Electoral Systems and Geographic Representation

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September 21, 2021

Contents of the Presentation

- Our focus: The Descriptive Representation of *Places* in *Parliaments*
- Theoretical Expectations: The Effects of Electoral Systems
- Measurement: The Spatial Un-Representativeness of Legislatures Index (SURLI)
- Cross-country Analysis: Evidence from 62 Democracies
- Paired Comparison: Local Representation and Seat Safety in German and UK Single-Member Districts

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Parliaments and Places: How well do Representatives Reflect the Geographic Diversity of Voters?

- Voters value *localness* as a descriptive trait in candidates, and candidates often cue strategically their local credentials to reap an electoral bonus.
- Yet, it is often claimed not all places are equally represented in legislatures, and that this contributes to spatially unequal policy outcomes.
- How should we *expect* geographic 'representativeness' to vary across countries?
- How do we *measure* geographic 'representativeness'?

Victor - the LOCAL Choice!

"I'm proud of Chorlton" says the ONLY local candidate Victor Chamberlain, "...after all I've lived here most of my life." Victor said, "I got involved with the Liberal Democrats in 2003 because of the Iraq war, then I helped get John Leech elected to Parliament 2005. Since then I have been heavily involved in numerous local campaigns including being involved in the campaign to save Chorlton Meadows FROM THE START, the campaign AGAINST the 'Mega' Tesco at Old Trafford, fought AGAINST Labour CLOSING Ewing School and dealt with hundreds of local cases.

CARPET-BAGGER!

Meanwhile, the Labour Campaign is in tatters after Labour selected **Amina Lone** who lives in Gorton. Lone has already unsuccessfully stood in Whalley Range.

Councillor Paul Ankers said, "The selection of the Labour Candidate shows how much they take YOU for granted! Victor is standing because just like me he cares about you - the people of Chorlton." A close look at our map reveals that Amina Lone lives in Gorton.

John Leech said, "In a previous election, Labour have made a huge thing that our candidate came from neighbouring Didsbury. Now they select someone from miles away. They are hypocrites of the first order. Don't be fooled by their false promises! Select a Chorlton man - who can continue work alongside our Lib Dem Team!"

Labour's journey to Chorlton

"The Lib Dems have selected someone from Didsbury - it is a disgrace. A Chorlton Councillor should be from Chorlton!" ***Labour, April 2008***

"I will always put Whalley Range First!" ***Amina Lone April 2008***

Burnage

Gorton

Levenshulme

Victor lives here

Amina Lone lives here

Chorlton-cum-Hardy

Fallowfield

Ladybarn

Chorlton

intouch

with Oldham East and Saddleworth

FREEPOST RSAK-CUGS-YKYR
OES Conservatives, Dolphin's Barn, Moorby Street, Oldham, OL1 3QU
office@oes-conservatives.com
07719 237423
www.oes-conservatives.com
Or find us on facebook.

Conservatives

KASHIF ALI
OLDHAM BORN & BRED

Kashif hasn't just arrived. He's a true Oldhamer, born, educated and still living here in Oldham.

Kashif's key priority is the economic regeneration of the constituency. *"Jobs, businesses, and better public transport are the key to prosperity*

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News › UK News › Politics

If you're born here then you're more likely to become an MP than anywhere else

Some areas of the UK are over-represented in parliament, with more MPs than you would expect

London and the South East feature disproportionately in parliamentary CVs

POLITICS DEVOLUTION *July 4, 2018*

Under-represented and under-funded: London politicians can't keep ignoring the south-west

By Sam Alvis

POLITICS 11/12/2017 13:17 GMT

John McDonnell: London-Centric Decision-Making May Have Caused Brexit Vote

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Assumptions

- Voters prefer legislators from their local areas.
- Parties are biased towards certain parts of the country due to the unequal distribution of 'political credentials' (wealth, education, closeness to political power, access to party structures etc.).
- Electoral rules yield variation on two criteria that should therefore predict representativeness:
  1. *Party Incentives*: incentives for viable parties to select local candidates over 'parachuted' ones.
  2. *Voter Leverage*: ability of voters to express a local preference beyond their partisan preferences.

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Further Assumptions

- Though voters value localness, it is normally a second-order consideration vis-à-vis partisanship.
- To simplify can think of this phenomenon it in terms of two 'voter types':
  1. Most voters are 'partisans', who will consider localness only between candidates of the same party.
  2. A subset ℓ of voters are 'localists', who will always vote for the local choice of any party, if available. In list systems, they will break across parties proportionally to their list's share of local candidates.
- Parties have spatial biases: *at least for some territorial units*, a party would prefer to 'parachute' a non-local.

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Features of Electoral Systems Considered

1. Constituency Structure (single-, multi-, mixed-member).
2. Ballot Structure (closed lists/single party candidates vs various forms of *preferential voting*, via e.g. open or flexible lists, STV, SNTV).
3. District Magnitude.

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Single-Member (SM) systems

Seat safety (whether the expected margin between parties is larger than ℓ) creates different *party incentives* and *voter leverage*.

In competitive seats, i.e. $|E(P_1) - E(P_2)| \leq \ell$:

- High *party incentives*:
  - High visibility of candidate $\rightarrow$ more localist voters
  - High payoff of local candidate $\rightarrow$ choosing a local can make a difference between winning 100% of seats or 0% (unlike PR).
- High *voter leverage*:
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- Low *party incentives*:
  - No payoff of local candidate choice $\rightarrow$ for the only viable party fielding a local makes no difference to election outcome.
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Therefore, SMD systems present a combination of the 'best' equilibrium for local representation in competitive seats and the 'worst' equilibrium in safe seats.

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Multi-Member (MTM) systems

- Modest *party incentives*:
  - As district magnitude increases, lower visibility of candidates vis-à-vis party brand than in SM systems.
  - In larger districts, parties may select unevenly across territorial units *within districts*. These may be slates that are fully local to the district, but represent unequally sub-district units.
  - Payoff of local candidate is lower than in competitive SMDs (each additional marginal fraction ℓ increases the expected number of seats proportionally).
  - However, *the payoff is never null*, as in safe SMDs: parties don't have strong priors on who 'gets' the last seat.

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Mixed-Member (MXM) systems

Naive view: halfway between SM and MTM systems.

However, there are *contamination effects* in the SM tier. These refers to ways in which the presence of a MTM tier affects *party incentives* in the SM tier:

- More parties compete in SMDs under MXM rules, as – even if the seat is hopeless – putting up a 'face' increases party share in the MTM tier (Herron and Nishikawa, 2001) $\rightarrow$ more competitive SMDs.
- Even in non-competitive SMDs, there is an incentive to select 'locals', as these will increase party share in the MTM relative to a 'parachuted' candidate.

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Summing Up

		Party incentives to select local candidates		
		High	Moderate	Low
Voter leverage (ability to express a preference for locals)	High	competitive seats in SM systems SM tier in MXM systems	MTM seats with PV (in both MTM and MXM systems)	
	Low		MTM seats without PV (in both MTM and MXM systems)	'safe' seats in SM systems

Table 1: Probability of a territorial unit being represented by a local by type of district and presence of preferential vote (PV). SM = single-member, MTM = multi-member, MXM = mixed-member.

Challenges in Measuring Spatial Representativeness of Legislatures

1. What does it mean to be 'from' somewhere?
2. Different geographical units *within* and *between* countries.
3. Making distance matter.
4. Comparing countries of widely different population, land area, geographic shape, legislature size etc.
5. Accounting for internal migration.

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Our Solution: SURLI

1. What does it mean to be 'from' somewhere?

- We use MPs' municipality of birth: pros and cons to it, but widely available (sort of): 13,808 entries for 62 legislatures, building on Global Leadership Programme (GLP) dataset.

2. Different geographical units *within* and *between* countries.

- We use the gridded population data: we geocode MPs' birthplaces and sort them into 15 $\times$ 15 arcmin cells, for which we have population estimates.

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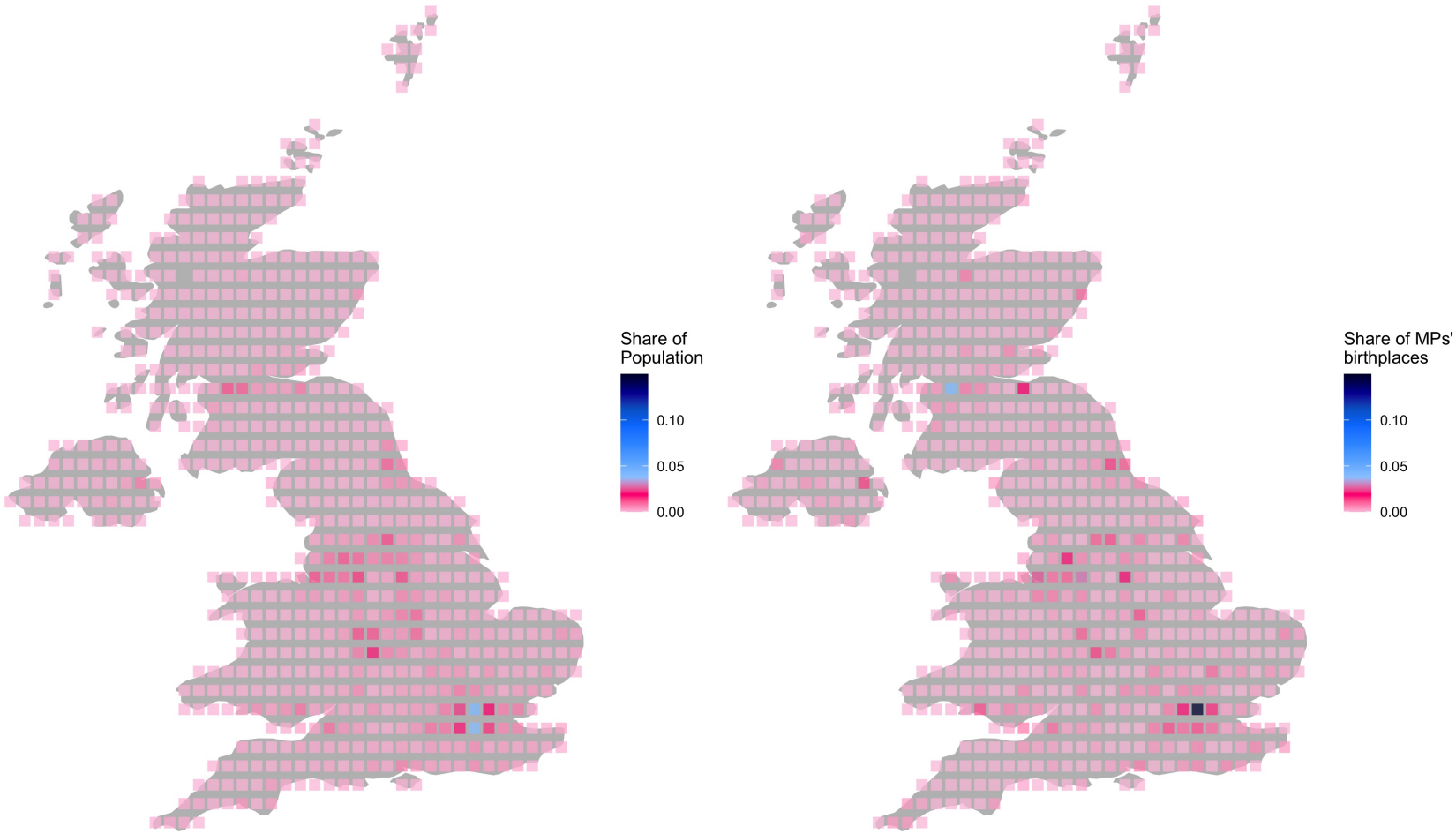
Share of Population
0.10
0.05
0.00
Share of MPs' birthplaces
0.10
0.05
0.00

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3. Making distance matter.

- Initial idea: using the Earth Mover's Distance (EMD), an algorithm that computes minimum amount of *work* (Mass $\times$ Distance) required to convert one distribution into the other.
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- For our EMD approximation, we compute the integral of the discrepancy between cumulative distribution functions of the two distributions *in one dimension* (e.g. North-South).
- Then we 'rotate' the country, and repeat the exercise. Finally, we take the weighted average across rotations of the integral of the areas between cumulative one-dimensional distribution functions.

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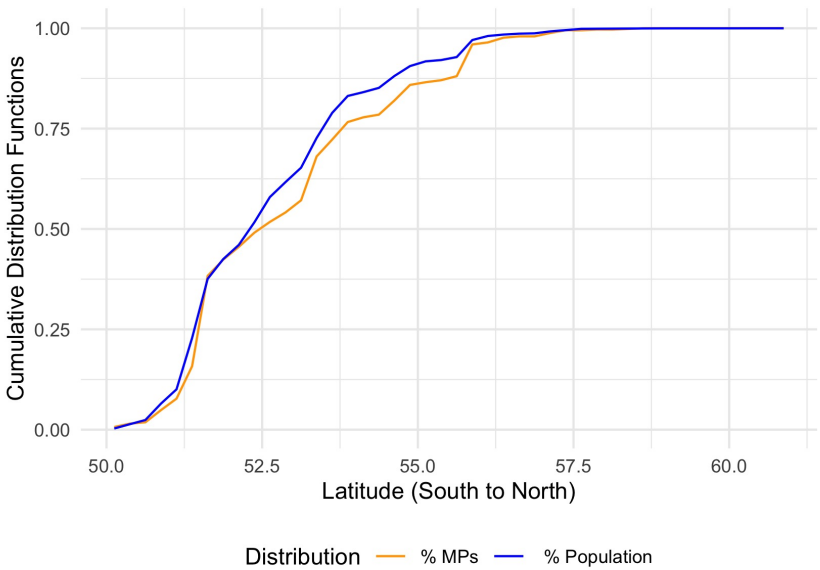
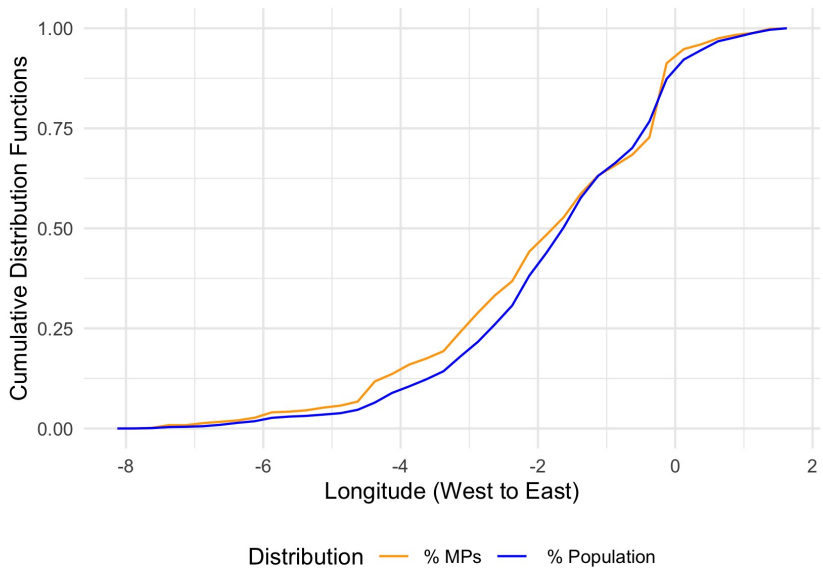
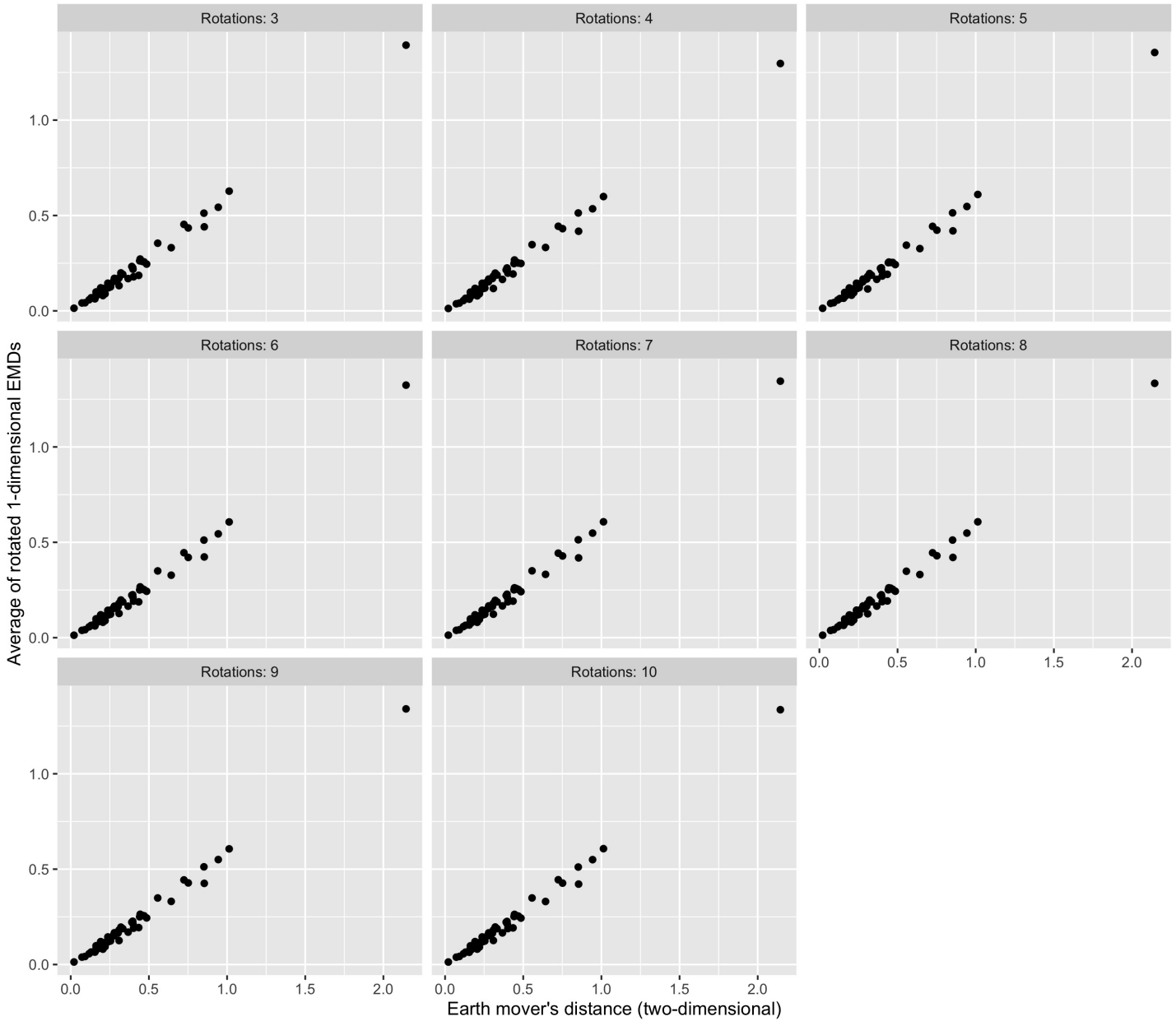
An example with two rotations:






Rotations: 3
Rotations: 4
Rotations: 5
Rotations: 6
Rotations: 7
Rotations: 8
Rotations: 9
Rotations: 10
Average of rotated 1-dimensional EMDs
Earth mover's distance (two-dimensional)
0.0
0.5
1.0
1.5
2.0

Our Solution: SURLI

4. Comparing countries of widely different population, land area, geographic shape, legislature size etc.

- We draw 500 parliaments 'at random' (each grid has a probability of expressing an MP proportional to population).
- We compute EMDs for each random draw of MPs and use this distribution as the benchmark against which we compare the 'real' EMD.
- SURLI is the number of standard deviations between the mean of the simulated parliaments' EMDs and the 'real' EMD.

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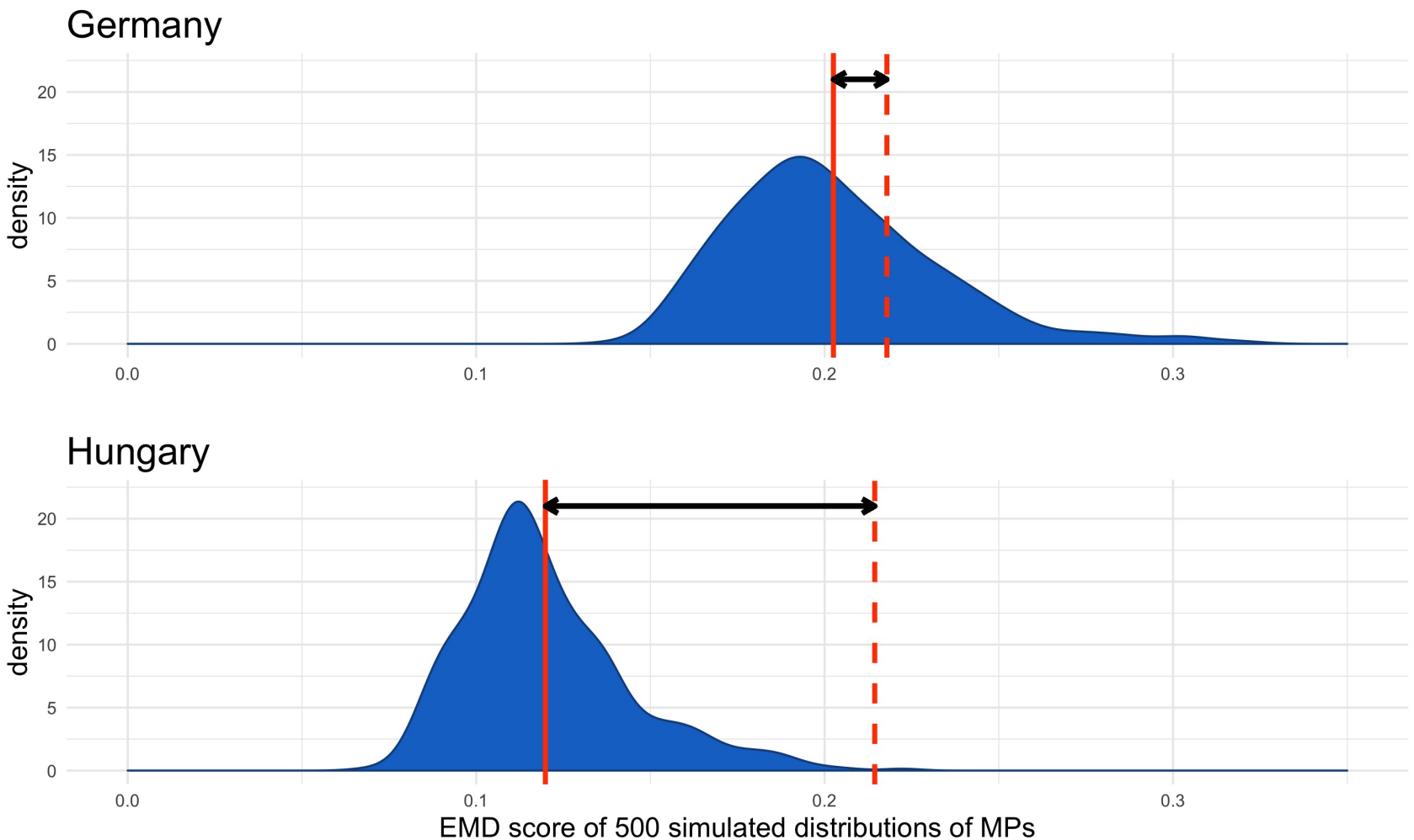
- We compute EMDs for each random draw of MPs and use this distribution as the benchmark against which we compare the 'real' EMD.
- SURLI is the number of standard deviations between the mean of the simulated parliaments' EMDs and the 'real' EMD.


Germany
density
20
15
10
5
0
0.0
0.1
0.2
0.3
Hungary
density
20
15
10
5
0
0.0
0.1
0.2
0.3
EMD score of 500 simulated distributions of MPs

Our Solution: SURLI

5. Accounting for internal migration.

- Areas that experienced high inward migration may appear underrepresented because there are fewer 'locals' than voters today.
- We repeat the calculation using a proxy for the distribution of birthplaces: population distribution in the mean legislator birth year (data from HYDE3.2).
- All the analysis is conducted on both measures of SURLI.

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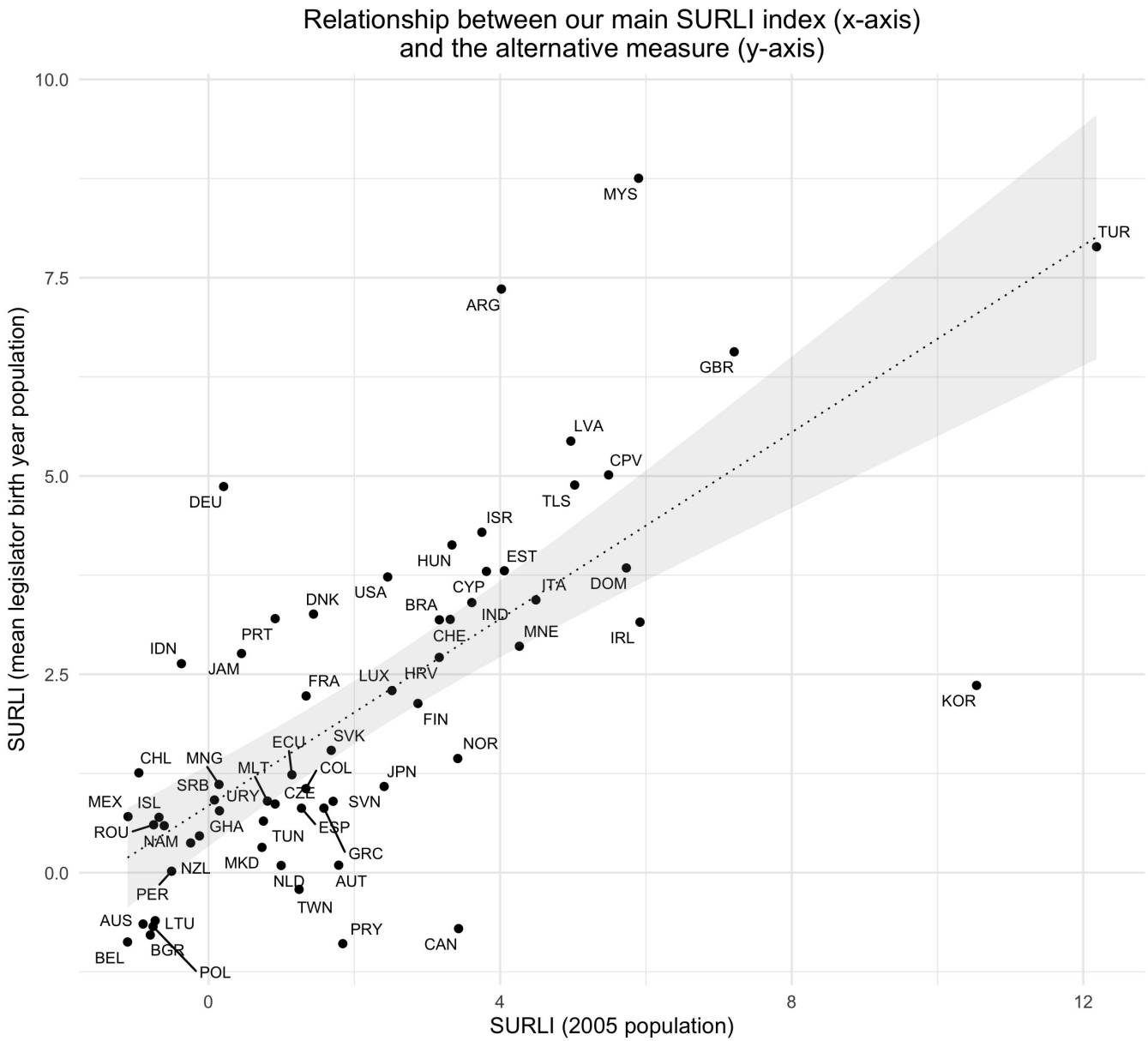
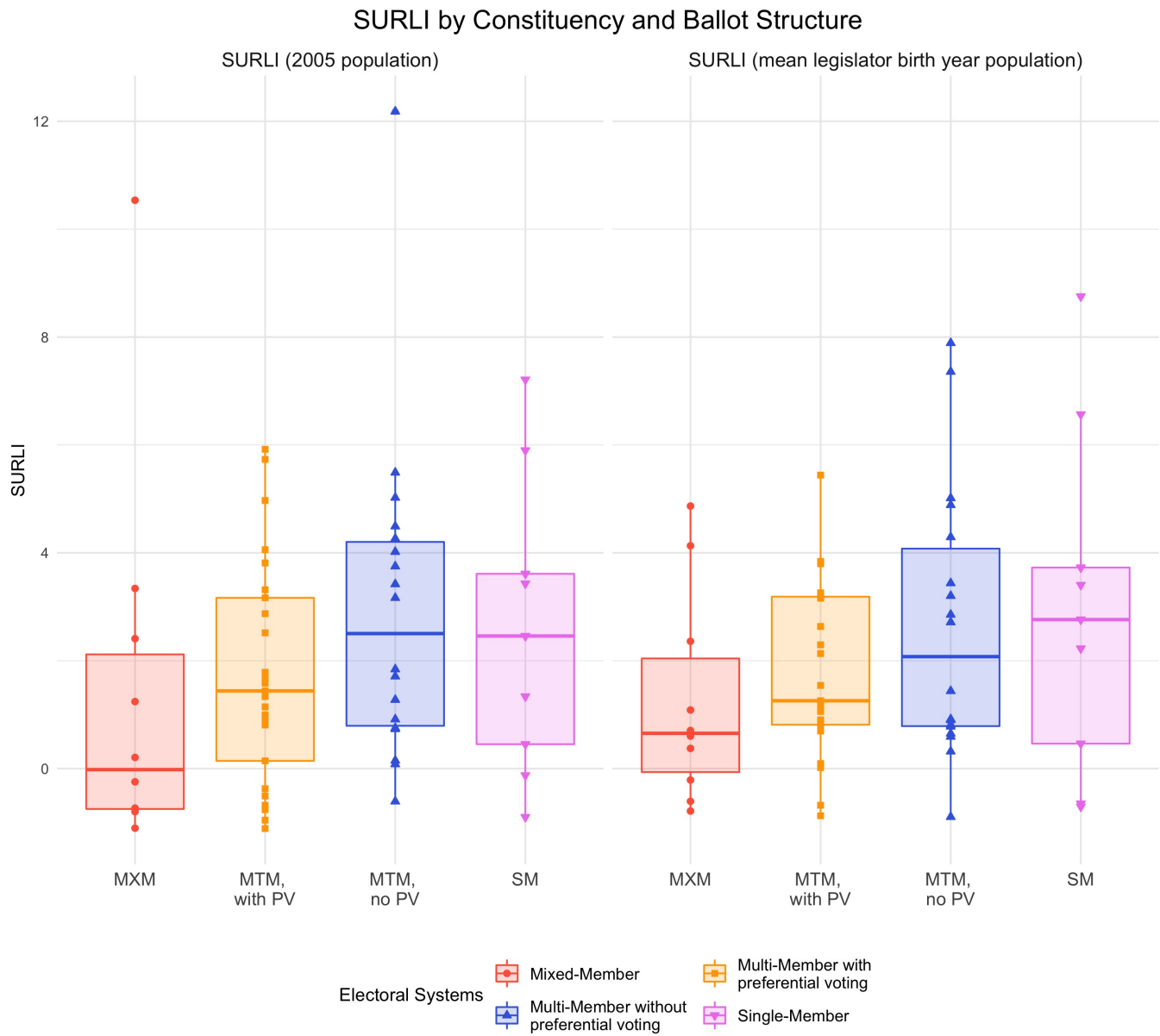

Relationship between our main SURLI index (x-axis)
and the alternative measure (y-axis)
SURLI (mean legislator birth year population)
SURLI (2005 population)
10.0
7.5
5.0
2.5
0.0
0
4
8
12
MYS
TUR
ARG
GBR
LVA
CPV
TLS
DEU
ISR
HUN
EST
DOM
ITA
CYP
USA
DNK
BRA
IND
IRL
MNE
CHE
PRT
IDN
JAM
FRA
LUX
HRV
KOR
FIN
SVK
ECU
NOR
CHL
MNG
MLT
COL
JPN
SRB
CZE
URY
SVN
MEX
ISL
ROU
NAM
GHA
TUN
ESP
GRC
MKD
NZL
NLD
AUT
PER
TWN
AUS
LTU
PRY
CAN
BEL
BGR
POL

Summing Up

- SURLI is the number of standard devations of
  - a country's spatial discrepancy between the distribution of its legislators' birthplaces and its population,
  - over the distribution of the same discrepancy measure computed with 500 random draws of MPs from the population.

Descriptives



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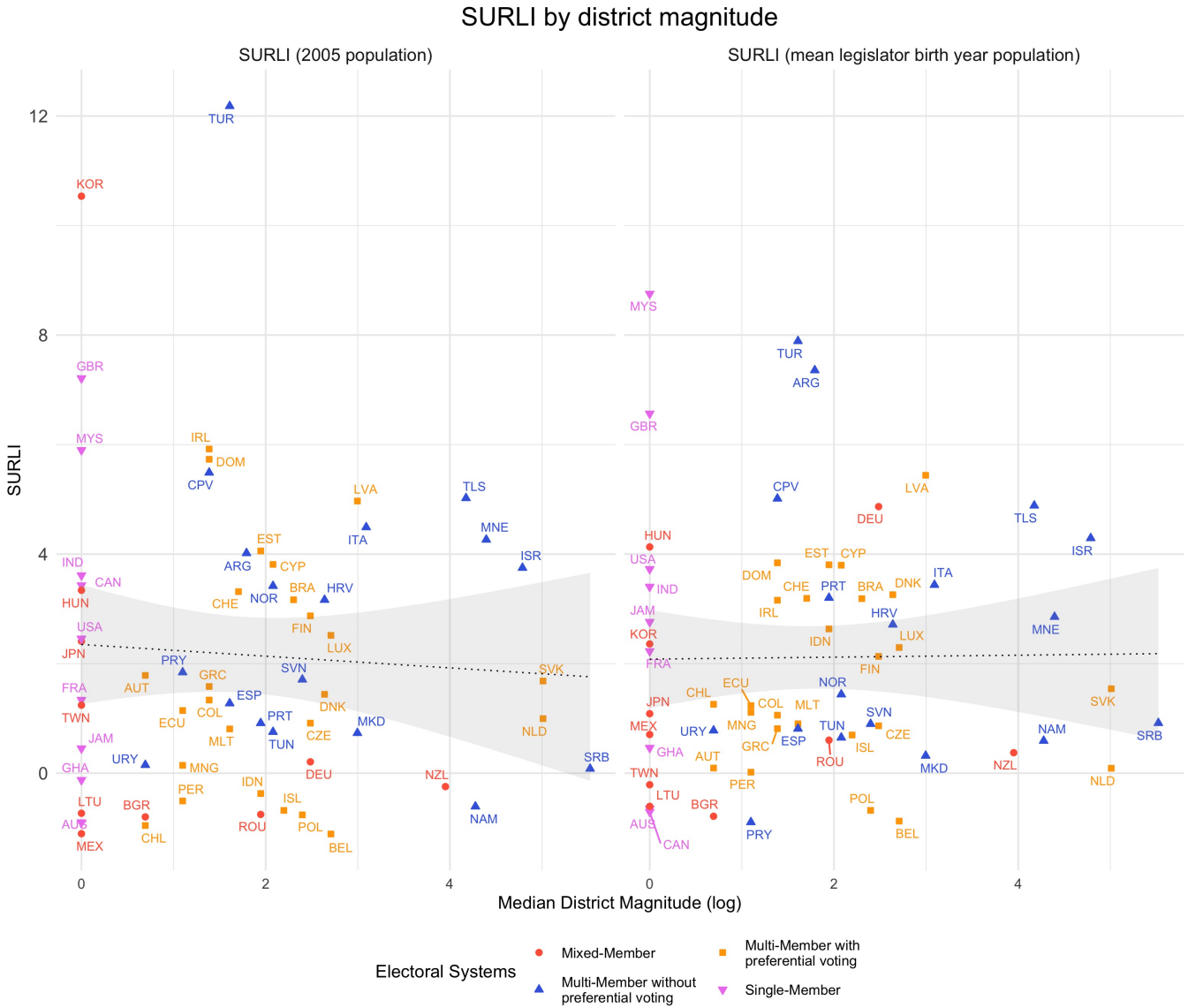

Cross-Country Analysis

- We regress SURLI on constituency structure (measured as a three-category nominal and with a combination of share of MTM seats plus MXM dummy), preferential vote, median district magnitude, and controls.
- These include, across different models, population, land area, GDP per capita, democracy score, federalism, spatial economic inequality (spatial GINI in GDP per capita).

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Cross-Country Analysis

	Dependent variable:			
	SURLI (2005)		SURLI (mean MP birth year)	
	Model 1	Model 2	Model 3	Model 4
Constituency Structure[a]				
Multi-Member	2.63** (1.15)		1.63* (0.96)	
Single-Member	1.56 (1.28)		2.19** (1.07)	
Share multi-member		0.64 (1.34)		−0.35 (1.12)
Mixed-member		−2.08** (1.01)		−1.92** (0.84)
Preferential Voting	−1.58* (0.82)	−1.46* (0.81)	−0.82 (0.68)	−0.88 (0.68)
Median dist. mag. (log)	−0.40 (0.30)	−0.35 (0.29)	−0.01 (0.25)	−0.03 (0.25)
Population (log)	0.39 (0.32)	0.37 (0.32)	0.29 (0.27)	0.30 (0.27)
Land area (log)	−0.43* (0.25)	−0.43 (0.26)	−0.28 (0.21)	−0.28 (0.21)
GDP p.c. (log)	1.10* (0.56)	1.13* (0.56)	0.68 (0.47)	0.66 (0.47)
Democracy score	−1.73 (1.09)	−1.82* (1.09)	−1.55* (0.91)	−1.51 (0.91)
Constant	−8.31 (5.49)	−6.46 (5.50)	−5.12 (4.60)	−3.07 (4.59)
Observations	62	62	62	62
R^2	0.21	0.20	0.18	0.18
Adjusted R^2	0.09	0.08	0.05	0.05
Residual Std. Error (df = 53)	2.58	2.59	2.16	2.17
F Statistic (df = 8; 53)	1.74	1.68	1.44	1.42

[a]: reference category: Mixed-member; *p<0.1; **p<0.05; ***p<0.01

Some Testable Implications

- SURLI only measures aggregate unrepresentativeness: but is the overperformance of MXM systems really due to the fact that its SM tier allows better *local* representation?
- Is the underperformance of SM systems really due to seat safety?
- Are MXM systems really immune to the issue of seat safety, thanks to contamination effects?

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Paired Comparison

- We employ legislator and district-level data for UK MPs and German legislators elected in the SM tier to investigate.
- We code each legislator as 'local-born' if (1) her birthplace falls in her district's land area, or (2) her birthplace is within 20km (geodesic distance) from the district centroid.
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Descriptives

	United Kingdom						
Election year	2001	2005	2010	2015	2017	2019	overall
% valid birthplaces	0.93	0.99	0.98	0.98	0.98	0.97	0.97
Mean margin in last election	0.24	0.23	0.19	0.18	0.24	0.24	0.22
Med. margin in last election	0.21	0.20	0.18	0.17	0.24	0.23	0.20
% Safe seats (> 10% margin)	0.76	0.79	0.74	0.69	0.81	0.74	0.76
% Ultrasafe seats (> 20% margin)	0.51	0.51	0.43	0.43	0.59	0.57	0.51
Med. distance MP birthplace-seat (km)	93.97	100.20	89.21	73.09	72.00	57.74	79.50
% MPs born in seat	0.25	0.24	0.25	0.28	0.29	0.32	0.27

	Germany (single-member district tier)						
Election year	1998	2002	2005	2009	2013	2017	overall
% valid birthplaces	0.99	0.99	0.99	1.00	1.00	1.00	1.00
Mean margin in last election	0.14	0.13	0.15	0.14	0.14	0.18	0.14
Med. margin in last election	0.11	0.10	0.13	0.12	0.11	0.16	0.12
% Safe seats (> 10% margin)	0.55	0.53	0.59	0.57	0.54	0.68	0.57
% Ultrasafe seats (> 20% margin)	0.27	0.22	0.27	0.23	0.26	0.39	0.27
Med. distance MP birthplace-seat (km)	29.48	26.16	24.83	20.68	18.54	18.88	21.76
% MPs born in seat	0.62	0.71	0.70	0.73	0.78	0.74	0.71

Paired Comparison

- We also look at the effect of seat safety on likelihood of a newly elected MP being local-born.
- This time seat safety is measured as the difference between the share of the vote of the party that *currently* holds the seats in the *previous* election and its top rival (real or notional results) $\rightarrow$ the variable takes negative values for 'pickups'.
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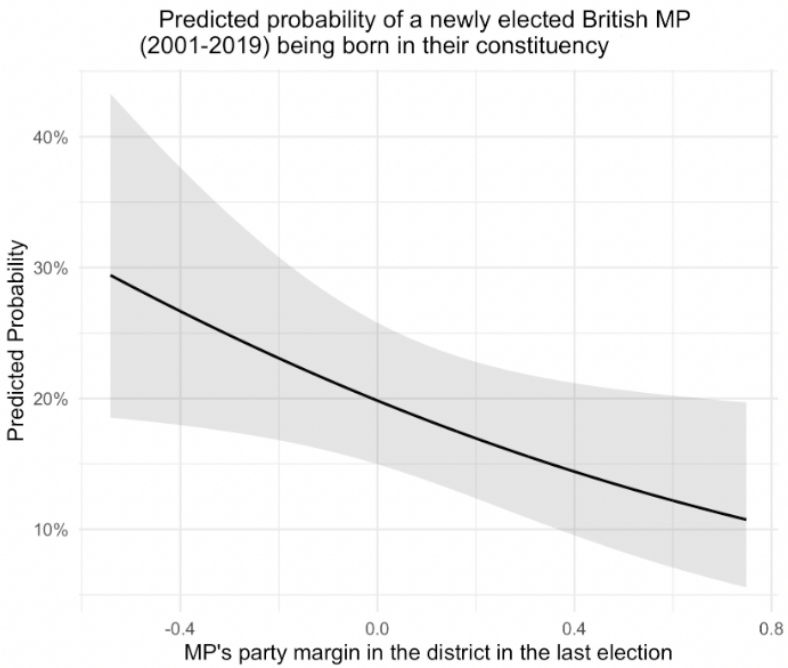

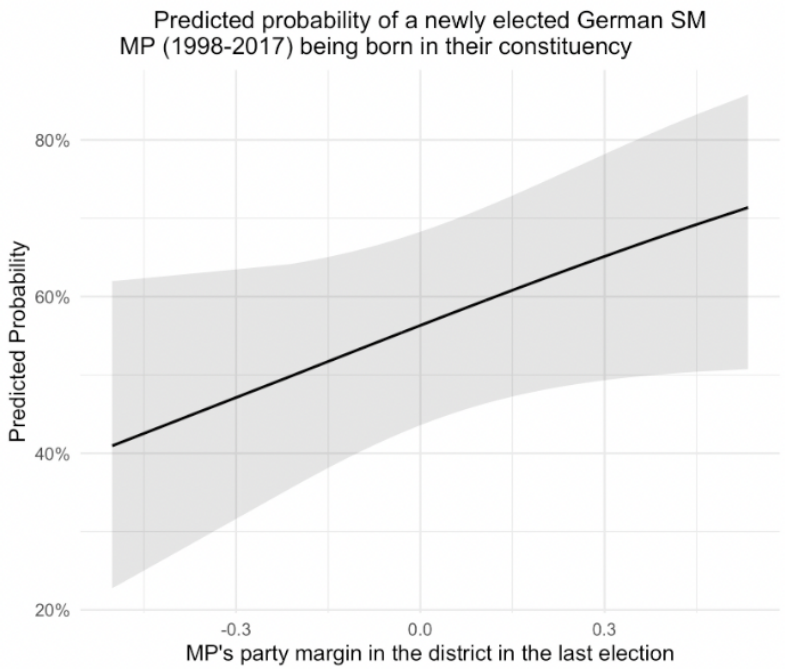

Conclusion

- The paper proposes a method to compare spatial inequalities, and applies it to legislative representation.
- Substantially, it draws a link between descriptive representation of places in parliaments and electoral systems.
- On this dimension of representation, MXM perform better than MTM and — against received wisdom — SM systems. Tentative evidence of a positive effect of PV rules too.
- Case studies suggest that this may be due to 'contamination effects' in the SM tier of MXM systems.

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Thank you for your kind attention