assuming behavior is homogeneous within each group.

- The incumbent party expects to win if their vote share exceeds 1/2:

$$\boldsymbol{\sigma}\ \boldsymbol{\varphi}\{(\boldsymbol{v^i}-\boldsymbol{v^o})+\mathbf{1}/\mathbf{2}\boldsymbol{\varphi}\}+(\mathbf{1}-\boldsymbol{\sigma})(\mathbf{1}+\boldsymbol{\lambda})/\mathbf{2}>\mathbf{1}/\mathbf{2},$$

  or,

$$\boldsymbol{\varphi d^i + \frac{(1-\sigma)}{\sigma}\frac{\lambda}{2} > 0 \;;\quad d^i = (v^i - v^o).}$$

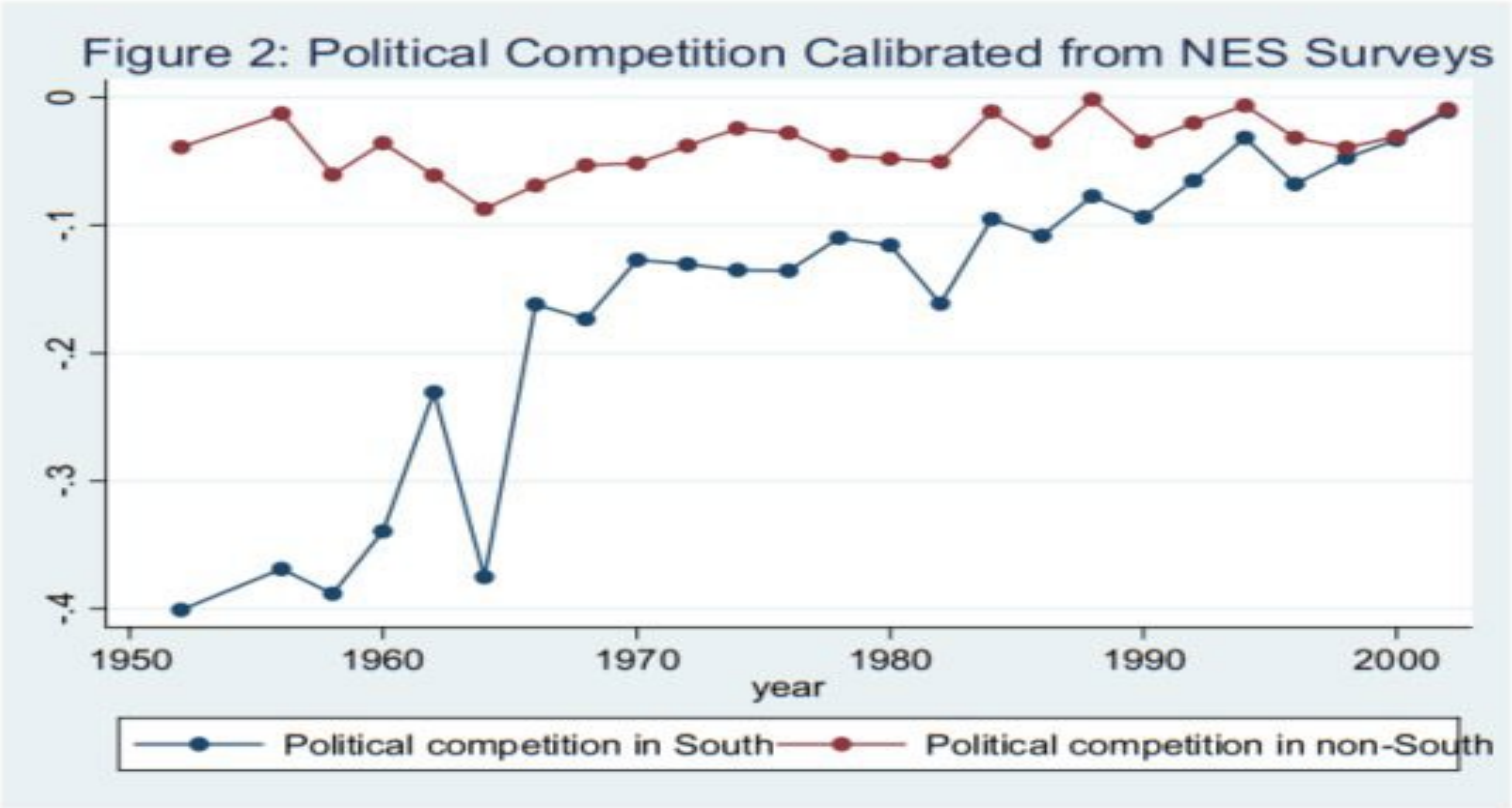
A highly competitive election – one that is *'too close to call'* - requires the left side of the inequality to approach zero **=>** an election is more competitive:

- the larger the proportion of swing voters (the smaller is $1-\sigma)/\sigma)$;
- the smaller the advantage of the incumbent in core supporters λ;
- the lower the 'salience' or sensitivity of swing voters to policy differentials φ;
- the smaller are the policy differentials (d^i= 0 when party platforms converge).

- B/P/S suggest the following index as a measure of electoral competitiveness:

$$\frac{(\mathbf{1}-\boldsymbol{\sigma})}{\boldsymbol{\sigma}}\frac{\boldsymbol{\lambda}}{\mathbf{2}\boldsymbol{\varphi}} \qquad (1)$$

Example: $[\frac{(1-\sigma)}{\sigma}\frac{\lambda}{2\varphi}]$ calibrated for U.S. Southern and Non-Southern states



Source: Besley, T., T. Persson and D. M. Sturm (2010). Political competition, policy and growth: Theory and evidence from the US. *Review of Economic Studies* 77: 1329-1352.

Existing, and generally complementary, ideas about the essence of political competition: (My take on a large literature)

As a group, these ideas encompass all of the key roles played by elections: i) selection of representatives; ii) disciplining of political agents; and iii) aggregation of preferences.

- 1- A **contest** among political parties **for the right to govern** (the view expressed above). It is fully competitive when the contest is open to challengers and the electorate is broadly based (e.g., Schumpeter 1950, Becker 1958, Sartori 1976)

- 2- A competitive system is one in which parties are **responsive** to the demands of voters (e.g., Soroka and Wlezien 2010).

- 3- Political competition is **a communication process** in which preferences and opinions are created, discovered, selected and disseminated (e.g., Wohlgemuth 1995, building on Hayek 1948)

- 4- **The process through which representatives are hired and fired:** i.e., its a process of selection and accountability (e.g., Strom 1989, Buchler 2011)

- 5- Political competition is **a veil for rivalry among special interest groups,** which may arise to a considerable extent apart from election contests. Two versions:

  (i) one version emphasizes the exchange of policies for favored groups for political resources taking the full cost of taxation into account (e.g., Becker 1983,1985);
  (ii) another version focuses on the artificial creation and capture of rents. (See the rent-seeking literature)

- 6- Political competition involves **creative destruction** of (future) political interests and coalitions (Schumpeter 1950, Young 1991)

- 7- We can also describe political competition in terms of its location: among candidates in districts; among parties in the legislature; among levels of government in a federation; between national governments.

How do we proceed to define competition indexes and to actual measurement?

(i) Consider each approach by itself;
(ii) Focus on some underlying common factors…..

Underlying elements:

1) uncertainty about, or unpredictability of, the outcome
2) contestability of the electoral system
3) other?

- Rivalry for office makes it impossible to predict with certainty which party or coalition will win, more intense rivalry makes it more difficult, and the most competitive elections are 'too close to call'.

- Contestability refers to the existence of, or potential for, credible challenges to the governing party. *This is not the same as uncertainty….*

- Credible alternatives will lead to a change in the outcome at some point, so unpredictability and contestability are *not* independent.

Two difficult, underlying general issues we should think about:

(i) competitiveness exante vs. expost measurement

(ii) competition between elections vs. within an electoral period

General indexes of competitiveness as uncertainty

i) In majoritarian, winner-take-all, electoral districts*:*

Vote Share (or seat share) Margin = (v_1-v_2). (2)

Aggregate up to a national level to make an index of competitiveness for the country as a whole.

A transformation of this margin is what B/P/S *actually use* in their study of the effect of competitiveness on growth in the U.S. South.

Example: Open (no incumbent) U.S. Senate Elections, 1922-2016 (why 1922?). Showing the absolute value of the Republican share of the two party vote less 1/2: $\mathbf{|\{v_R/(v_R + v_D)\} - 0.5)|}$.

|Republican share of two-party vote − 0.5| in Open U.S. Senate Elections, 1922-2016

Average over 11-12 years	0.00 – 0.05	0.05 – 0.10	0.10 +
1922 – 1933	25.0 %	25.0 %	50.0 %
1934 – 1945	27.9 %	37.2 %	34.9 %
1946 – 1957	36.1 %	25.0 %	38.9 %
1958 – 1969	64.9 %	18.9 %	16.2%
1970 – 1981	41.1 %	40.5 %	18.4 %
1982 – 1993	46.4 %	28.6 %	25.0 %
1994 – 2004	40.0 %	43.3 %	16.7 %
2006 – 2016	22.5 %	24.0 %	53.5 %

Source: Winer, S.L., L. Kenny and B. Grofman (2014). Explaining variation in the competitiveness of U.S. Senate elections, 1922–2004. *Public Choice* 161(3/4): 471-497, (Table 1), extended through 2016 by S. L. Winer and S. J. Ferris (2020), *Political Competition and the Study of Public Economics*, Cambridge.

ii) In PR systems, with district magnitudes > 1, more than one party is elected. Blais and Lago (2009) suggest the following index of the uncertainty attached to any district election under PR, as well as for SMP elections:

Min Seats = {the minimal number of additional votes required for any party to win one additional seat} / ballots per seat (3)

The **lower** is *Min Seats*, the more uncertain is the district election.

This index depends on the specific rules governing the electoral system: *Min Seats* = a (district level) vote share margin in an SMP system.

Example: *Min Seats* for Canada, Spain, Portugal and the UK.

Mean value of *Min Seats*

	Mean value of Min Seats	
Spain	26.88	PR
Portugal	16.77	PR
Canada	20.29	SMP
United Kingdom	19.34	SMP

Districts are most competitive in Portugal(PR), least in Spain(PR), while the two SMP countries are in between.

Source: Blais, A. and I. Lago (2009). A general measure of district competitiveness. *Electoral Studies* 28: 94-100. Excerpt from Table 4

iii) Incorporating vote-volatility in any electoral system

Even a small vote margin can signal an election that is not close if the expected volatility of the vote is even smaller (Przeworski/Sprague 1971, Elkins 1974).

Implication**:** normalize the simple vote margin using vote volatility V:

$$\boldsymbol{vol.ajusted\ margin} \ = \ (\boldsymbol{v_1} - \boldsymbol{v_2}) \ / \ \boldsymbol{V} \qquad (4)$$

where $V = \sum_k |v_{k,t} - v_{k,t-1}|/2$.

Note the implication that indexes like *Min Seats*, which collapse to unadjusted margins $(v_1 - v_2)$ in an SMP system, are incomplete.

iv) The multi-party analogue to the volatility adjusted margin due to Przeworski and Sprague (1971).

Divide the 'distance to go' to overcome the leader $v_1 - v_k$ for each party *k* contesting a constituency election by the relevant measure of volatility:

$$h_k = (v_1 - v_k)/V.$$

Then, define a sub-index c_k *:*

$c_k = 1$ if $0 \leq h_k \leq 1$ and = $1/h_k$ if $h_k > 1$.

c_k equals 1 if a party's distance to go to tie the leader is less than the portion of the electorate that switched parties last time. It falls below 1 as the vote margin to be overcome grows relative to volatility.

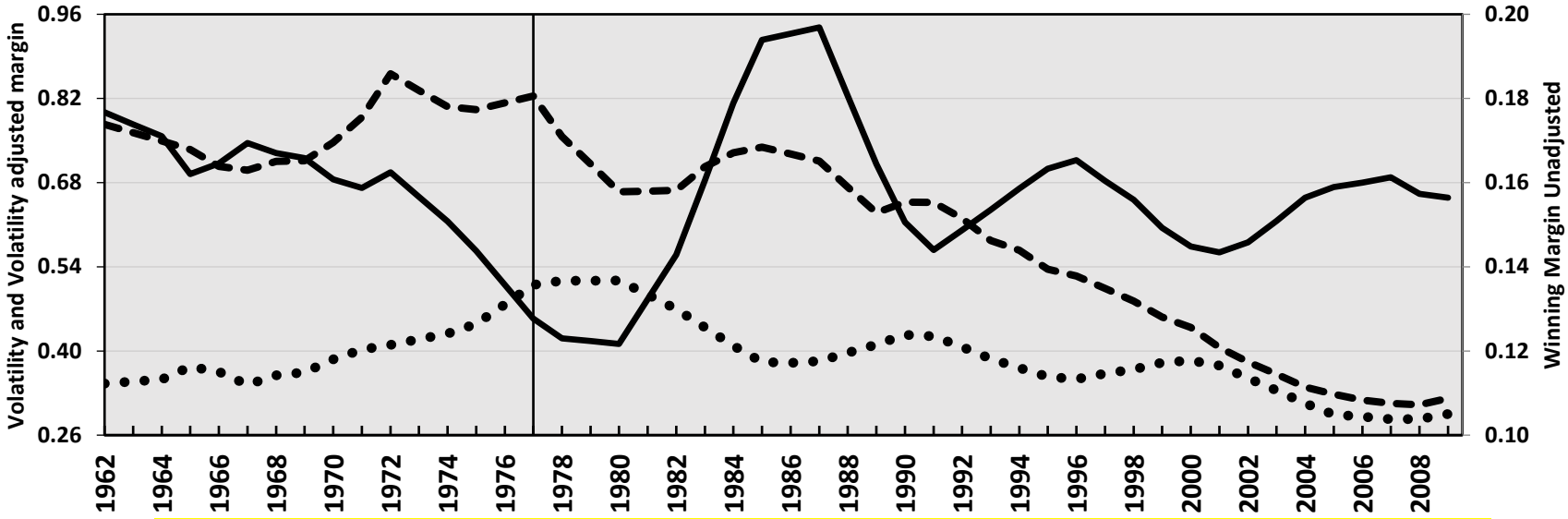
Aggregating c_k's across all the parties contesting the election in a constituency using vote shares as weights yields a multi-party volatility-adjusted index, *PS* (for the authors):

$$PS = \sum_k c_k \, v_k \, . \qquad (5)$$

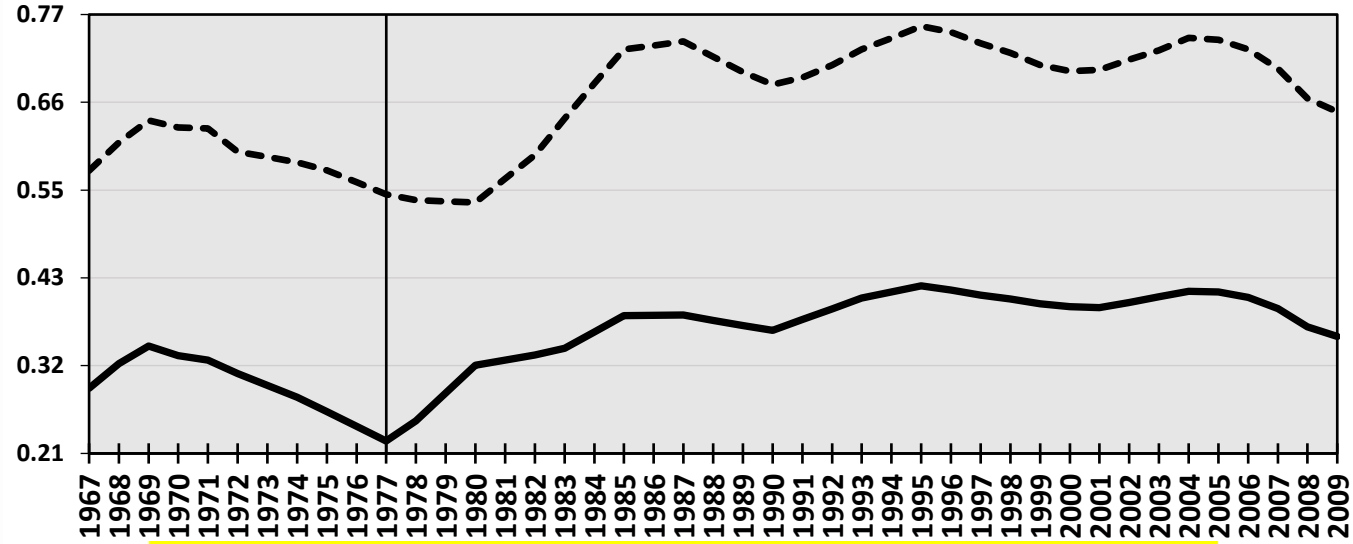
The implication here is that a perfectly competitive contest is one in which the distance to go for *every party* contesting an election is smaller than the relevant vote-volatility of the electorate **=>** *PS = 1*.

Example: The simple vote share margin, volatility, the volatility adjusted margin, and the PS index, for 14 major Indian states, 1962 (1967) - 2009.

Source: Dash, B.B., J.S. Ferris and S.L. Winer (2019). The measurement of electoral competition with application to Indian states. *Electoral Studies* 62: 1-21. Figures 3&4.



dashed = $v_1 - v_2$; dotted = volatility V; solid = volatility adjusted margin $(v_1 - v_2)/V$



solid= PS index by party; dashed = PS index by constituency

v) Local vs. national: (1) *allowing for asymmetry of safe seats in the legislature.*

What happens on average in the electoral districts may not be indicative of competitiveness in the legislature.

In SMP, asymmetry across parties in the number of seats which are 'safe' is a measure of competitiveness *at the polity-wide level*: a party with a preponderance of safe seats has an advantage….

Define a safe seat as one that lies in the upper tail of the distribution of volatility-adjusted vote margins of incumbents in a set of past elections (Bodet 2014).

The proportion of marginal seats can then be computed as

$$MS = 1 - \psi,$$ where ψ is the proportion of safe seats.

Next, use the Euclidean deviation from a three-party equal sharing of safe seats as a measure of asymmetry, where the third party = all other than the two leaders ϕ_3 (normalized to 1 if a single party has all the safe seats):

$$\boldsymbol{\phi_3 = \sqrt{3/2} * \sqrt{(1/3 - S_{p1})^2 + (1/3 - S_{p2})^2 + (1/3 - S_{p3})^2}}.$$

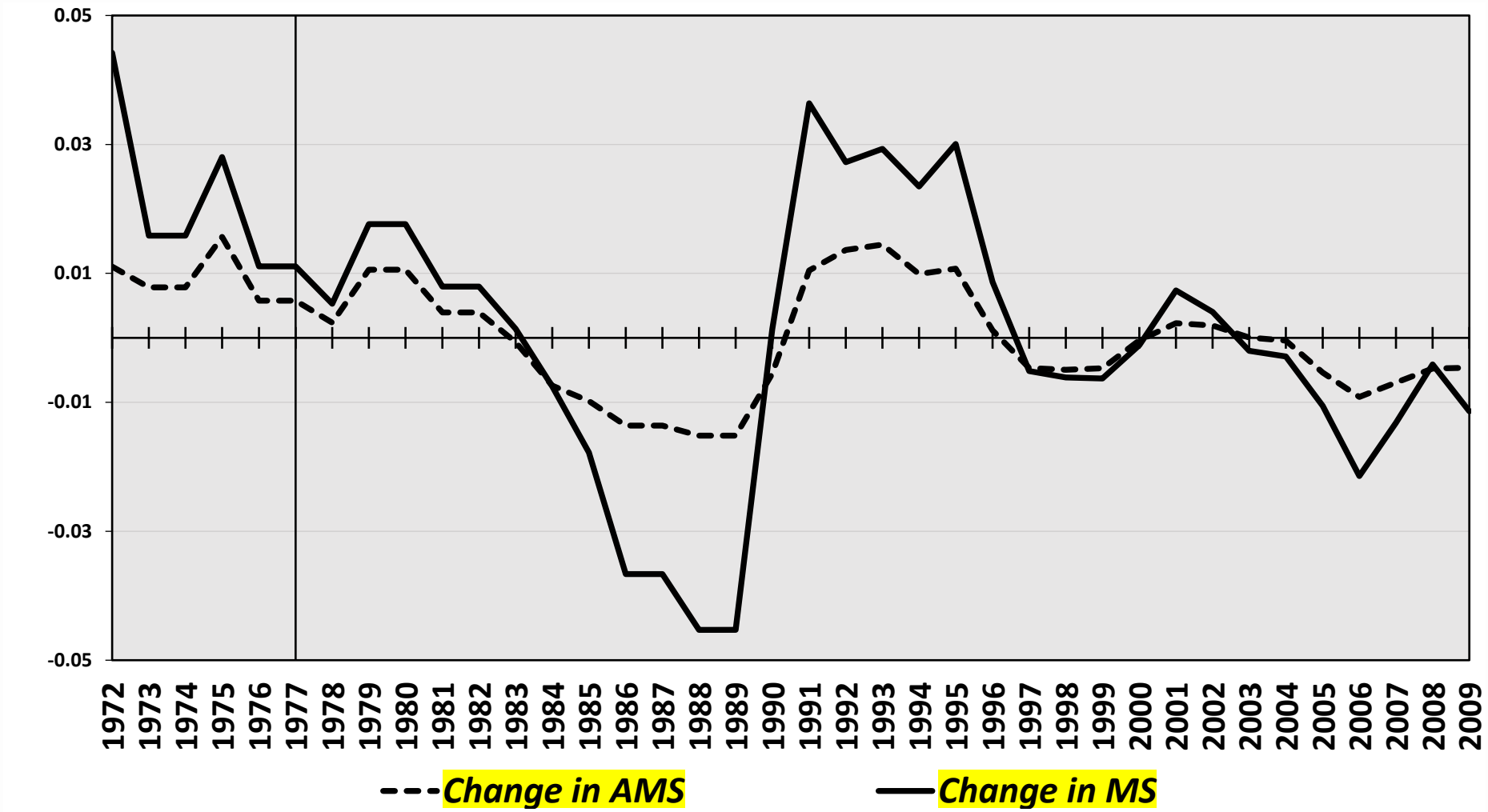
Then, an asymmetry-adjusted marginal seats measure (*AMS*) of competitiveness for the polity as a whole is:

$$\boldsymbol{AMS = 1 - \{\psi \phi_3\}}. \qquad (6)$$

When safe seats are equally distributed $\phi_3 = 0$, *AMS* = 1, and competition is 'perfect'.

Example: Changes in MS and AMS for Indian State Elections, 1972-2009. Note the economic crisis in the early 1990s after which Indian growth doubled.

Changes in Competitiveness as Signaled by Changes in MS and AMS



Source: Dash, B.B., J.S. Ferris and S.L. Winer (2019). Figure 5

(vi) Local vs. national: (2) *The connection between competition for the legislature and the typical contest at the constituency level (after Buchler 2007).*

Could competition at the constituency level fall when competitiveness at the state level is rising (or vice versa)?

Suppose a legislature has L seats where the governing party has S safe seats, the opposition has s safe seats, and the remaining *c* seats are marginal: $\boldsymbol{L = S + s + c}$. Suppose $\boldsymbol{1/2L > S > s > c}$ so the opposition is at a disadvantage, but could in principle defeat the incumbent.

Let *p* = the probability that the *incumbent* will win any one of the *c* contested seats **=>** If $L\ p$ is 'large', the distribution of total seats available to the incumbent can be represented by a normal approximation to the binomial

$$N(\mu, \sigma^2);\ \mu = S + p \cdot c \text{ and } \sigma^2 = c \cdot p \cdot (1 - p).$$

If $p = 0.5$, say, the incumbent expects to receive 1/2 of the contested seats. Whether the opposition can overcome the safe seat bias in favor of the incumbent, *S*-*s*, and win depends upon the size of the bias and on the variance in the distribution of electoral outcomes.

If $p = 0.5$, $\sigma^2 = 0.25c$, and is as large as possible.

As *p* declines below 0.5, the opposition can expect more seats, but the distribution of the outcome will be more tightly distributed. There are many possibilities.

In the Indian states, competitiveness at the constituency level has evolved differently than competition between parties at the state-wide level.
(See previous figures)

vii) Competitiveness as the incumbent's probability of loss in the next election

If governing parties are composed of coalitions formed after an election, as in PR systems, estimating an incumbent's probability of losing office is complex, involving both pre-electoral and post-electoral elements (Cronert and Nyman 2021):

$$\boldsymbol{Pr}(\mathbf{Office})_{\boldsymbol{k}} = \sum_{\boldsymbol{j}} \boldsymbol{Pr}\left(\mathbf{Office_k} \middle| \boldsymbol{E_j}\right) \cdot \boldsymbol{Pr}\left(\boldsymbol{E_j}\right) \qquad (7)$$

where $\mathrm{E_j}$ is an electoral outcome involving specific coalitions.

This index can be applied to all electoral systems.

Whether this probability provides a better measure of competitiveness than do previous indexes, which capture key factors that underly inter-party rivalry, is not obvious.

- **Kayser and Lindstadt's (2015) simpler formulation of a loss probability:**

  Assume just two parties/coalitions alternate in government –- historically includes most cases.

  Given changes in votes across adjacent elections for the incumbent (Δv_1) and the opposition (Δv_2), and vote to seat *swing ratios,* or elasticities, for the incumbent (τ_1) and the opposition (τ_2), assumed =1 under PR, the seat swing against the incumbent is:

  $$\boldsymbol{s = \Delta v_1 \tau_1 - \Delta v_2 \tau_2.}$$

  Note: Such calculations become problematic when there are more than two major parties that sometimes alternate in opposition.

Using *the actual history* of seat swings $\{s_n\}^{t-1}$ (simpler than KL's method of fitting a distribution and predicting them), define a smoothed probability density for *s* with bandwith *h:*

$$\boldsymbol{g(s) = \frac{1}{nh}\sum_{i=1}^{n} K\left(\frac{s - s_i}{h}\right),}$$

where K is a Gaussian kernel.

The probability that the opposition will just overcome the seat share gap, ***d***, between it and the incumbent party (LPR) can then be computed as:

$$\boldsymbol{LPR = \int_{-\infty}^{-d} g(s)ds.} \qquad (8)$$

Example: LPRs for SMP and PR systems, 1945-2011.

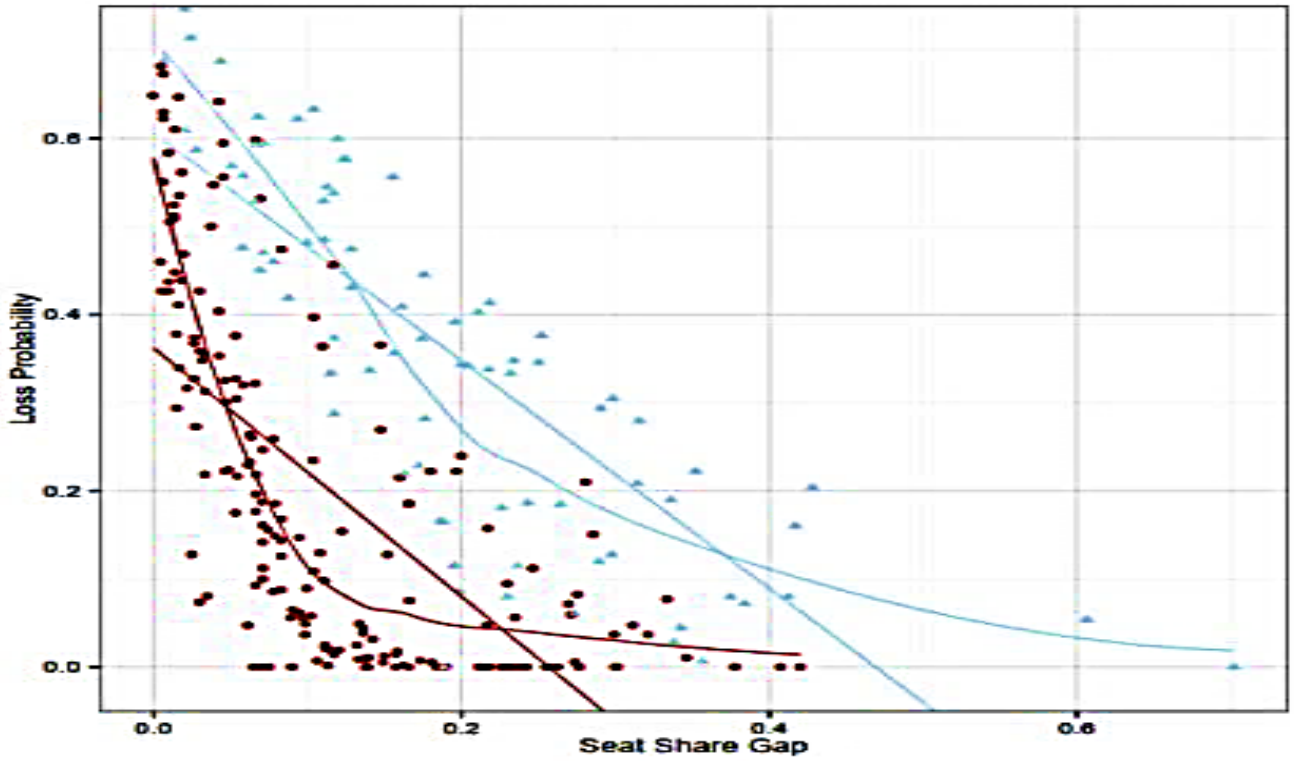


Figure 8: *Loss probability (LPR) plotted against seat share gap by electoral system with separate least-squares lines and loess smoothers. PR elections in red and SMD elections in blue. N=267. OECD sample, 1945-2011.*

Source: Kayser, M.A. and R. Lindstadt (2015). A cross-national measure of electoral competitiveness. *Political Analysis* 23(2).

Competitiveness as contestability

- **Political contestability is similar to the idea of contestability in an economic market introduced by Schumpeter (1950, 85) and studied by Demsetz (1968), Baumol and others. Yet different…**

  Contestability in an economic market may be present even if there is one firm. The higher costs of entry into the political arena - due to the free rider problem in political organization - may require the actual presence of at least one opposition party.

- **Contestability, the number of parties, and Duverger-Demsetz reasoning**

  - Usual argument: more parties leads to greater competitiveness, as in an economic market. *But elections are not markets.....*

  - The winner-take-all nature of an SMP system (consider PR later) means entry of more parties ***decreases*** the likelihood that any challenger will be a credible rival to the incumbent. Only one coalition forms the government in each period, unlike a market where many 'sellers' coexist, and party entry fragments the vote.

  - In majoritarian electoral systems, this reasoning suggests that ***fewer*** rather than more parties increases the likelihood of there being a credible challenger. (Agreed?)

- Duverger-Demsetz reasoning, after Duverger (1950/54) and Demsetz (1968):

  (i) ENP **-->** 2 in the long run in SMP systems (Duverger's Law);
  (ii) Even a situation with a dominant party can be contestable, as suggested by Demsetz's argument about monopolized markets

  --> **Conjecture**: SMP systems evolve over time around a long run path that involves a high degree of contestability.

  A test awaits a convincing measure of electoral contestability.

- **On SMP vs. PR:**

  - Although PR allows a larger number of parties to survive an election, because only one coalition becomes the government, voters may still be concerned with the fact that minor party proposals are less likely to be implemented.

  - If so, as in SMP systems, voters also have an incentive to desert parties not likely to be part of a governing coalition.

  - On the other hand, entry is easier in a PR system, making challenges to the incumbent less costly….

- **Measuring contestability**

  i) The effective number of parties

  An implication of above reasoning is that the *effective number of parties* (Laakso and Taagepera, 1979) can be used as a measure of contestability:

$$N_v = \frac{1}{\sum_k {v_k}^2} \ , \qquad (9)$$

  where vote shares v_k are employed (alternatively seat shares N_s).

  N_v = inverse of an HH index using vote (seat) shares. The use of squares distinguishes significant parties from insignificant ones. Two parties with equal shares => N_v (or N_s) = 2.

  In the Duverger-Demsetz view, contestability **declines** with N_v.

ii) Alternatives to ENP

- *Tpartyness* (Gaines and Taagepera 2013) is suggested as a way to deal with problems of ENP, which may over- or under-emphasize departures from 2:

$$\boldsymbol{T}\textbf{-partyness}_{\boldsymbol{v}} = \frac{(\boldsymbol{v_2}-\boldsymbol{v_3})(\boldsymbol{v_1}+\boldsymbol{v_2})}{\boldsymbol{v_1}}. \qquad (T2 = 1 \text{ when } N_v = 2)$$

But see Dunleavy (2014) who argues that this measure does not sensibly reflect two-partyness at a system wide level.

- Thomsen (2022) suggests a measure of the effective number of candidates based on fundraising:

$$N_c = \frac{(\sum_k f_{kt})^2}{\sum_k f_{kt}^2}, \qquad (10)$$

where f_{kt} is the amount of money raised by party or candidate k in an election contest at time t.

N_c = the number of parties if receipts are evenly distributed, and if one party has most of the money, the effective number is a bit larger than one. (*Is there an analogue for N_c to ENP under Duverger's Law?*)

He also suggests simpler measures that reflect the percentages raised **(a)** by the top fundraiser compared to all candidates, and **(b)** by the top compared to the second highest fundraiser.

iii) Contestation: combining closeness and turnover to deal with collusion

- Gehl and Porter (2020) suggest caution in interpreting small party numbers as evidence of greater competitiveness: the same Duvergerian logic that delivers small numbers of parties in SMP systems also allows for greater collusion among parties to restrict entry of challengers.

  The need to incorporate this trade-off into a more complete measure of contestability remains an outstanding challenge.

- A partial solution to the problem posed by the potential for collusion among existing parties to prevent the entry is ***contestation*****…..**

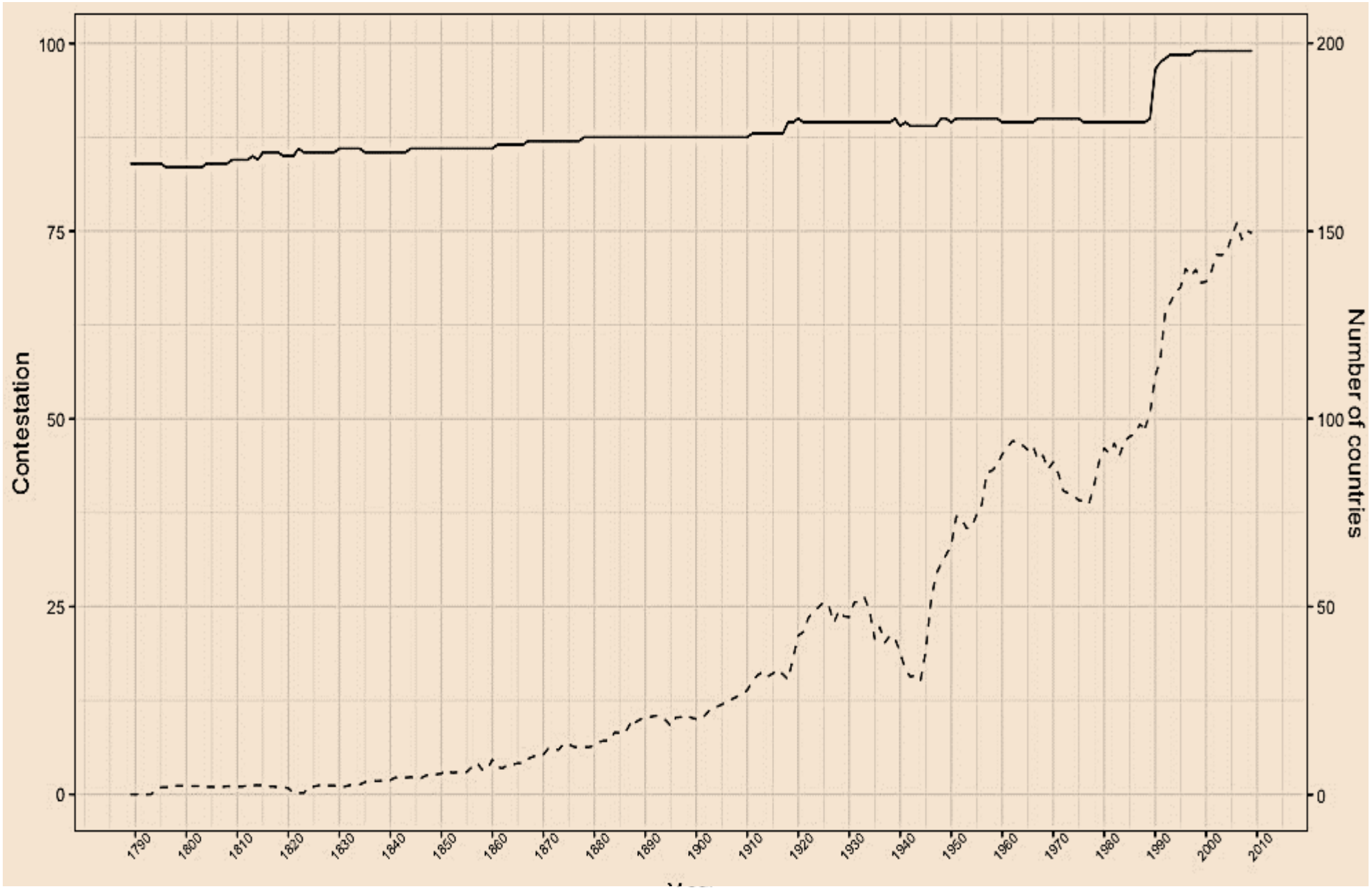
- **Gerring, Hicken, Weitzel and Cojocaru (2018) construct an index of contestation that combines closeness and turnover:**

  Contestation = 100 – (vote share of the party that was the winner last time − vote share of the largest challenger in the current election) (10)

Contestation varies from 0 to 200 (when the incumbent receives no votes) if shares are ranked from 0 to 100, with 100 the value at which turnover occurs.

Example: The average value of contestation from the 1790's for more than 150 countries, 1790 – 2010.

Source: Gerring, J., A. Hicken, D. Weitzel and L. Cojocaru (2018). Electoral Contestation: A Comprehensive Polity-Level Analysis. V-Dem Institute, Working Paper 73, University of Gothenberg. August



Note: The solid line shows the number of countries for each year in the data set. The dashed line shows contestation (incumbent-challenger) through time, calculated as the polity-year mean across all polities for which data is available.

- **Skilling and Zeckhauser (2002) suggest a 'political competition' index, PCI:**

$$PCI = 1 - \sum_k \alpha_k^2 \ , \qquad (11)$$

where α is the proportion of time that different parties (or long-lived coalitions) were in power over a given period.

PCI = 1 minus an HH index that uses the proportion of a given time period that a party or coalition was in power.

PCI = 0 if one party is in power for the whole period; and PCI **-->** 1 as competitiveness increases.

Example: Skilling and Zeckhauser (2002, Table 1, 128) gives this index for OECD countries from 1960 to 1997.

Table 1
Party dominance and PCI values

Country	1960–1997	
	Dominant party	Competition index
US	Republican	0.50
Japan	LDP	0.04
Germany	CDU	0.44
France	Gaullists	0.42
UK	Conservatives	0.44
Italy	DC	0.18
Canada	Liberals	0.43
Austria	SPO	0.40
Belgium	CVP	0.00
Denmark	SD	0.55
Finland	SDP	0.57
Iceland	Independents	0.42
Ireland	Fianna Fail	0.45
The Netherlands	CDA	0.63
Norway	AP	0.52
Sweden	SDA	0.39
Australia	Liberal	0.49
New Zealand	National	0.34
Average		0.34

Source: Skilling, D. and R.J. Zeckhauser (2002). Political competition and debt trajectories in Japan and the OECD. *Japan and the World Economy* 14: 121-135

- **Problems measuring contestability remain:**

1 The potential for collusion pointed to by Gehl and Porter is only indirectly captured in these measures of turnover. How can the potential for collusion be measured?

2 Since turnover may be low when incumbents survive for extended periods by delivering good government, low turnover may be consistent with a high degree of competition in the long run. How would we know?

3 The maintenance of contestability may require the occasional turnover. If so, how often?

Does it matter??

Some investigations from a diverse and growing literature:

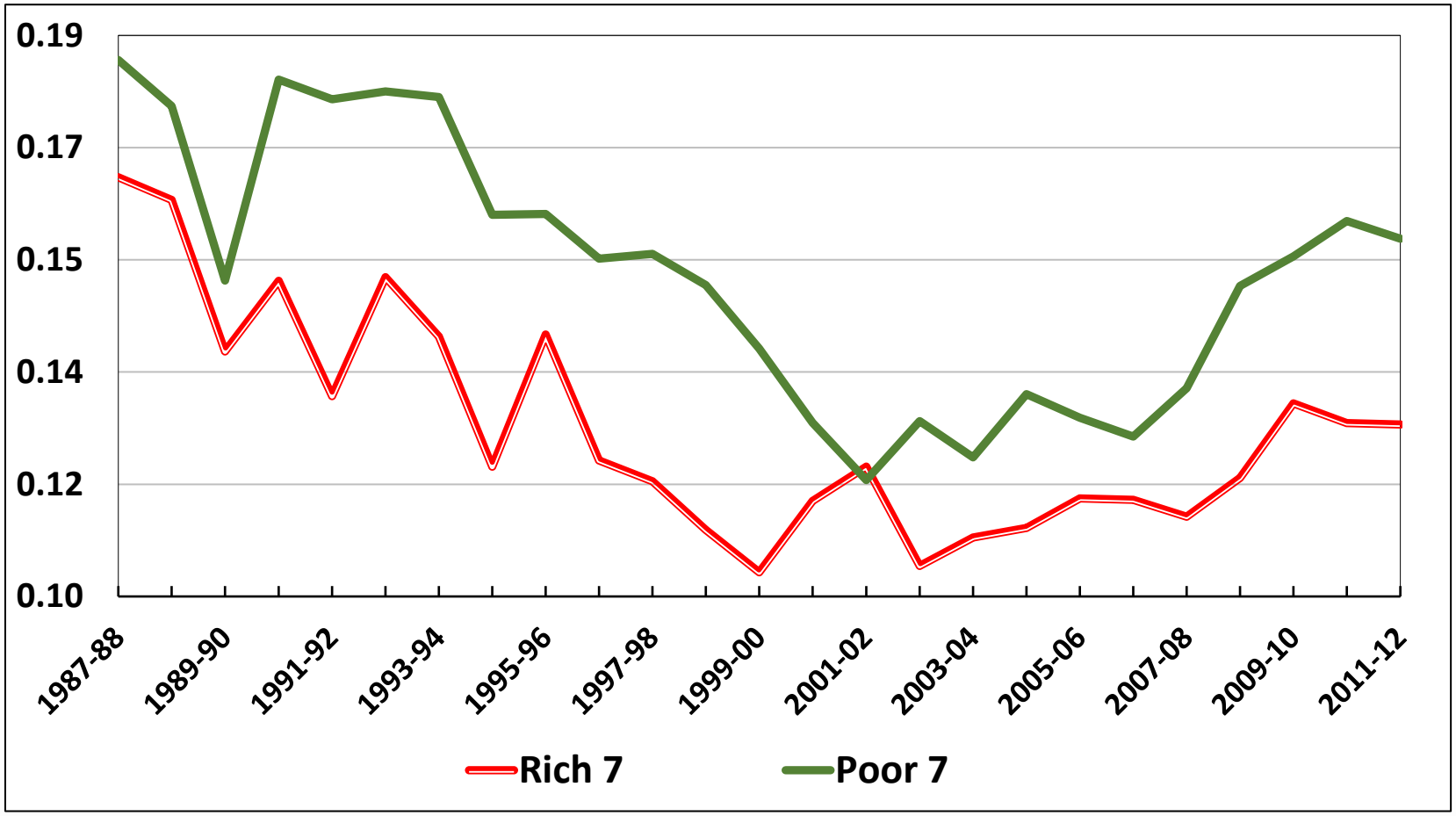
- Besley, Persson and Sturm (2010) on growth in the U.S. South after the Voting Rights Act of 1965

- Archambault and Winer (2023) on the incumbency effect in Canadian general elections.

- **Winer et al (2021) on the competitiveness in the study of the privateness of public expenditure in the Indian states.**

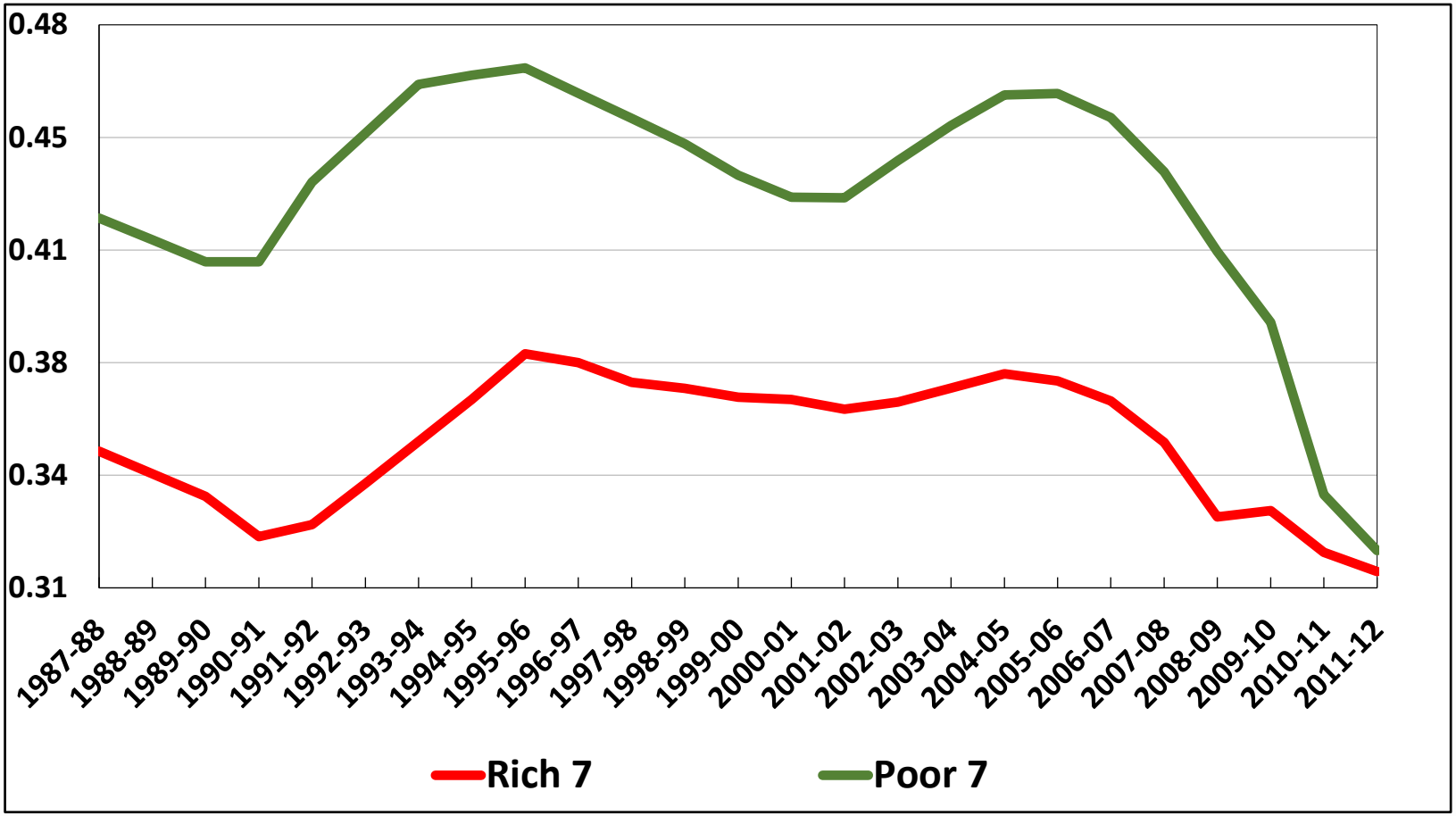
Example: Winer, S.L., J.S. Ferris, B.B. Dash and P. Chakraborty (2021). The privateness of public expenditure: A model and empirics for the Indian States. *International Tax and Public Finance* 28: 1430-1471. Figures 1 and 3

State spending on private targetable goods and services as a proportion of total noninterest state spending: Averages over 7 higher and 7 lower income Indian states, 1987/88 to 2011/12



Note: Public spending on lotteries is excluded. See Table 1 for classification of states. The 14 major states are divided into two equal groups based on real per capita real income in 2008/2009. *High income group*: Gujarat, Haryana, Kerala, Maharashtra, Punjab, Tamil Nadu and Karnataka. *Low income group*: Bihar, Uttar Pradesh, Madhya Pradesh, Orissa, Rajasthan, West Bengal and Andhra Pradesh.

Average multi-party competitiveness (PS index by constituency) for 7 higher and 7 lower income Indian states, 1987/88 to 2011/12



Note: Using data for all 14 states, the PS index is weakly correlated with (v_1 - v_2) over the 1987/88 to 2011/12 period, at -0.21.

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