How Similar Are International Economic Relations of EU Member States? Comparing Trade, Investment and Political Behavior

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RESPECT Final Conference

Motivation

Is the E.U. an "optimal trade policy union"?

1. Measure heterogeneity in direction of trade (and investment) between Member States.
   - comparative advantage
   - political economy
   - geopolitical incentives
2. Estimate how this affects their bilateral diplomatic efforts.
3. Develop an early warning system for which bilateral country relations are most "out-of-line" with E.U. average.

Measuring economic diplomacy

- News mentions from Global Database of Events, Language and Tone 2015–17 (The GDELT Project 2020).
- Actor 1, Actor 2, Type of event, Tone, Date...
- Select: Actor 1 is government entity in EUMS, Actor 2 outside.
  - intent to materially cooperate
  - state visit
  - negotiation
  - agreement
- Measure "intent" and "visits" at bilaterial level.

Examples of “intent to cooperate”

FM Szijjártó Calls for Speeding up Serbia's EU Integration – Hungary Today

AUGUST 25, 2021

FM Szijjártó Calls for Speeding up Serbia's EU Integration Hungary Today Source link : https://hungarytoday.hu/hungary-szijjarto-serbia-integration-joksimovic/ Author : Publish date ...

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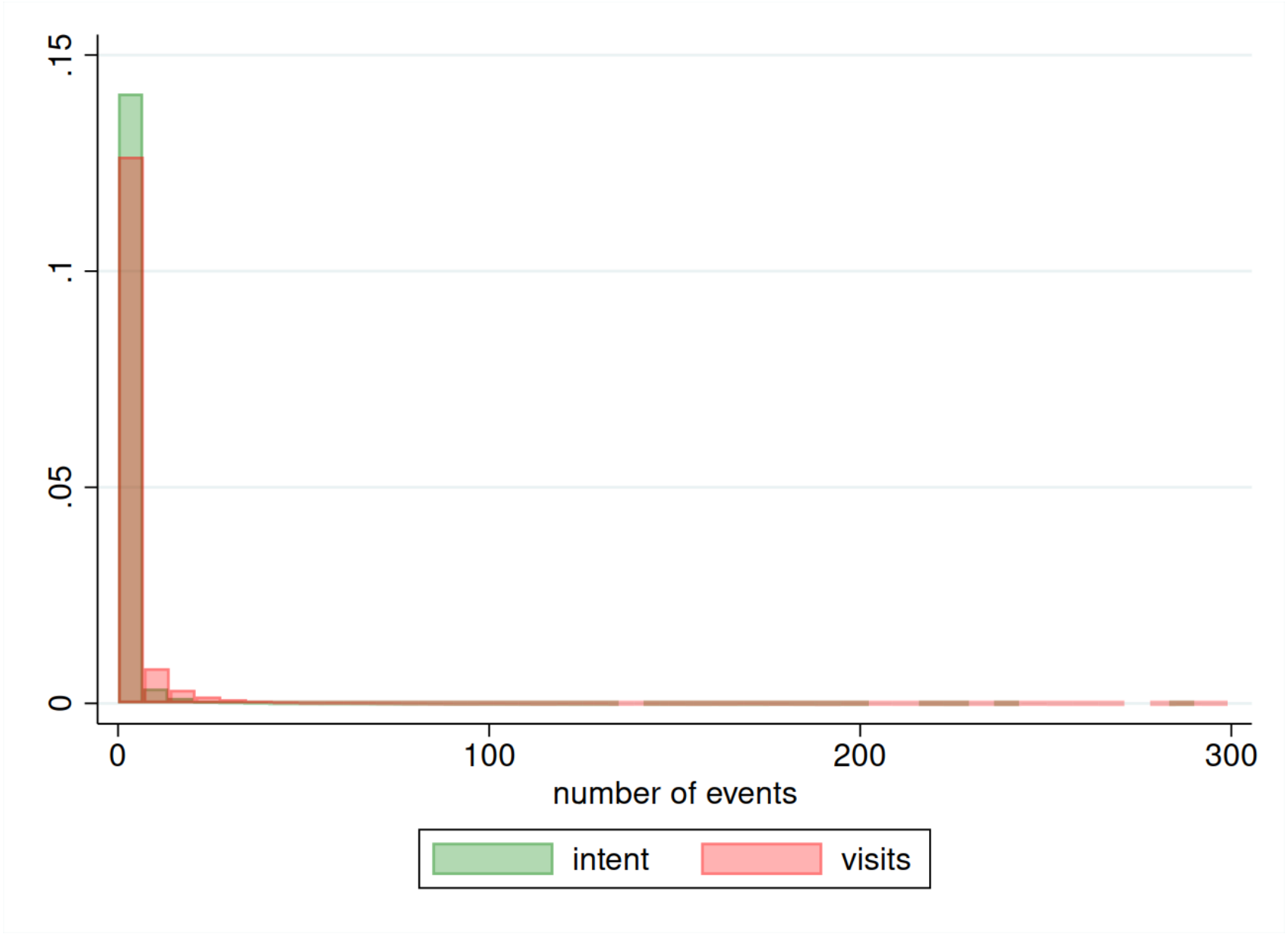
Examples of “intent to cooperate”

Coded as

- HUN $\rightarrow$ SRB, intent (meeting took place in Budapest)
- HUN $\rightarrow$ UKR, visit (meeting took place in Kiev)

The histogram of GDELT intent and visits



Gravity works for state visits

Table 1: The gravity equation holds for measures of economic diplomacy

	Model 1 intent	Model 2 visits
Distance (log)	-0.857*** (0.125)	-0.627*** (0.116)
Exporter nominal GDP (log)	1.073*** (0.132)	0.850*** (0.143)
Importer nominal GDP (log)	0.900*** (0.101)	0.705*** (0.113)
Trade flow (log)	-0.193** (0.082)	-0.115 (0.083)
Number of observations	5855	5855
Pseudo R^2	0.479	0.447

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Methods

Measuring dissimilarity

- Given a metric, is a MS *different* from the E.U. average?
  - How strongly?
- What is the proper metric?
  - capture incentives to deviate
  - statistically robust

Trade shares

s_{ijtp}: export share of product p in trade between country i and j at time t

s_{*jtp}: export share of product p in trade between E.U. and country j at time t

All dissimilarity measures (e.g., Finger and Kreinin 1979, Krugman 1991, and Fontagné et al 2018) will be

$$F(\{s_{ijtp}\}, \{s_{*jtp}\}),$$

typically

$$\sum_{p=1}^{P} f(s_{ijtp}, s_{*jtp}).$$

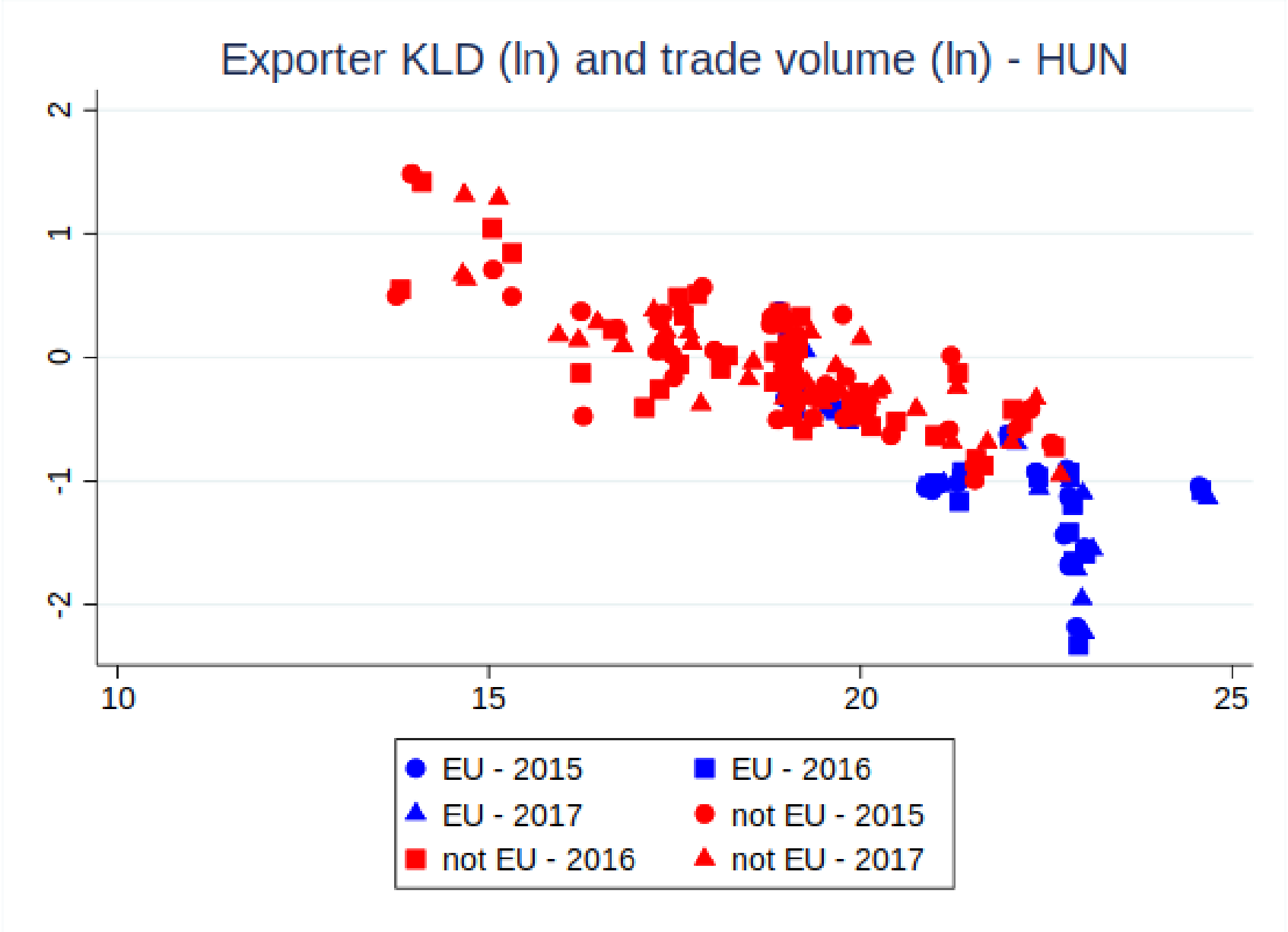
Kullback-Leibler Divergence

Our preferred measure of difference between country-specific and EU trade shares is the Kullback-Leibler divergence (Kullback 1987, KLD henceforth), defined as

$$\text{KLD}_{ijt} = \sum_{p=1}^{P} s_{ijtp} \ln(s_{ijtp}/s_{*jtp}). \tag{1}$$

- only zero if all the products have the same share, positive otherwise
- based on utility maximizing decision model (logit)

But this is not statistically robust



Small-sample upward bias because of data sparsity (Armenter and

How to allow for noise?

Allow for statistical heterogeneity ("noise") with the appropriate distribution: multivariate Polya (Eggenberger and Pólya 1923)

$$\alpha_{ijtp} \sim \text{Dirichlet}(s_{*jtp}, T)$$

$$x_{ijtp} \sim \text{Multinomial}(\alpha_{ijtp}, n_{ijt})$$

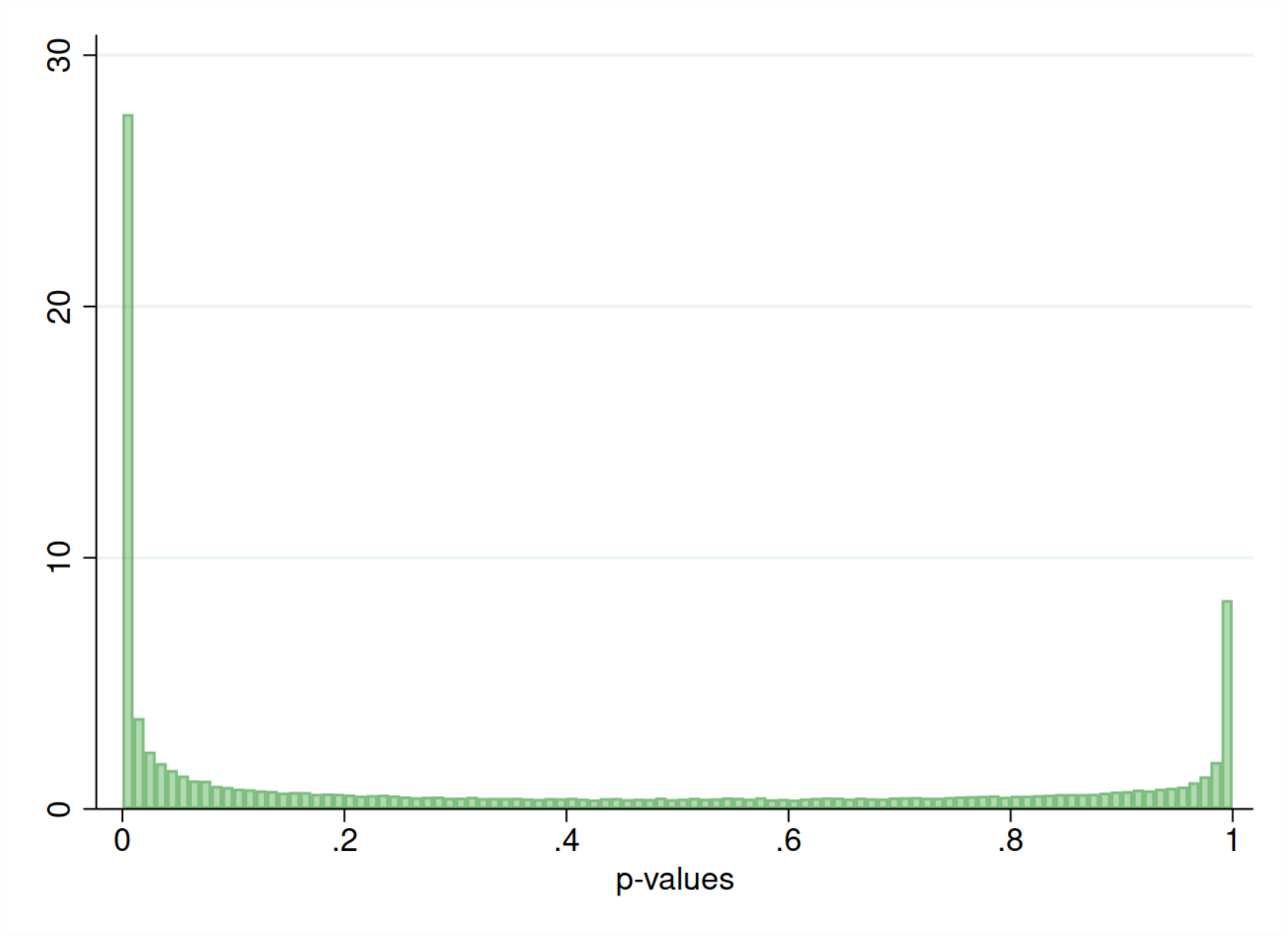
sparsity: small n_{ijt}

heterogeneity: $1/T$

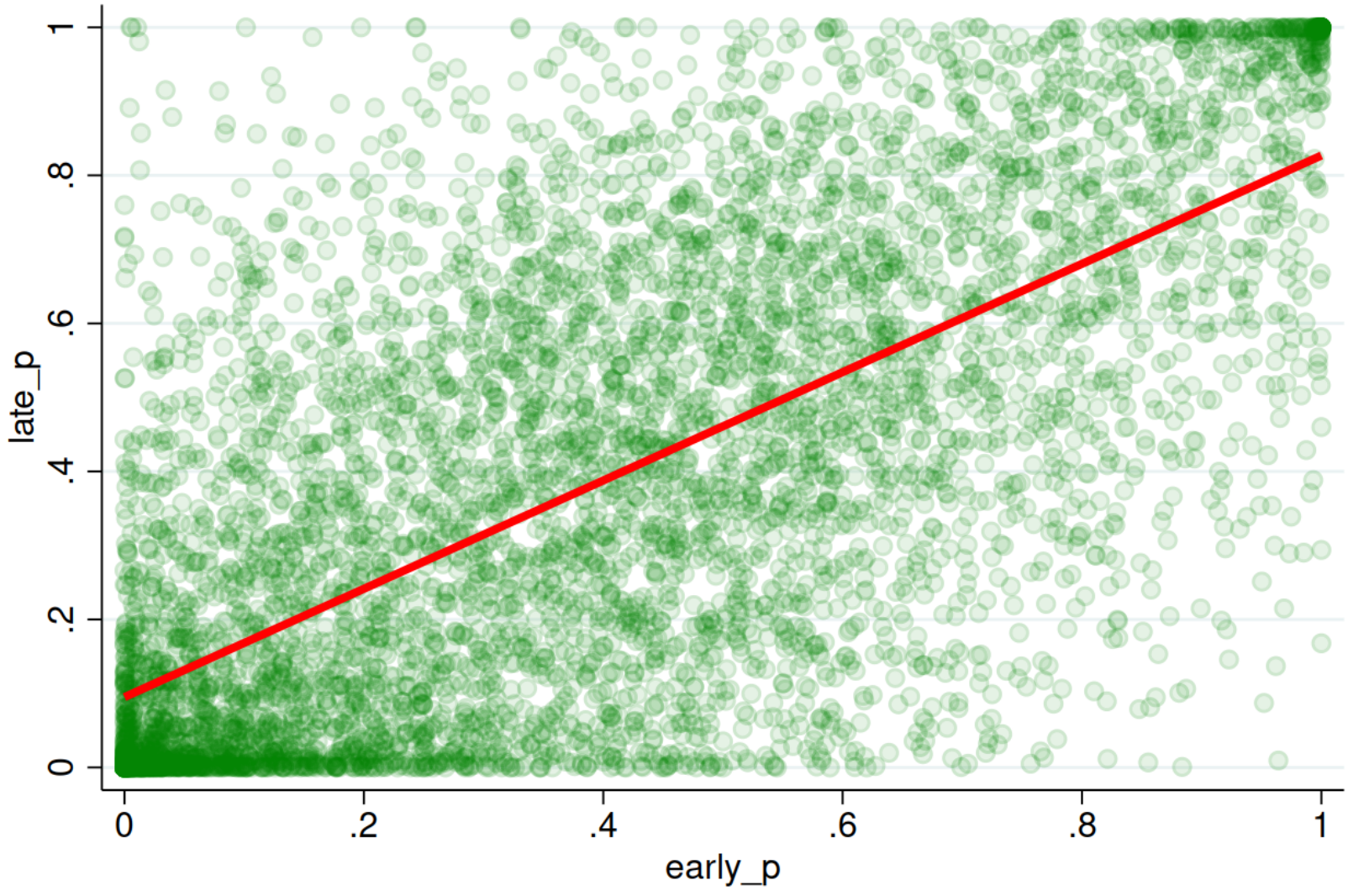
The Polya Index

1. Estimate Polya distribution by maximum likelihood.
2. Under the null of this data generating process, what is the distribution of KLD?
3. Are particular countries outliers? Compute a p-value.

The Polya Index is not uniformly distributed



The Polya Index is relatively stable over time

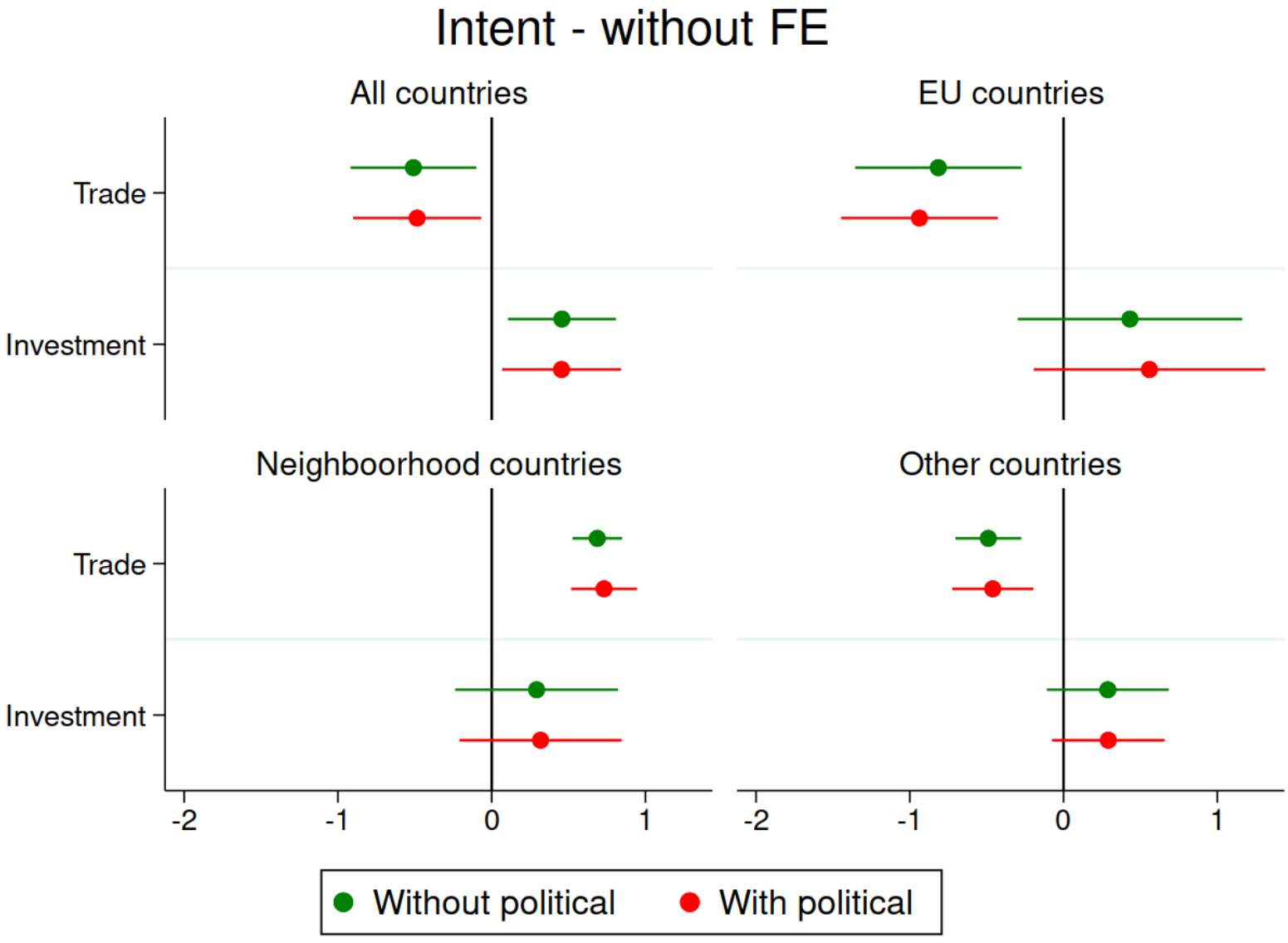


Data and results

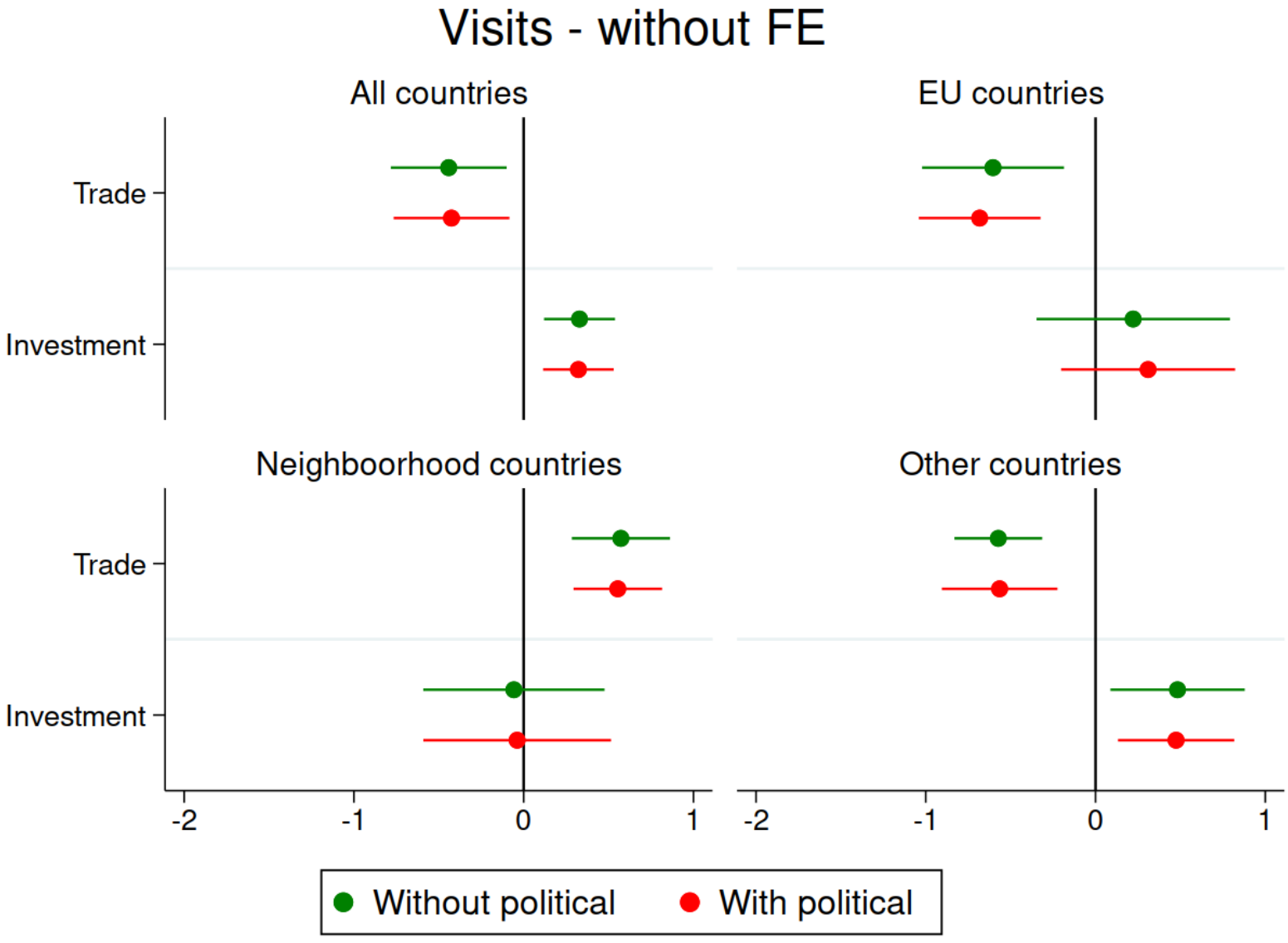
Trade, investments, and additional controls

- Export data from COMEXT (Eurostat 2019).
- Investment data from fDIMarket database (Financial Times, 2019)
- geographic distance as well as historical and cultural ties: GeoDist dataset (Mayer and Zignago 2011)
- GDP (expressed in US dollars and taken in log form), World Bank 2020).
- United Nations General Assembly Voting Data (Voeten, Strezhnev and Bailey 2009).
- Difference in democracy from the Quality of Government Basic Dataset (Teorell et al 2020)

Trade similarity and intent to cooperate are negatively correlated for most countries



Trade similarity and state visits are negatively correlated for most countries



Discussion

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- New approach to measure the similarity in trade and investment structures between EU Member States and the E.U. average.
- Strong correlation of trade with economic diplomacy (outside EUNP): dissimilar countries engage in more diplomacy.
- No such correlation for investment.
- Method is applicable to measuring similarlity in other domains.