Analytical framework to capture corruption and collusion risks in public procurement
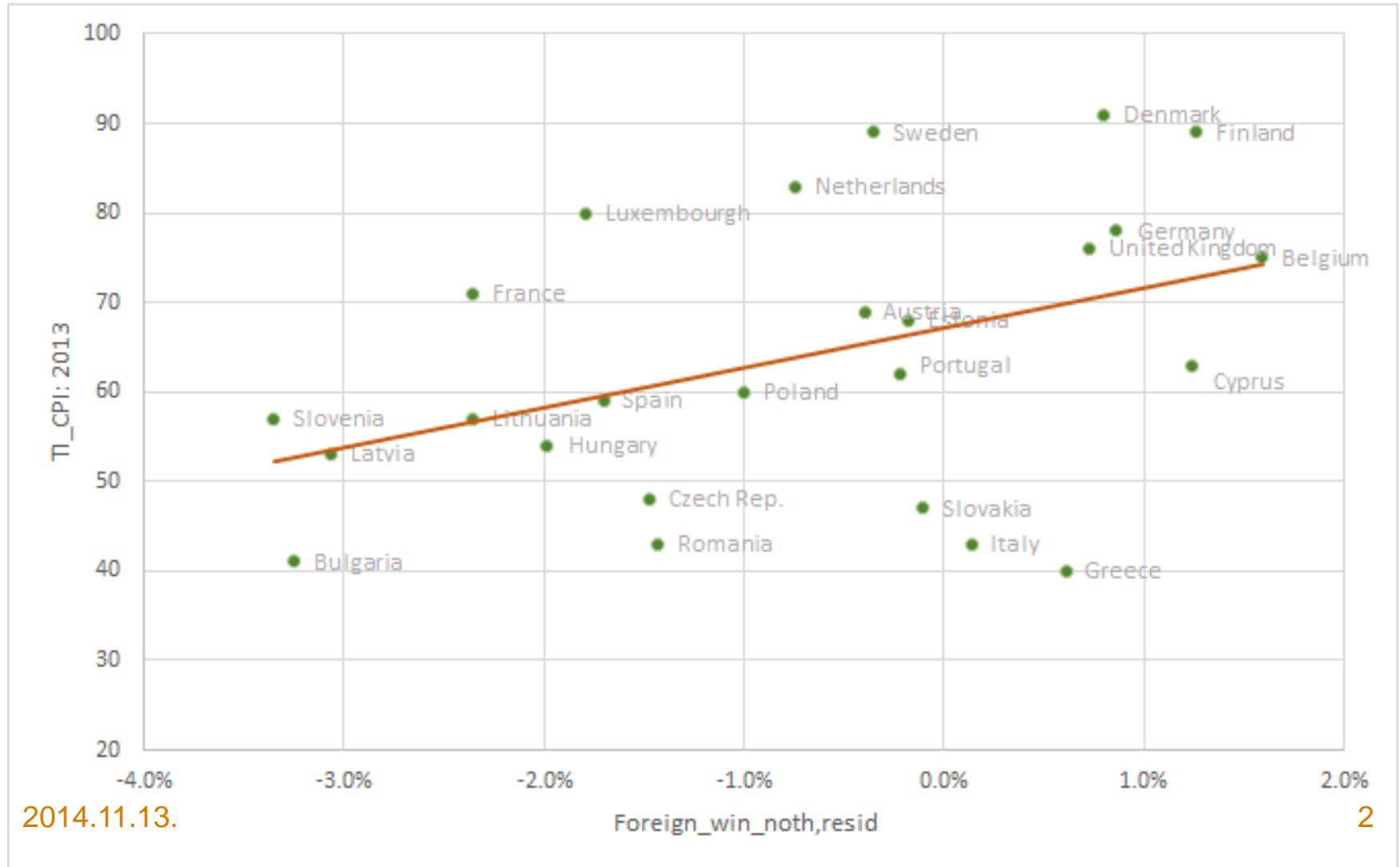
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Meeting of the Economic and Statistical Working Group,
Brussels, 12 November 2014

Corruption matters for the common market

Overview

- Measurement approach

- Definition of corruption

- Data: TED and beyond

- Proposed corruption risk indicators

- Applications

- Research perspectives: DIGIWHIST

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The CRCB measurement approach

- Perceptions/informants are not good enough
- New paradigm of measurement
  - harnessing BIG DATA,
  - built on thorough understanding of context, and
  - ‚open-ended'
- Indicator characteristics:
  - Specific
  - Real-time
  - ‘Objective’/hard
  - Micro-level
  - Aggregatable + comparative

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Definition of instutionalised grand corruption

- Specific definition (just like measurement)
- Institutionalised grand corruption in public procurement

  institutionalised grand corruption in public procurement refers to the regular particularistic allocation and performance of public procurement contracts by bending universalistic rules and principles of good public procurement in order to benefit a group of individuals while denying access to all others.

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The CRCB data template

- Public procurement data

- Company financial and registry data

- Company ownership and management data

- Political officeholder data

- Treasury accounts of public organisations

- Arbitration court judgements

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PP data - State of the art

- Global standardization effort: www.open-contracting.org/
- TED data: DG Markt, http://ted.openspending.org/, etc.
- National datasets:
  - Developed economies: CA, IT, US
  - Transition economies: CZ, HR, HU, RO, SK, SL
  - Developing countries: GEO: http://tendermonitor.ge/en
- Development agencies
  - World Bank
  - UNDP

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Blueprint for measuring institutionalised grand corruption in PP

1. Corruption Risk Index (CRI): generation and allocation of rents

2. Political Influence Indicator (PII): political influence on companies' market success

3. Political Control Indicator (PCI): direct political control of contractors

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Corruption Risk Index (CRI)

- Probability of institutionalised grand corruption to occur

$$0 \leq CRI^t \leq 1$$

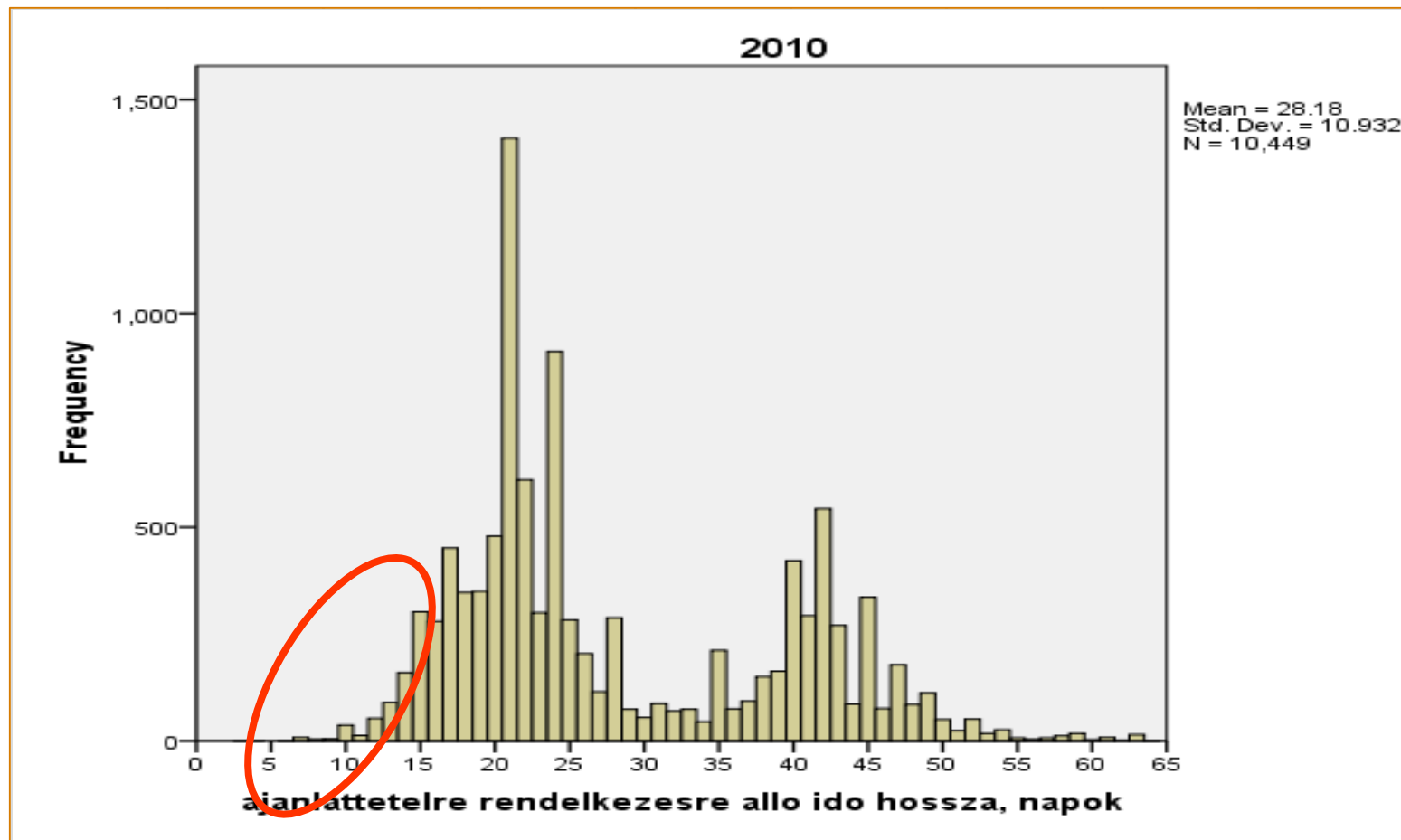where 0=minimal corruption risk; 1=maximal observed corruption risk

- Composite indicator of elementary risk (CI) indicators

$$CRI^t = \Sigma_j \, w_j * CI_j{}^t$$

- Elementary risk indicators / 'red flags' are combined to reflect a corrupt rent extraction logic

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Example of CRI components

Distribution of submission periods, Hungary, open procedures

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Components of CRI

Proc. phase	Indicator name	Indicator values	availability			
			CZ	HU	SK	TED
sub-mission	**Single bidder contract (valid/received)**	1=1 bid received	x	x	x	x
	Call for tenders not published in official journal	1=NO call for tender published in official journal	x	x	x	x
	Procedure type	open, invitation, etc.	x	x	x	x
	Relative length of eligibility criteria	number of characters relative to market average	x	x	*	*
	Length of submission period	number of days between call for tenders publication and the submission deadline	x	x	x	x
	Relative price of tender documentation	price of tender documentation DIVIDED BY contract value		x		
	Call for tenders modification	1=call for tender modified during submission period	x	x	*	*
assess-ment	**Exclusion of all but one bid**	1=all but one bid excluded		x		
	Weight of non-price evaluation criteria	sum of weights for evaluation criteria which are NOT related to prices	x	x	x	x
	Annulled procedure re-launched subsequently	1=contract awarded in procedure annulled, but re-launched		x		
	Length of decision period	number of days between submission deadline and announcing contract award	x	x	x	x
delivery	**Contract modification**	1=contract modified during delivery	*	x		
	Contract lengthening/value increase	relative contract extension (days) or relative contract price increase	*	x		
overall	**Winner contract share**	total contract value of winner / total awarded contract value (by issuer, over 12-month)	x	x	x	*
		Number of available components	9	14	7	6
		Number of potentially available components	11	14	9	9

*X = available; * = potentially available*

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Components of CRI-EU (preliminary)

1. Single bidder contract (received bids)

2. Call for tenders not published in official journal

3. Procedure type

4. Length of submission period

5. Weight of non-price evaluation criteria
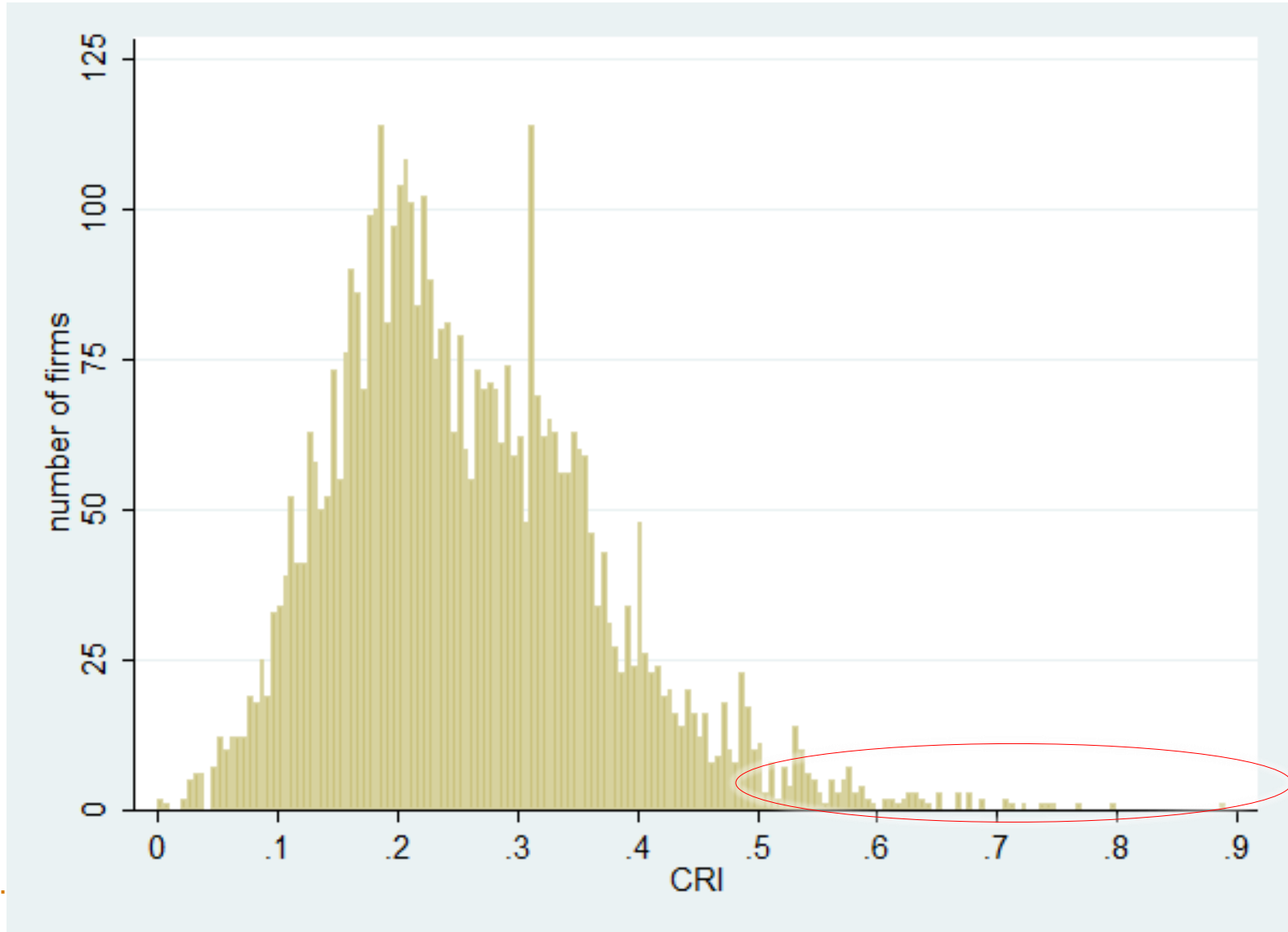
6. Length of decision period

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What kind of CRI distributions arise?

average CRI

Per winning bidder

2009-2012

Hungary

2014.11.13.

Political Influence Indicator (PII)

- Whether a company's market success depends on the political group in power

$$PII_i = \begin{cases} 1, \text{ if company } i \text{ is dependent on gov't} \\ \\ 0, \text{ if company } i \text{ is NOT dependent on gov't} \end{cases}$$

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PII construction

1. ## Deviation

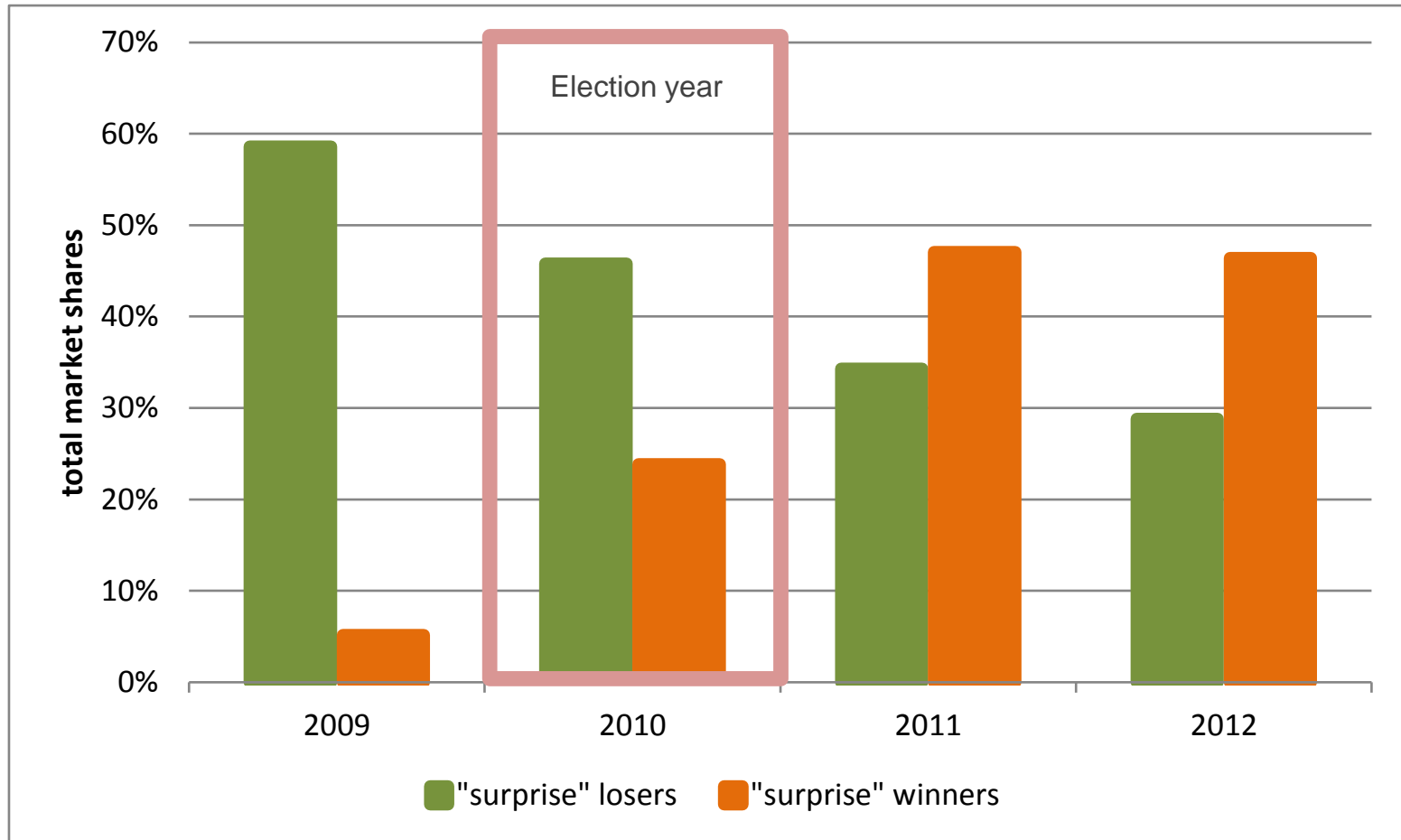   – Explaining contract volume: BEFORE-AFTER gov't change

2. ## Benchmark

   – Same approach as in 1), but for periods WITHOUT gov't change

3. ## Marking companies

   – Significant and substantial differences between 1) and 2)

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How does this look in pratice?

Hungary, total public procurement market, HU, 2009-2012

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Political Control Indicator (PCI)

- Whether a company has direct political connections

$$PCI_i = \begin{cases} 1, \text{ if company } i \text{ has pol. connections} \\ \\ 0, \text{ if company } i \text{ does NOT have pol. conn.} \end{cases}$$

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Indicator validity 1.

- Our corruption indicators co-vary
- CRI + PCI, HU, 2009-2012

| Group	N	Mean CRI	Std. Err.	Std. Dev.	95% Conf.Interval	
0=*no* political connection	2900	0.254	0.002	0.111	0.250	0.258
1=politically connected	1449	0.265	0.003	0.110	0.260	0.271
combined	4349	0.258	0.002	0.111	0.254	0.261
difference (CRI1-CRI0)		**-0.011*****	0.004		-0.018	-0.004

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Indicator validity 2.

- Our indicators relate to external variables as expected: **money laundering, diversion of funds**
- Financial Secrecy Index + CRI in EU, 2009-2013

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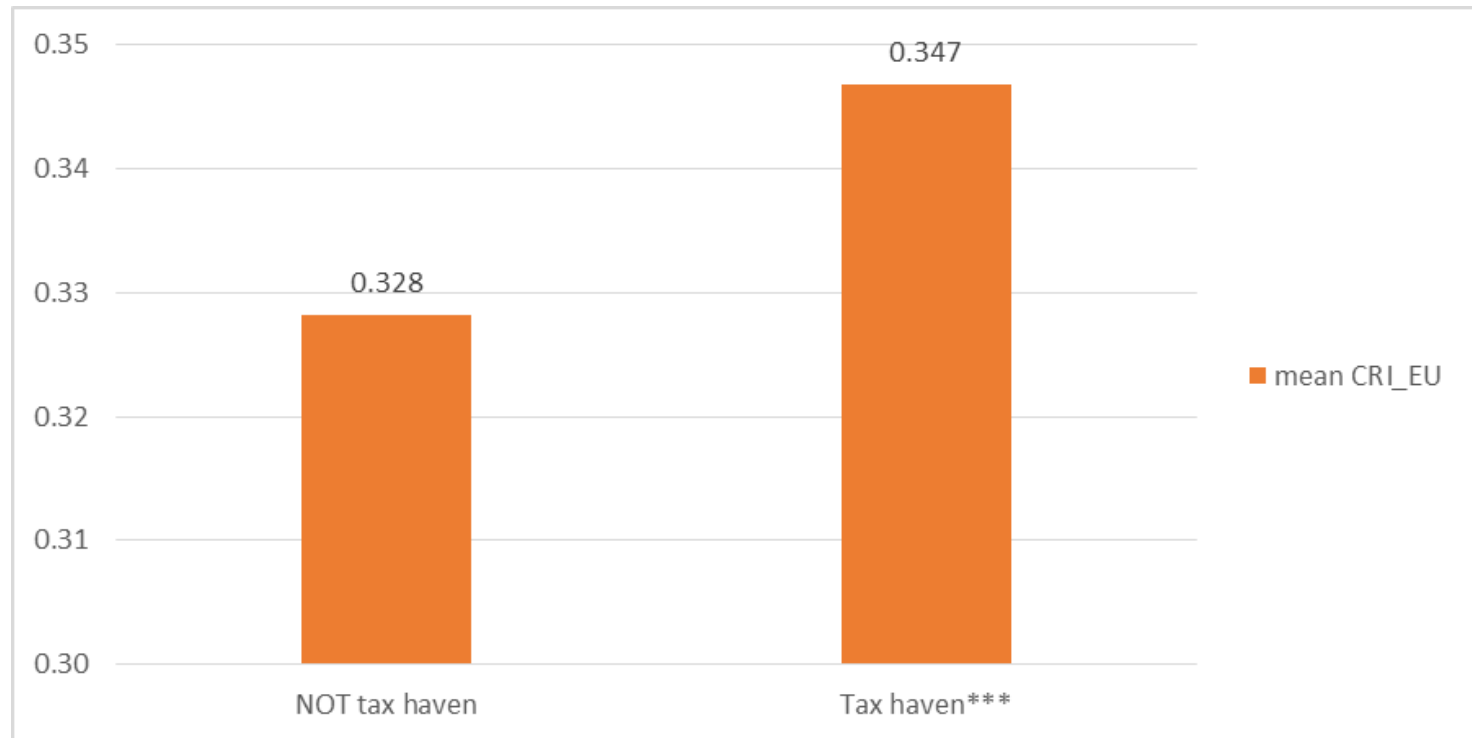
Indicator validity 2.

- Our indicators relate to external variables as expected: **rent extraction** from PP contracts
- Relative contract value + CRI in EU, 2009-2013
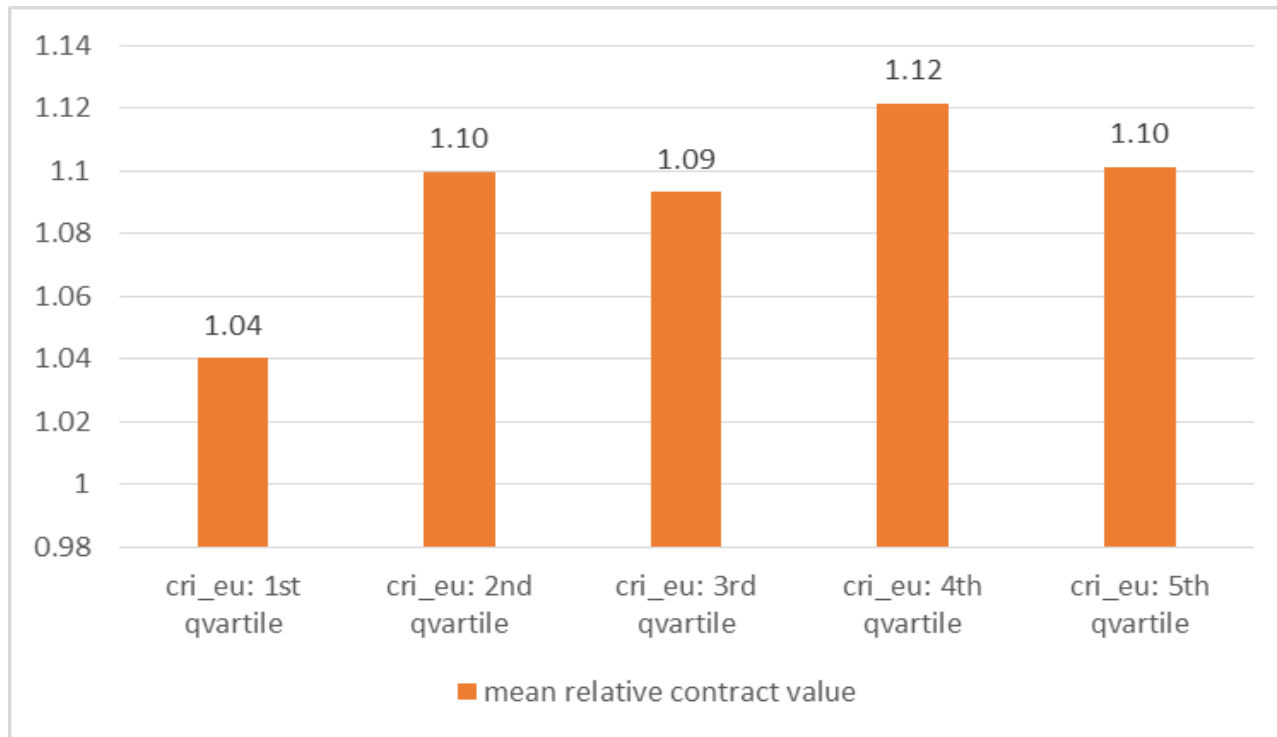
- Linear regression result: 10% increase in CRI 4% increase is relative price

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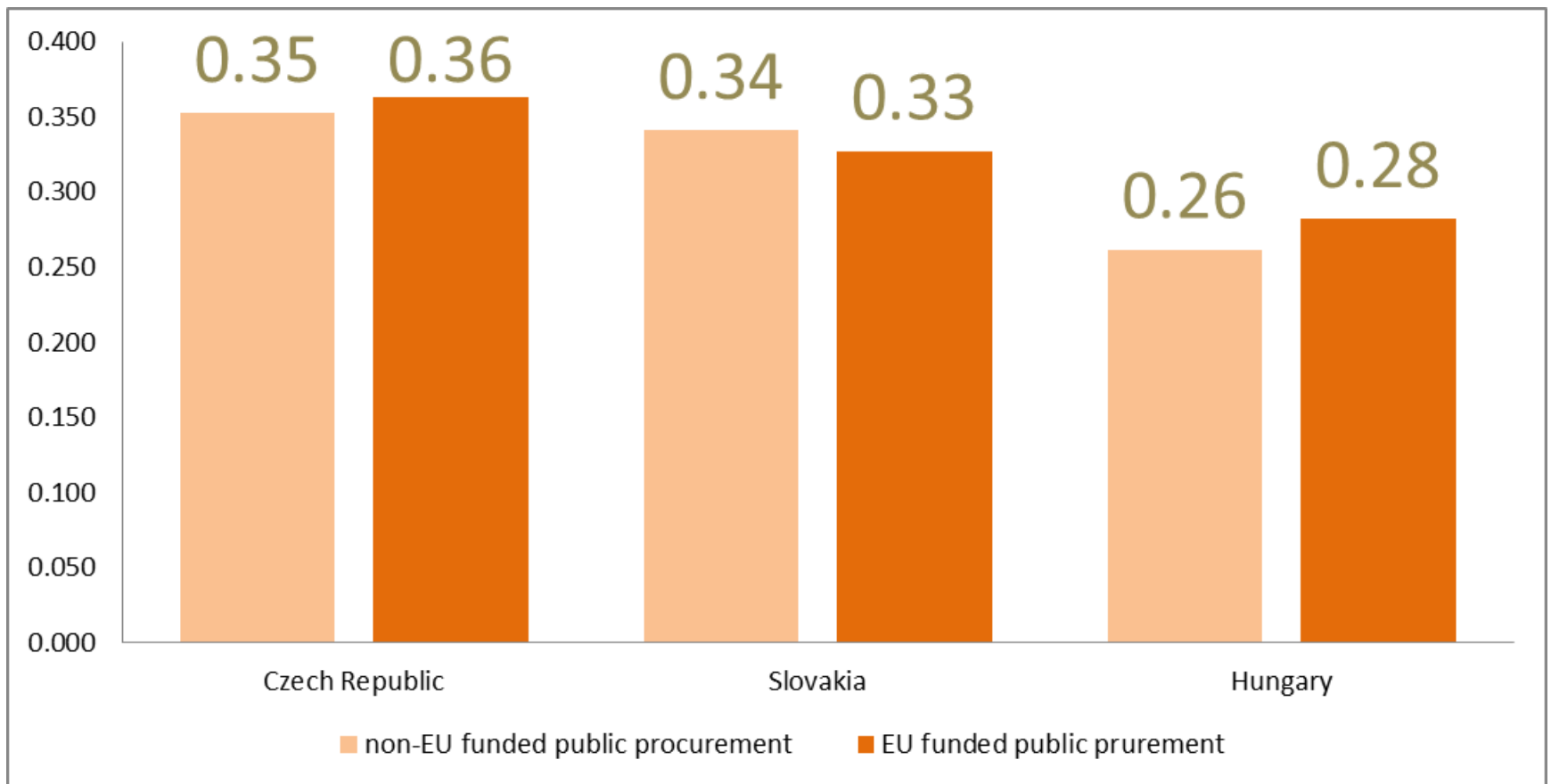RESEARCH CENTER
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Limitations

- Data, data, data!

- You get what you measure: no general indicator of corruption!

- Only lower bound estimate: **sophisticated actors can avoid detection**

- Reflexivity

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Applications – overview

1. Evaluating countries: against each other or the same country over time
2. **Evaluating large funding programmes:** e.g. EU structural funds in CEE
3. Identifying focal points for policy intervention: e.g. networks of corruption
4. Evaluating the impact of single regulatory or organisational changes on corruption: e.g. loosening transparency regulations
5. **Risk-based audit of actors/transactions**

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Applications 2. EU Funding in CEE

- EU Funds **increase** corruption risks in Cz and Hu
- EU Funds **decrease** corruption risks in Sk

	Czech Republic		Slovakia		Hungary	
non-EU funded	0.35		0.34		0.26	
EU funded		0.36		0.33		0.28

Legend: non-EU funded public procurement | EU funded public prurement
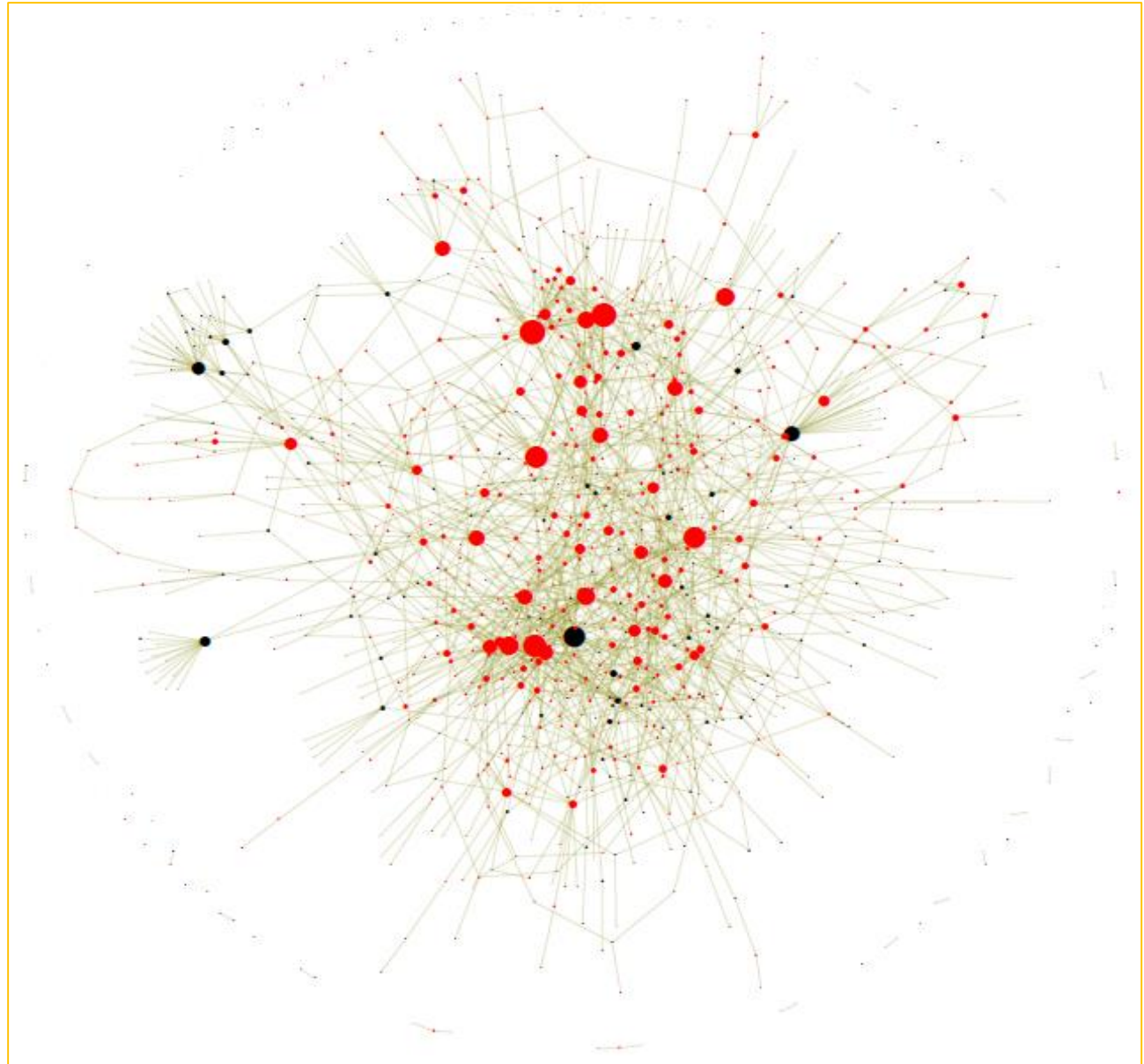
What explains cross-country differences?

- **Concentration of EU funding**
  - Medium to large EU Funds share: main effect
  - Within and cross-country alike
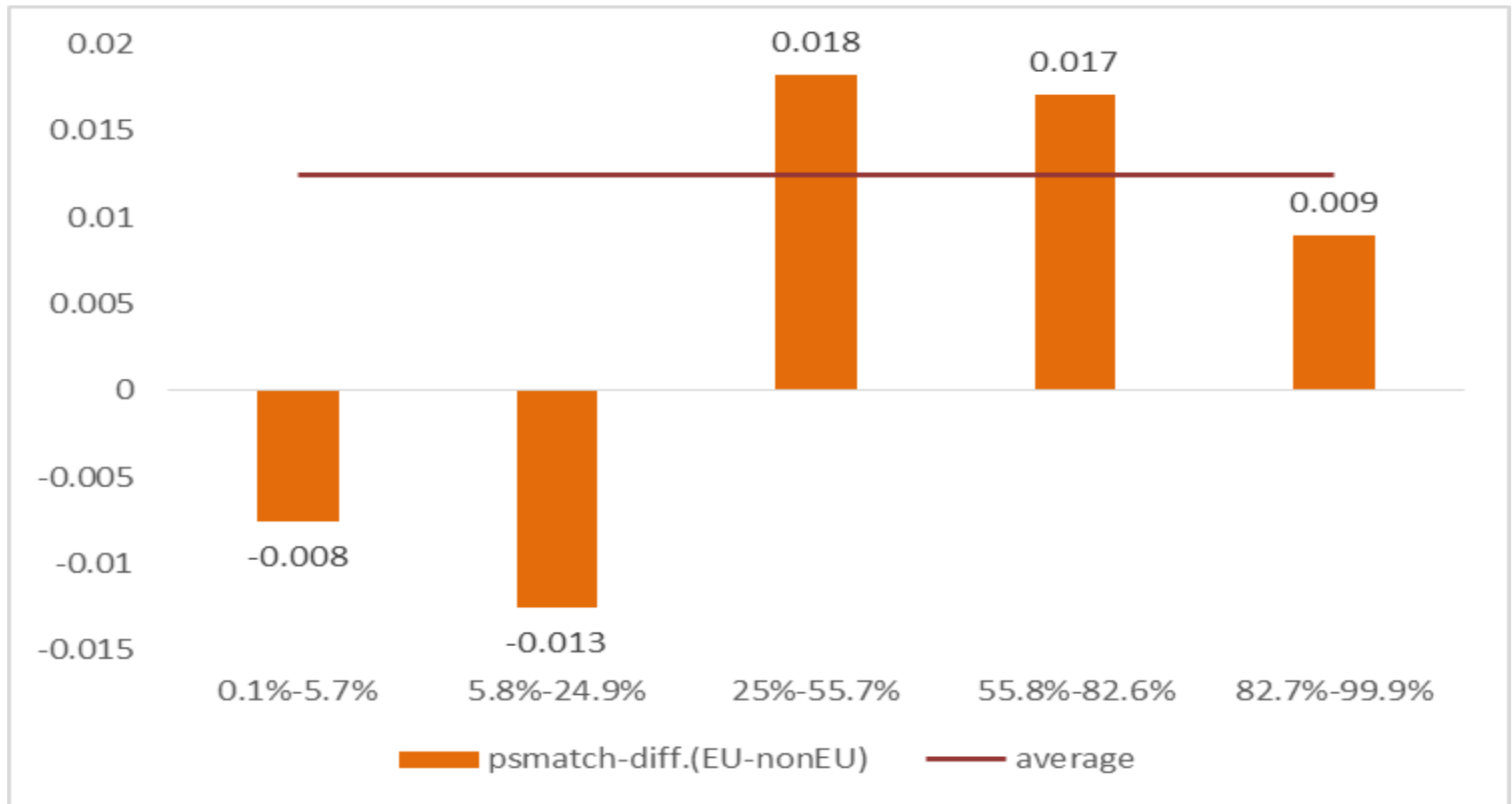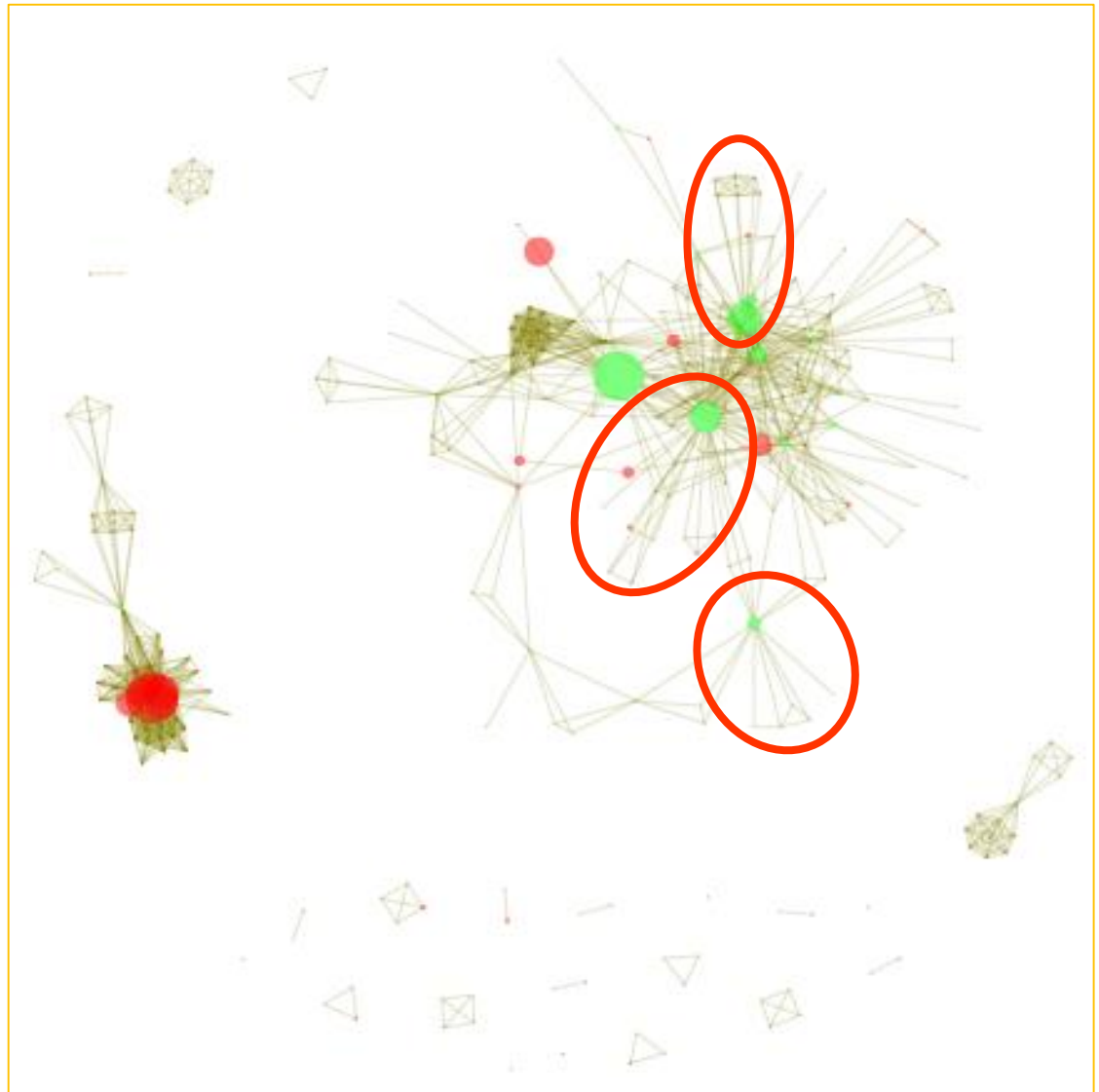
Applications 3. State capture

Captured
org.s'
network,
HU,
2009-
2010Q2

2014.11.13.

Applications 5.: collusion

- co-bidding network
- Hu, 2009
- Dense networks
- Many cutpoints
- Cutpoints seem to benefit from position

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Applications: From research to impact

- DIGIWHIST:
  - The Digital Whistleblower. Fiscal Transparency, Risk Assessment and Impact of Good Governance Policies Assessed
  - Builds on ANTICORRP, funded by Horizon2020
- Goals
  - Advancing anticorruption, transparency, and spending efficiency in public procurement
  - Open data and indicators for 35 European countries: EU, EEA, Caucasus
  - Helping audit bodies fighting corruption, fraud, and collusion
- Scope
  - March 2015 – February 2018
  - 3 million eur
  - Consortium: Cambridge, Hertie, CRCB, Datlab, Open Knowledge Foundation, Transcrime

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DIGIWHIST: key outputs

- Data:
  - Transparency and procurement legislation
  - Micro-level procurement data
  - Company information
  - Public organisation information
  - Asset declarations
- Indicators:
  - Corruption
  - Transparency
  - Administrative quality
- Utilization
  - Risk assessment software for public servants
  - Web portals, mobile apps
  - Whistleblower reporting

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Looking forward to the discussion!

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Further information about this approach

Corruption Research Center Budapest: www.crcb.eu

Published material:

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