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Second-generation indicators of high-level corruption using administrative data

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Overview

- Measurement problem
- Measurement and research approach
- Proposed set of indicators

Starting point

- Available indicators are either biased or too idiosyncratic
  - Perception-based survey instruments measure PERCEPTIONS
  - Experience-based survey instruments suffer from conformity bias and lack of access
  - Audits and case studies measure narrow phenomena

→ Need for new indicators

The CRCB measurement approach

- New indicators of corruption in PP
  - harnessing BIG DATA, and
  - built on thorough understanding of context
- Indicator characteristics:
  - Specific
  - Real-time
  - ‘Objective’/hard
  - Micro-level
  - Aggregatable + comparative

Why public procurement?

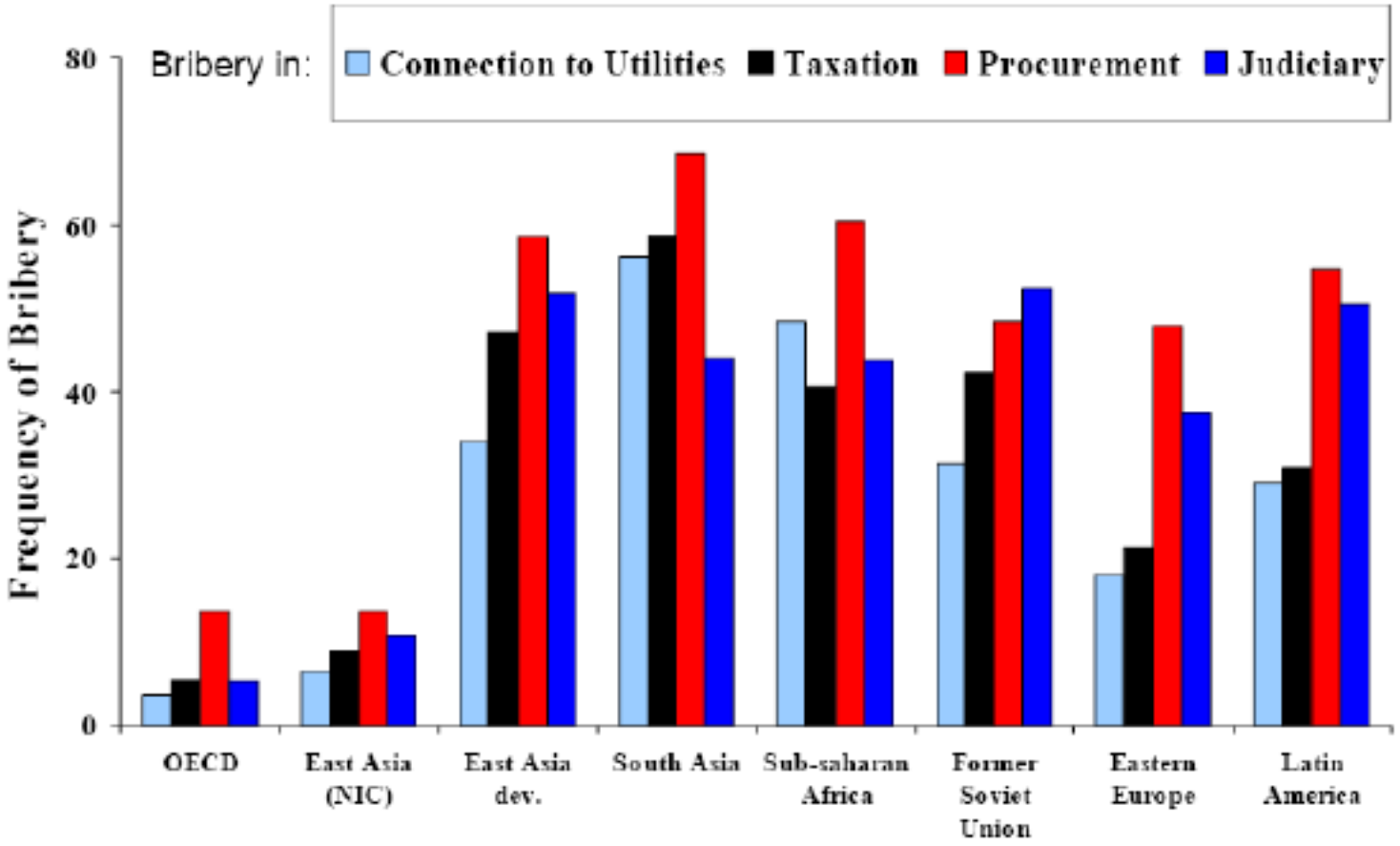
1. A lot of money involved

2. Crucial role in development (e.g. capital accumulation)

3. Indicates the broader quality of institutions

Why public procurement?

4. Very corrupt



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What is measured?

- Institutionalised grand corruption in public procurement
  - Institutionalised=recurrent, stable
  - Grand=high-level politics and business
  - Corruption=particularism and restricted access

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

How to pull all this together?

- It is difficult…
  - No low hanging fruits
  - Prepare for a lot of work
  - Ask for expert advice: programmers, administrators

Feasibility across the globe

- Transition economies:
  - HU, CZ, SK: already done
  - Romania: ongoing work
- Developed/emerging economies
  - Italy: ongoing work
  - EU, US
  - Russia, Chile, Brazil
- Developing countries
  - Development agencies' procurement announcements: e.g. http://www.devbusiness.com/Default.aspx
  - National portals: Georgia: http://tendermonitor.ge/en

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

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 13 elementary risk (CI) indicators

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

CRI construction

1. Wide set of potential components: 30 CIs
2. Narrowing down the list to the relevant components: 13 CIs
   - Set of regressions on single bidder and winner contract share
3. CRI calculation: determining weights
   - Stronger predictor→higher weight
   - Norming to 0-1 band

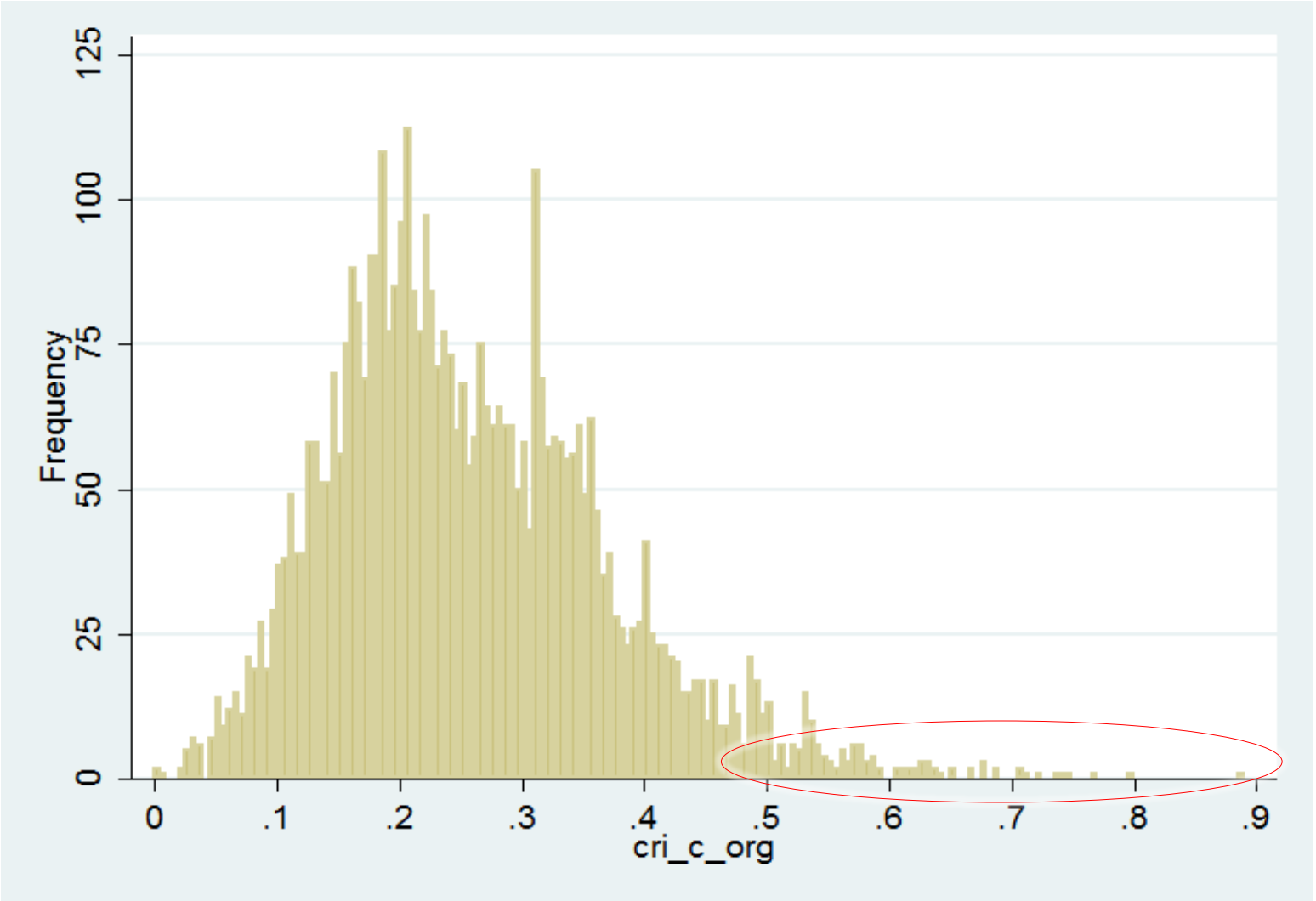
What kind of CRI distributions arise?

average CRI

Per winning bidder

2009-2012

Hungary



Political Influence Indicator (PII)

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

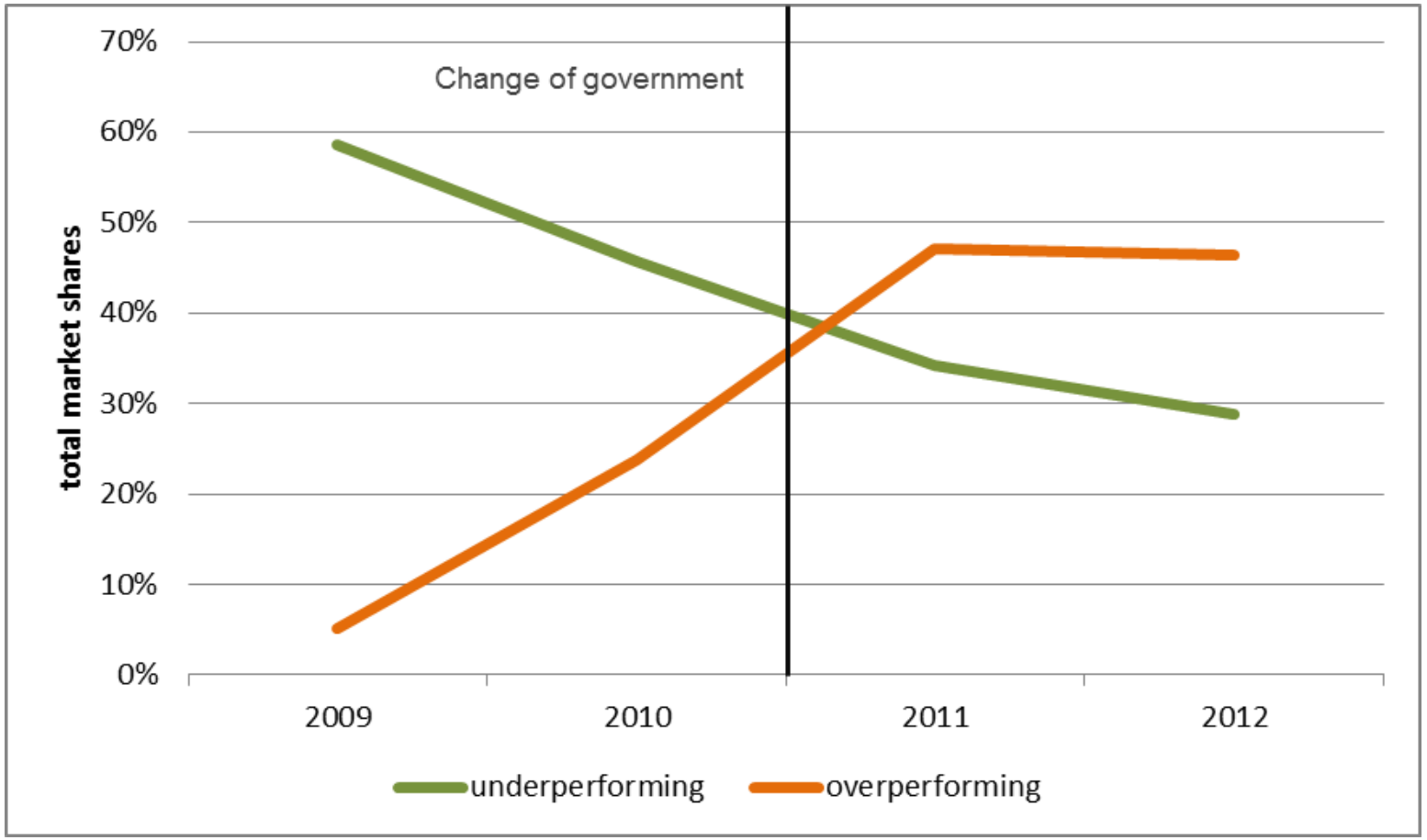
$$PII_i = \begin{cases} 1, \text{ if company } i \text{ is dependent on gov't} \\ 0, \text{ if company } i \text{ is NOT dependent on gov't} \end{cases}$$

PII construction

1. Baseline regressions
   - Explaining contract volume: BEFORE-AFTER gov't change
2. Benchmark regressions
   - Same regressions as in 1), but for periods WITHOUT gov't change
3. Marking companies
   - Significant and substantial differences between 1) and 2)

How does this look in pratice?

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



Political Control Indicator (PCI)

- Whether a company has direct political connections

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

PCI construction

1. Collecting names
   - Winners: company registry
   - Political officeholders: electoral registry, company registry, treasury records
2. Matching names/individuals
   - Biographical data
   - Statistical matching: name frequency,distance
3. Marking companies

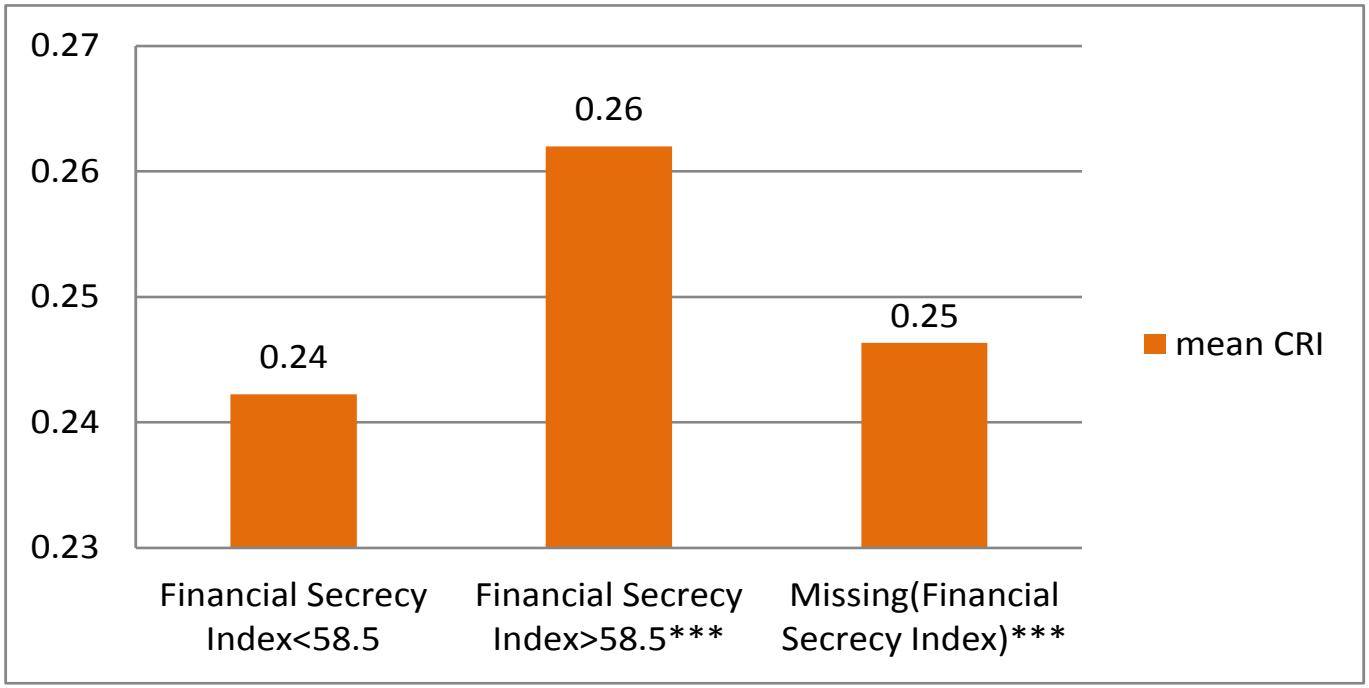
Indicator validity 1.

- Our corruption indicators co-vary
- For example: 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

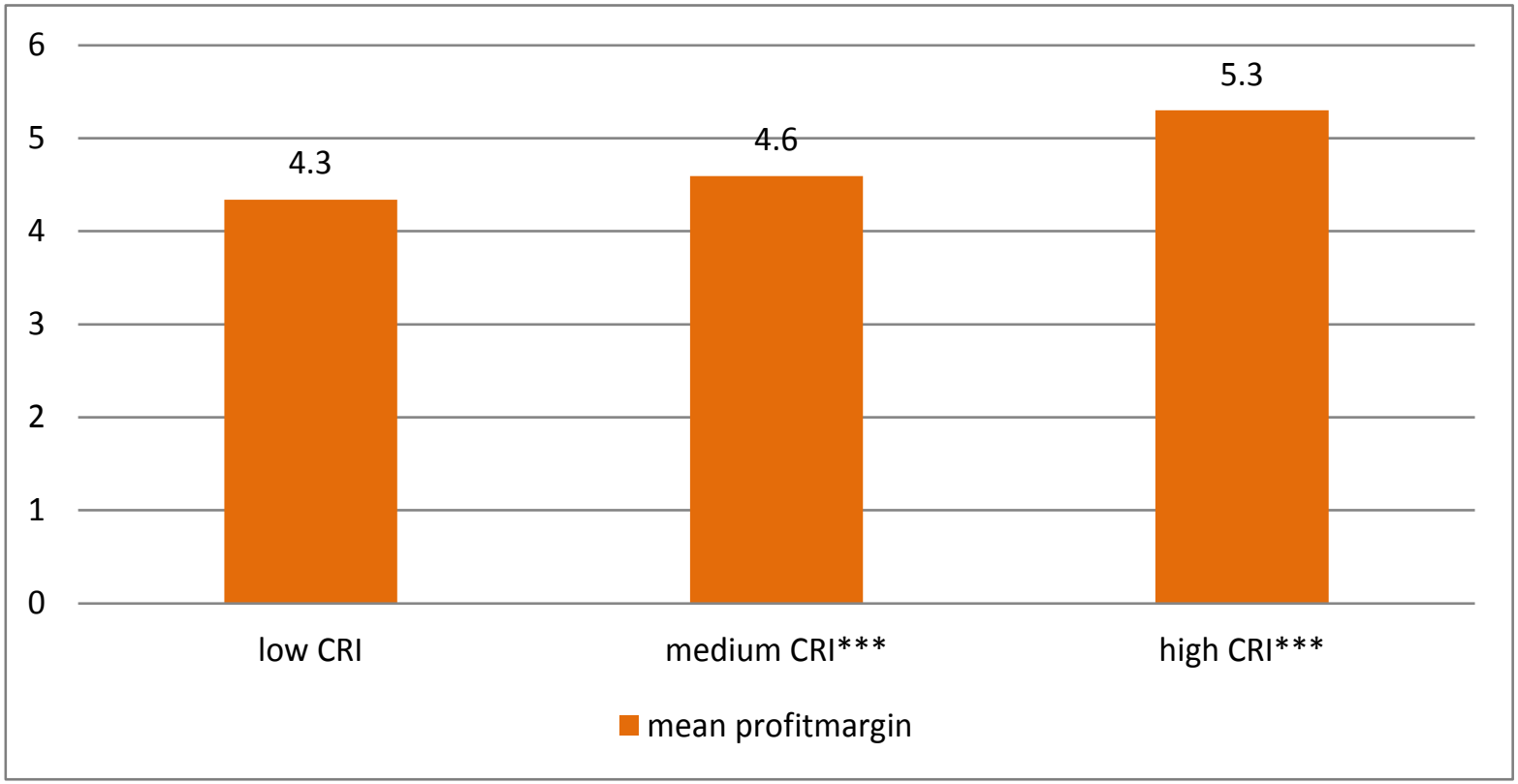
Indicator validity 2.

- Our indicators relate to external variables as expected: **money laundering, diversion of funds**
- Financial Secrecy Index + CRI in HU, 2009-2012



Indicator validity 3.

- Our indicators relate to external variables as expected: **rent extraction**
- Mean profitmargin + CRI in HU, 2009-2012

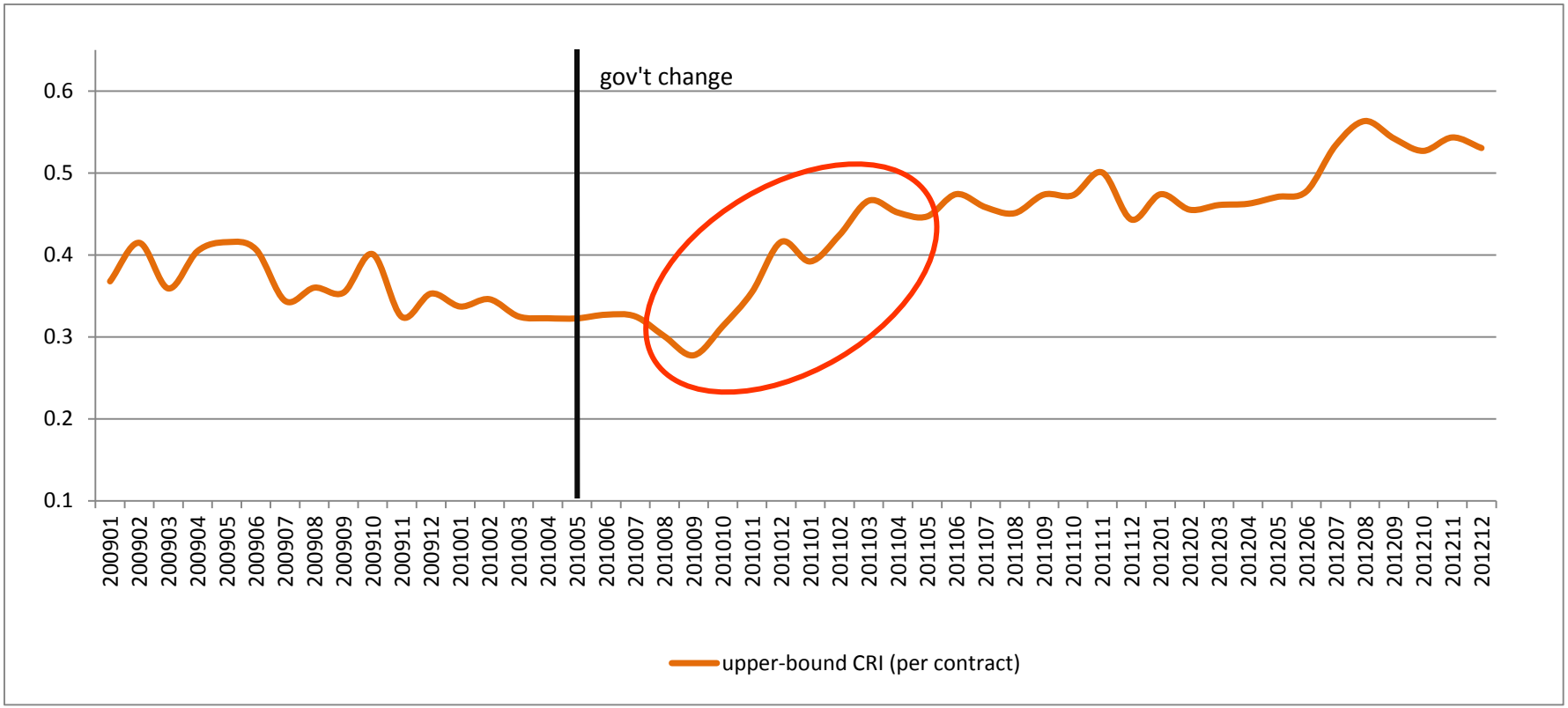


Limitations

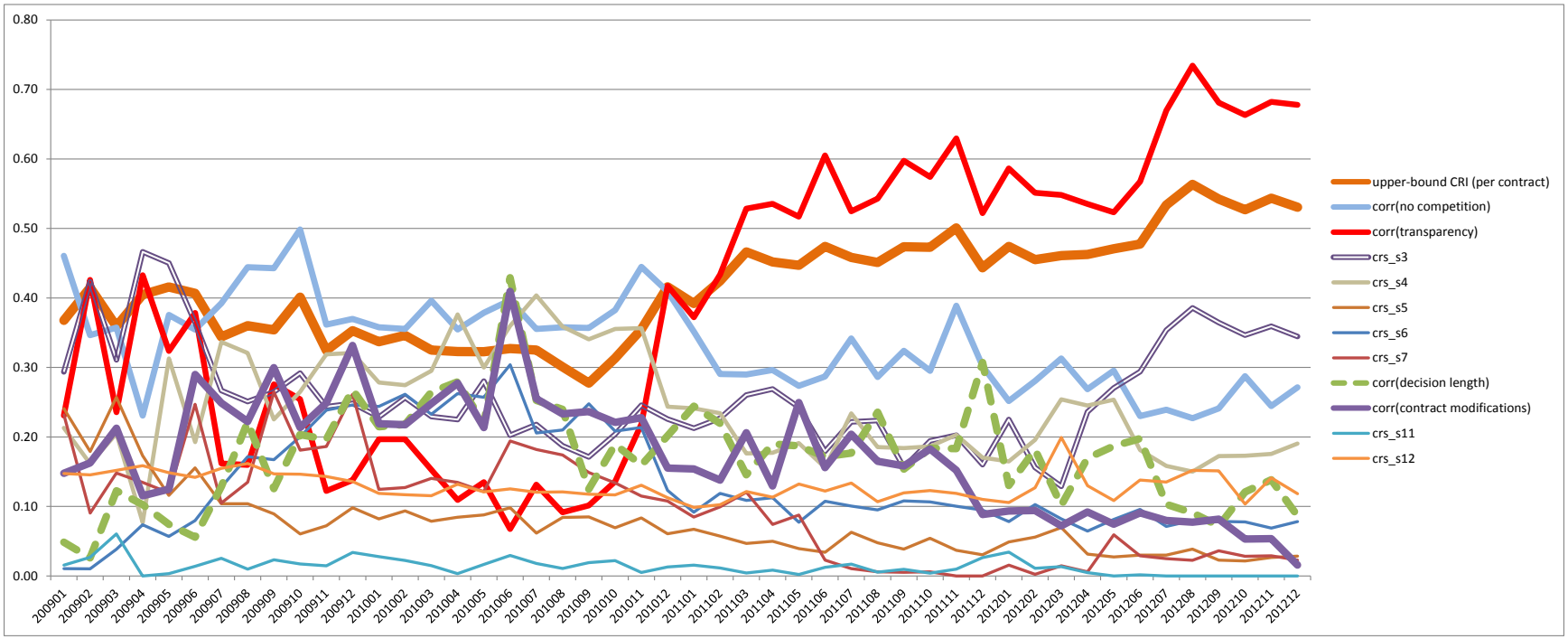
- You get what you measure: **no general indicator of corrupotion!**
- Reflexivity
- Two essential requirements
  - **Scope**: transparency is a preprequisite: if governments fiddle with it, measurement breaks down
  - **Variance**: we need to compare corrupt to non-corrupt: Sweden and Russia might not work

Applications 1. – tracking corruption

- CRI over time in HU, 2009-2012

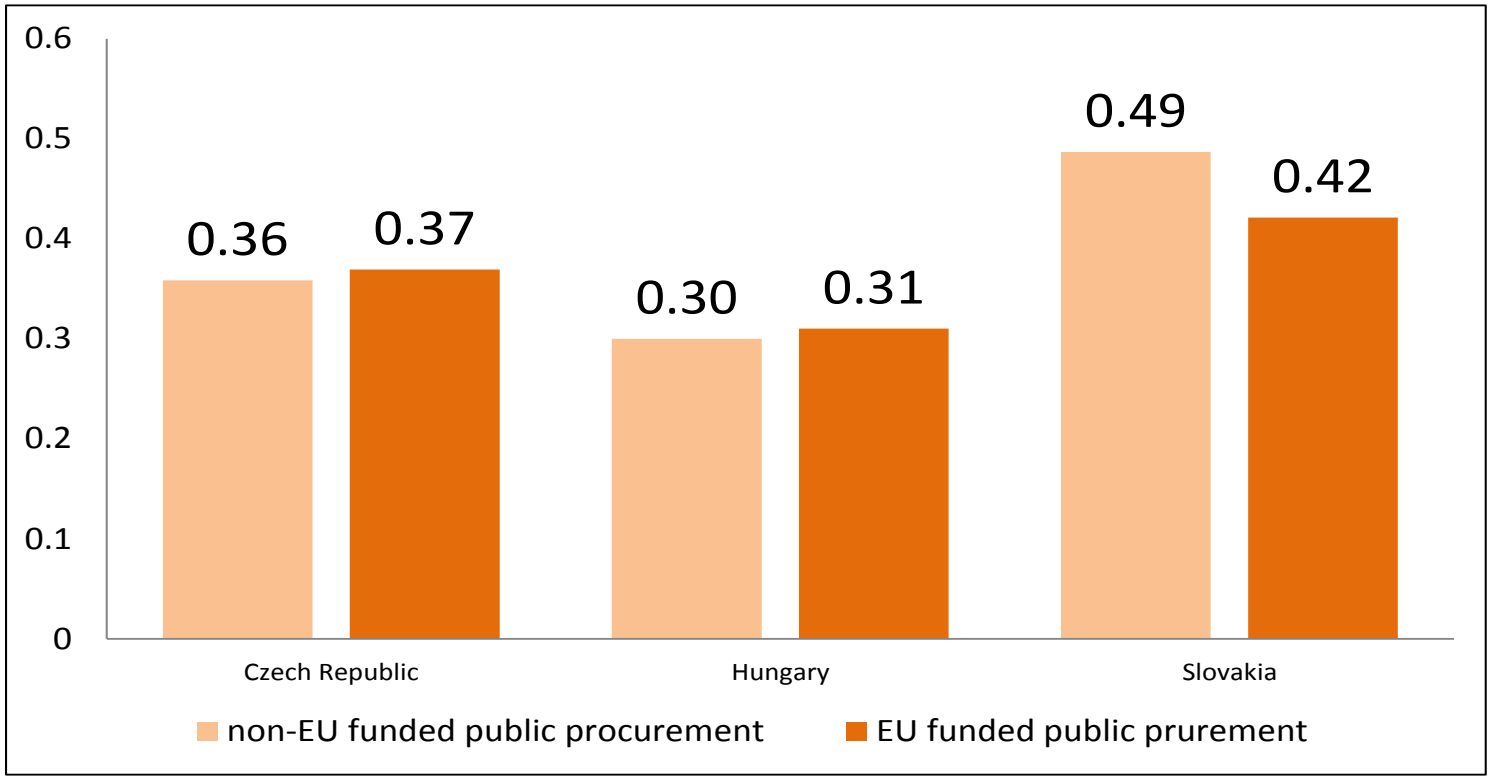


Application 1. – Decomposing change



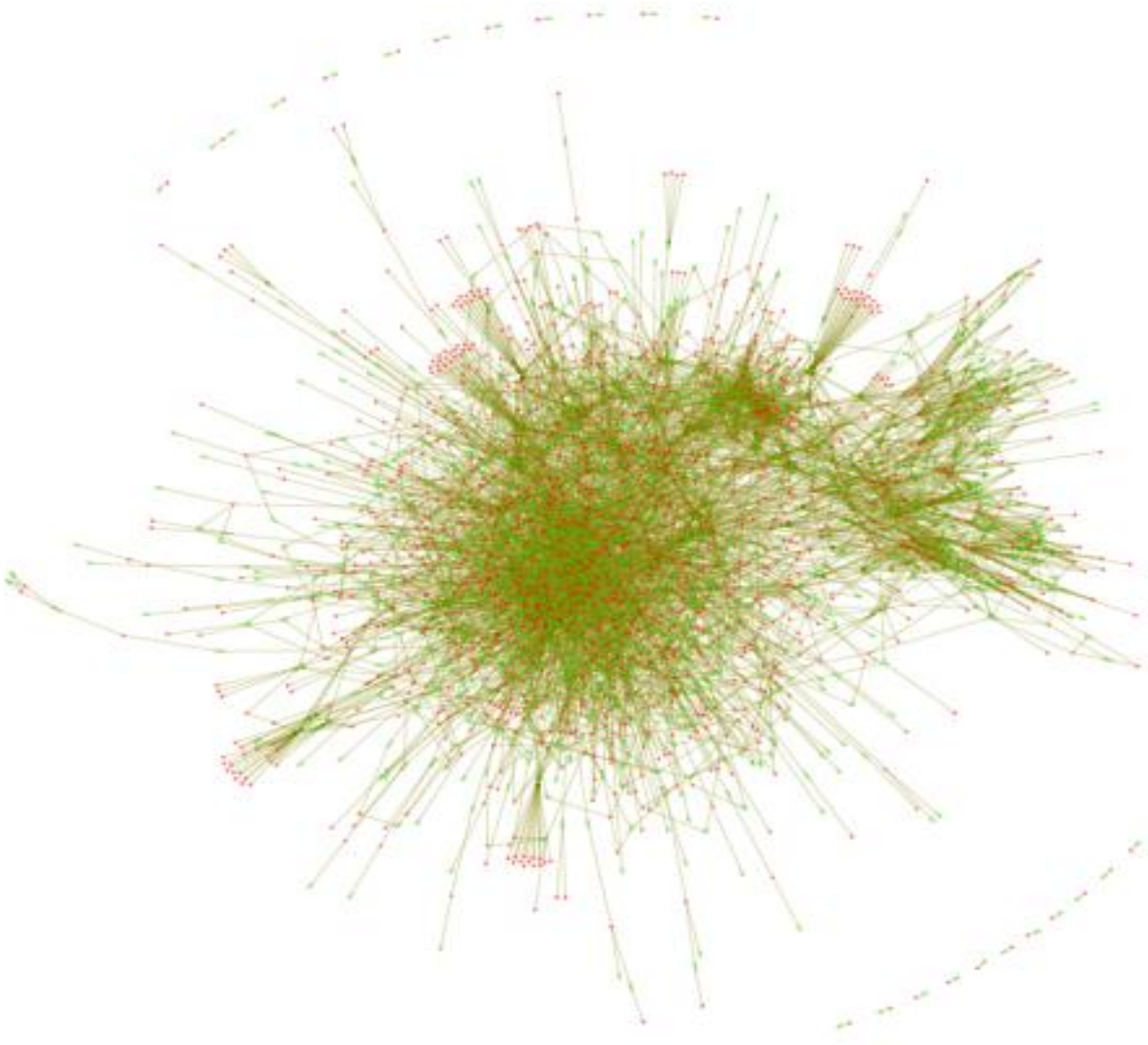
Applications 2. EU Funding

- EU structural funds' impact on corruption in CEE



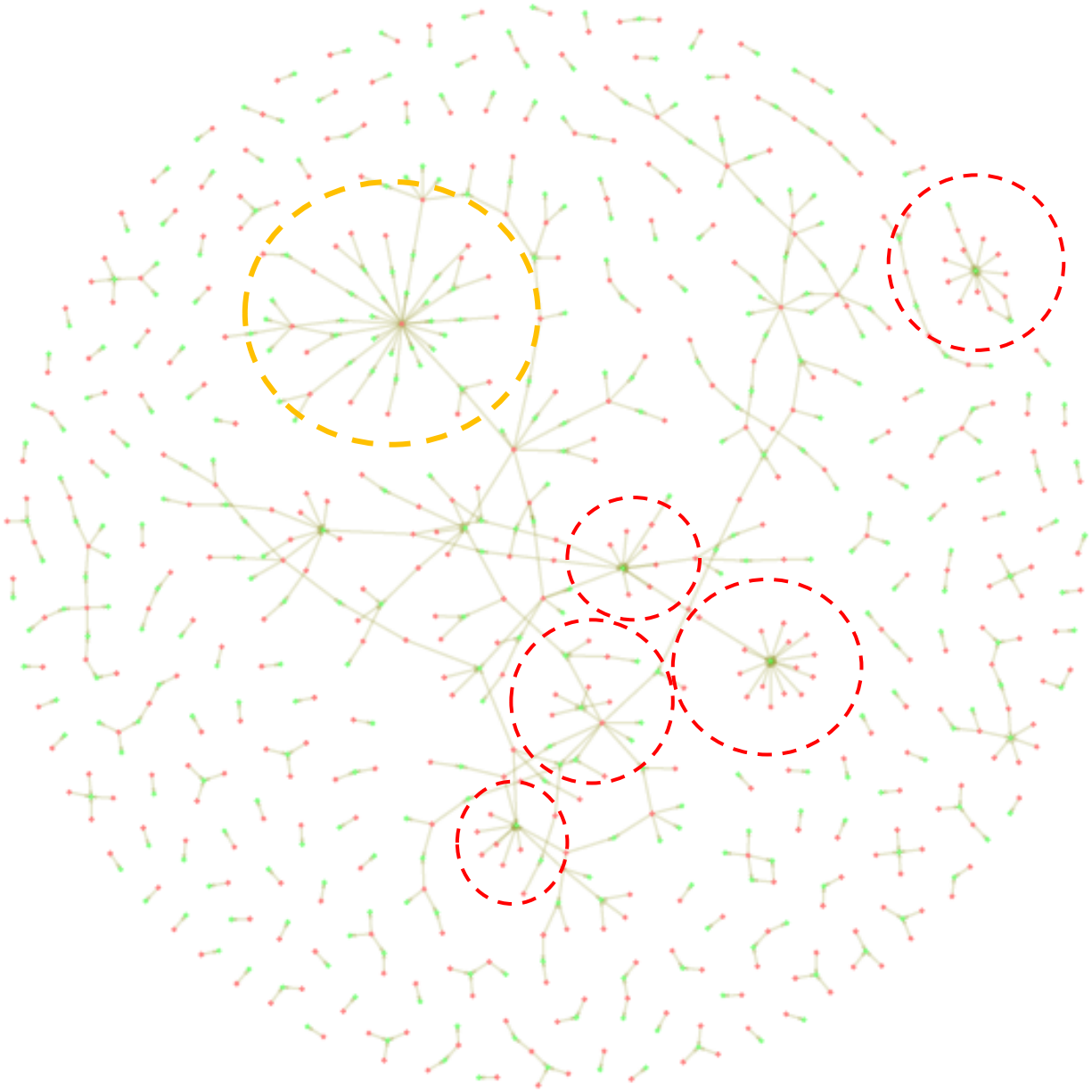
Applications 3. State capture

Total contr. network, HU, 2009-2010Q2



Applications 3. State capture

High CRI contr. network, HU, 2009-2010Q2



Further areas of application

- EU funds disbursement to private companies (e.g. HU)
- Sale of public assets (e.g. CZ, HU)
- Public auctions (e.g. wheat in HU)
- Lawmaking and regulatory capture (e.g. HU)
- Online public sector transparency (e.g. HU)

Looking forward to your questions!

Further information about this approach

Corurption Research Center Budapest: www.crcb.eu

Published material:

Fazekas, M., Tóth, I. J. (2014), *Three indicators of institutionalised grand corruption using administrative data*. Budapest: Corruption Research Centre.

Fazekas, M., Tóth, I. J., & King, L. P. (2013). *Anatomy of grand corruption: A composite corruption risk index based on objective data*. CRC-WP/2013:02, Budapest: Corruption Research Centre.

Fazekas, M., Tóth, I. J., & King, L. P. (2013). *Corruption manual for beginners: Inventory of elementary "corruption techniques" in public procurement using the case of Hungary*. CRC-WP/2013:01,Corruption Research Centre, Budapest.

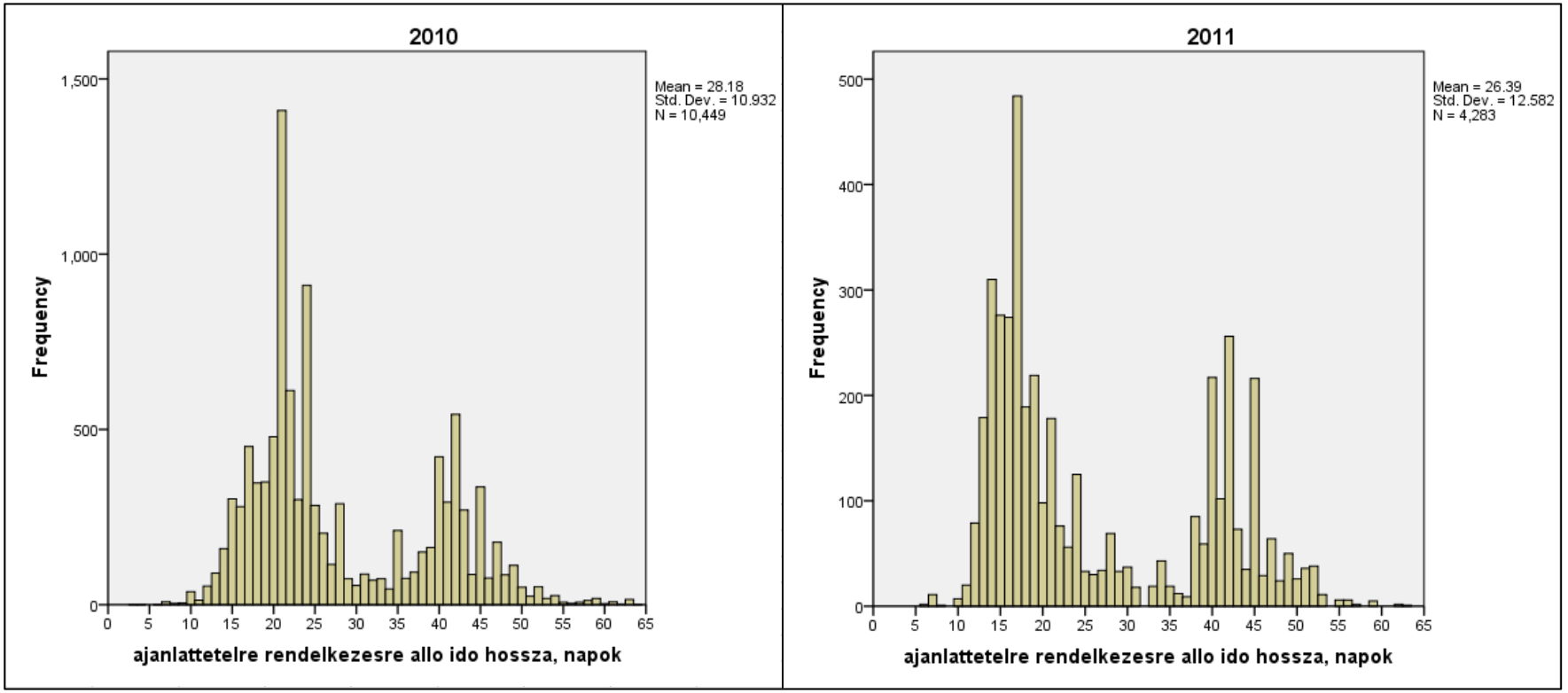
Fazekas, M., Tóth, I. J., & King, L. P. (2013). Hidden Depths. The Case of Hungary. In A. Mungiu-Pippidi (Ed.), *Controlling Corruption in Europe vol. 1* (pp. 74–82). Berlin: Barbara Budrich Publishers.

Fazekas, M., Chvalkovská, J., Skuhrovec, J., Tóth, I. J., & King, L. P. (2013). *Are EU funds a corruption risk? The impact of EU funds on grand corruption in Central and Eastern Europe*. CRC-WP/2013:03, Corruption Research Centre, Budapest.

Annexes

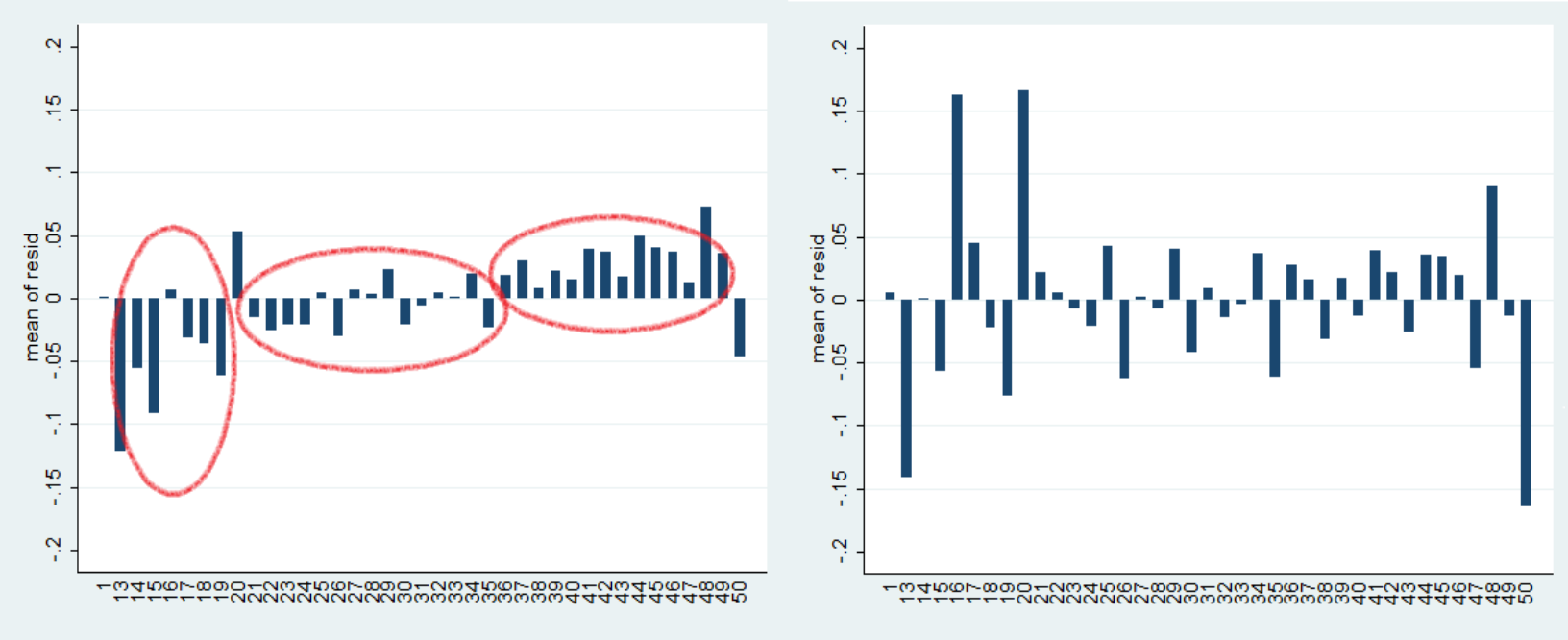
Example of corruption indicators

1. Length of submission period



CRI-component identification

- Regressions deliver component weights and thresholds
- Component categorisation (example: relative price of tender documentation)



Component weights

weights reflecting our limited understanding of the **exact** process

variable	component weight
single received/valid bid	0.096
no call for tenders published in official journal	0.096
procedure type	
ref. cat.=open procedure	0.000
1=invitation procedure	0.048
2=negotiation procedure	0.072
3=other procedures	0.096
4=missing/erroneous procedure type	0.024
length of eligibility criteria	
ref.cat.=length<-2922.125	0.000
1= -2922.125<length<=520.7038	0.024
2= 520.7038<length<=2639.729	0.048
3= 2639.729<length	0.072
4= missing length	0.096
short submission period	
ref.cat.=normal submission period	0.000
1=accelerated submission period	0.048
2=exceptional submission period	0.072
3=except. submission per. abusing weekend	0.096
4=missing submission period	0.024
relative price of tender documentation	0.000
ref.cat.= relative price=0	0.000
1= 0<relative price<=0.0004014	0.000
2= 0.0004014<relative price<=0.0009966	0.096
3= 0.0009966<relative price<=0.0021097	0.064
4= 0.0021097<relative price	0.032
5=missing relative price	0.000
call for tenders modification(only before 01/05/2010)	
weight of non-price evaluation criteria	0.000
ref.cat.= only price	0.000
2= 0<non-price criteria weight<=0.4	0.000
3= 0.4<non-price criteria weight<=0.556	0.048
4= 0.556<non-price criteria weight<1	0.096
5=only non-price criteria	0.000
procedure annulled and re-launched subsequently	0.096
length of decision period	
ref.cat.= 44<decision period<=182	0.000
1= decision period<=32	0.064
2= 32<decision period<=44	0.032
4= 182<decision period	0.096
5= missing decision period	0.000
contract modified during delivery	0.096
contract extension(length/value)	
ref.cat.= c.length diff.<=0 AND c.value diff.<=0.001	0.000
2= 0<c. length d.<=0.162 OR 0.001<c.value d.<=0.24	0.096
3= 0.162<c. length diff. OR 0.24<c.value diff.	0.000
4= missing (with contr. completion ann.)	0.048
5= missing (NO contr. completion ann.)	0.000
winner's market share	0.096

Additional validity tests 1.

- PII + CRI

Group	N	Mean CRI	Std. Err.	Std. Dev.	95% Conf.Interval	
0=success *not* linked to government change	428	0.205	0.006	0.120	0.193	0.216
1=success linked to government change	2481	0.214	0.002	0.111	0.210	0.219
combined	2909	0.213	0.002	0.112	0.209	0.217
difference (CRI1-CRI0)		***0.010****	0.006		0.021	-0.002