CORRUPTION RESEARCH CENTER BUDAPEST

In respectable society: on how elite configuration influences patterns of state capture in Hungary

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Outline

- Motivation
- Measuring corruption
  (Concept, Data, CRI)
- Corruption, state capture and change of government
  (Concept, Network data, Typology)
- Results
- Discussion

Motivation: two main goals today

- Introducing a new *‚objective'* corruption indicator

- Exploring the relationship between corruption, state capture, and political changes

MEASURING CORRUPTION

Old versus new measurement

- Perception indicators are not good enough
- Corruption experience surveys are of limited use
- Need for new indicators harnessing Big Data

What are we trying to measure?

- Institutionalised grand corruption in public spending (~particularistic allocation of public resources)

  – Institutionalised= recurrent, stable
  – Grand = high-level politics and business
  – Corruption = particularism
    = only at micro level
  – Public spending = public procurement

New indicator

- New (needed) indicator characteristics:
  - objective data describing actor behaviour
  - data from micro level
  - consistent comparisons across countries, organisations, and time
  - thorough understanding of corruption in its context

Composit indicator setting

$C = \{c_1, c_2, c_3, \ldots c_k\}$ and $0 \leq c_i \leq 1$ for every i

$c_1, c_2, c_3, \ldots c_k$ = elementary informations about corrupt behaviour

non corrupt

c1	c2	c3
c4	c4	c6
c7	c8	c9

probably corrupt

c1	c2	c3
c4	c4	c6
c7	c8	c9

very likely corrupt

c1	c2	c3
c4	c4	c6
c7	c8	c9

The data

- Hungaran data
- 2009-2012
- Public procurement announcements:
- http://www.kozbeszerzes.hu/adatbazis/keres/hirdetmeny/
- Data extracted from online text files (i.e. crawler algorithms, text mining algorithms)
- 3.2% of GDP on transaction level, 300+ variables per transaction

	2009	2010	2011	2012	Total
Total number of contracts awarded	10918	17914	14070	10342	53244
Total number of unique winners	3987	5617	5587	4923	13557
Total number of unique issuers	1718	2871	2808	2344	5519
Combined value of awarded contracts (million EUR) *	4604	3834	1856	1298	11592

*Notes: * = a 300 HUR/EUR uniform exchange rate was applied for exchanging HUF values.*

Corruption Risk Index (CRI)

CRI observes the winner selection process in public procurement

- „Risk of corruption” instead of veritable cases of corruption
- Information from actor behaviour
- A composite indicator

- Similar concept: „red flags”
  (Office Européen de lutte Anti-fraude [OLAF], EU)

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

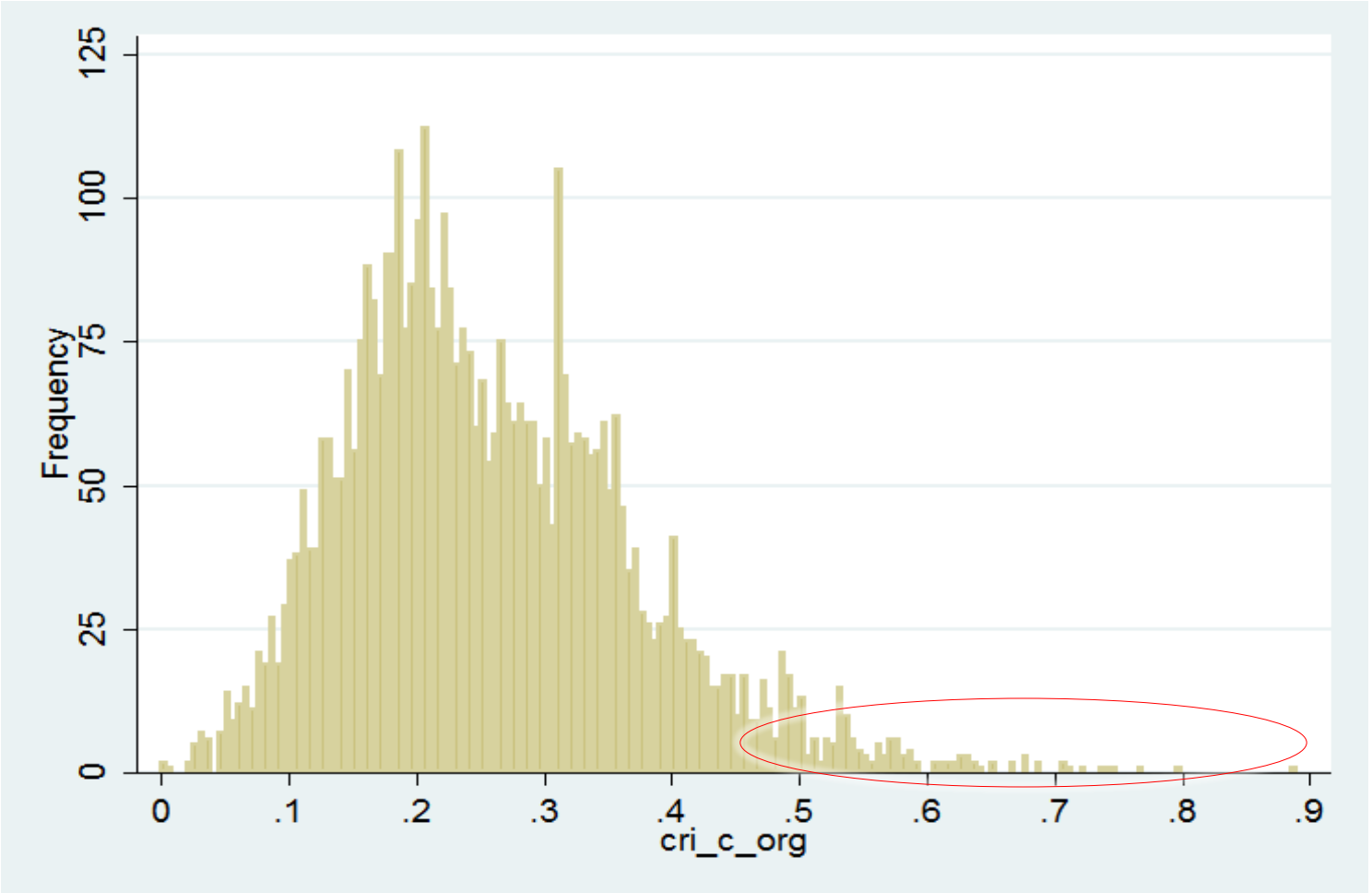
- *Number of bids*
- *Call for tender not published in official journal*
- *Procedure type (openness)*
- *Length of eligibility criteria*
- *Exceptionally short submission period*
- *Relative price of tender documentation*
- *Call for tenders modification*
- *Weight of non-price evaluation criteria*
- *Annulled procedure re-launched subsequently*
- *Length of decision period*
- *Contract modification*
- *Contract value increase*
- *Winner's market share*

What kind of distributions arise?

average CRI

Per wining bidder

2009-2012



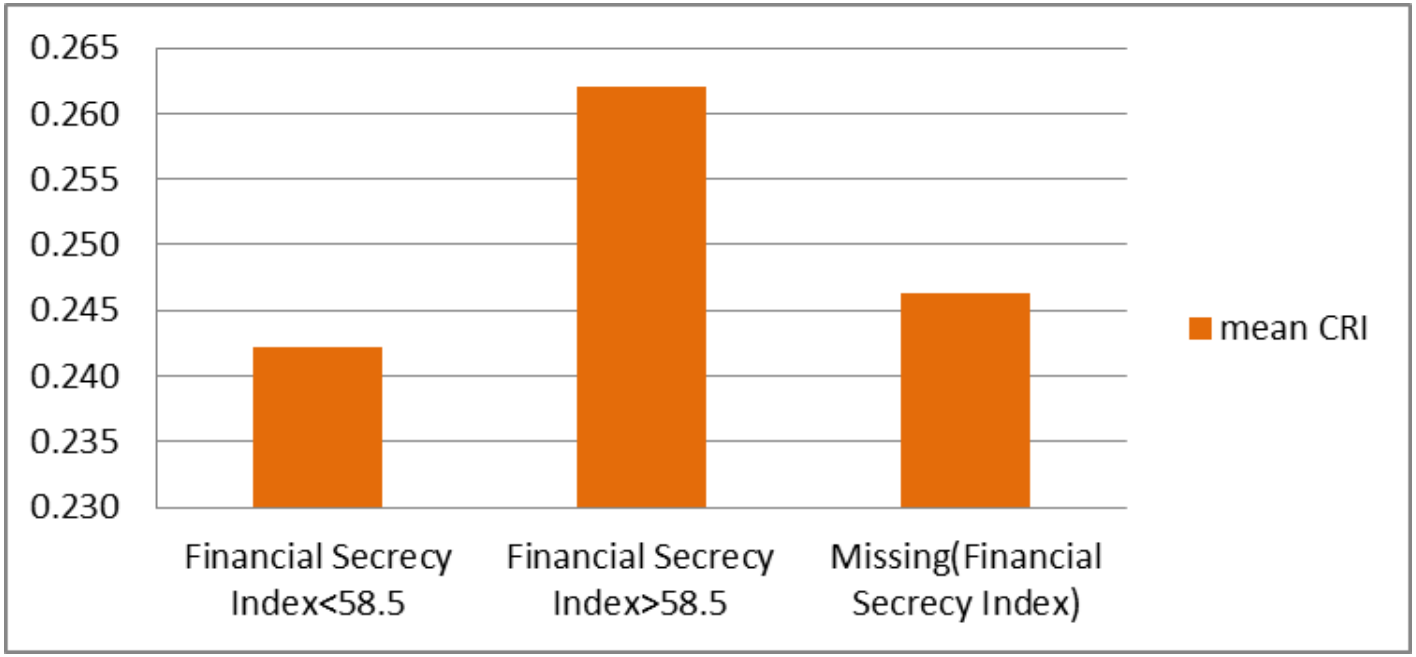
CRI validation 1.

- Average CRI of politically connected and not-connected companies, 2009-2012

Group	N	Mean CRI	Std. Err.	Std. Dev.	95% Conf.Interval	
0=no political connection	2687	0.254	0.002	0.113	0.250	0.258
1=politically connected	1318	0.264	0.003	0.112	0.258	0.270
combined	4005	0.257	0.002	0.113	0.254	0.261
difference (CRI1-CRI0)		***0.010****	0.004		0.017	0.003

CRI validation 2.

- Our indicators relate to external variables as expected
- For example, FSI & CRI



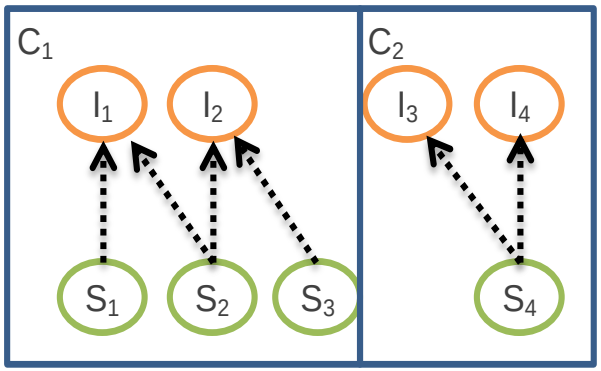
CORRUPTION, STATE CAPTURE & CHANGE IN POLITICAL POWER

State capture

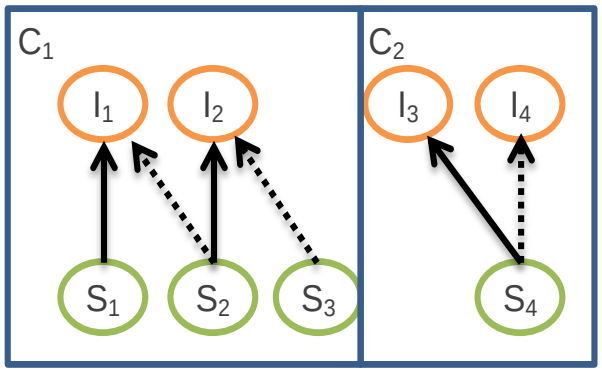
- type of political corruption
- systemic
- ONLY corrupt connection between an issuer and a supplier

From „independent” to captured state

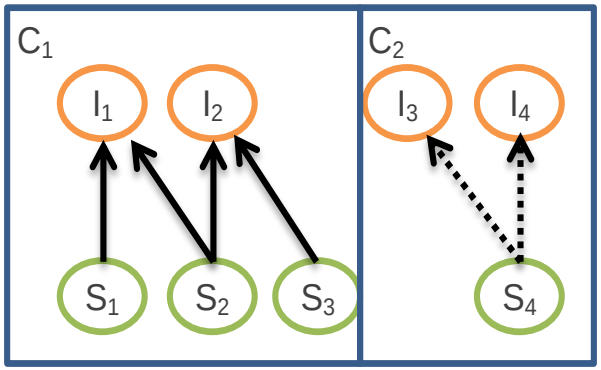
(i) corruption free state



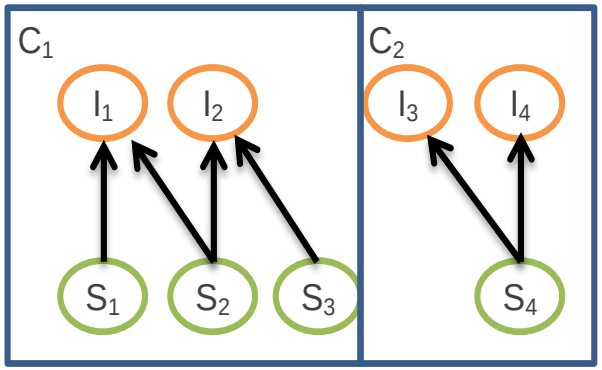
(ii) corruption without state capture



(iii) partially appropriated state



(iv) fully captured state



Research goals

- How a novel analytical framework works for measuring state capture using the example of Hungary during 2009-2012

- If YES, it systematically analyses how captor group organisation influences the structure and distribution of state capture

Context

- Hungary: high corruption environment
- 2009-2012: two period
  - 2009 - 2010.05 left-wing party (MSZP) gov.;
  - 2011.06 -2012 right-wing party (Fidesz) gov.
- Public procurement: highly affected area, key in linking public and private spheres

Related literature

- Corruption and networks:
  - Small-n studies: ego networks or networks of sentenced organised criminals (e.g. mafia)
- Theoretical models: e.g. Grzymala-Busse, Wedel, Lambsdorff, Szántó-Tóth,
- Dark networks: e.g. Everton

→ Very little directly relevant literature

Hypotheses 1 – Structure of state capture

- H_{11}: there is no fully corrupt organisational ego network in Hungary between 2009-2012 – corruption without state capture hypothesis;

- H_{12}: at least one organisation's ego network is fully corrupt in Hungary between 2009-2012 - local state capture hypothesis;

- H_{13}: organisations of local capture are organised into distinct sub-graphs such as chains or clusters in Hungary between 2009-2012 – global state capture hypothesis.

Hypotheses 2 – State capture and centralisation

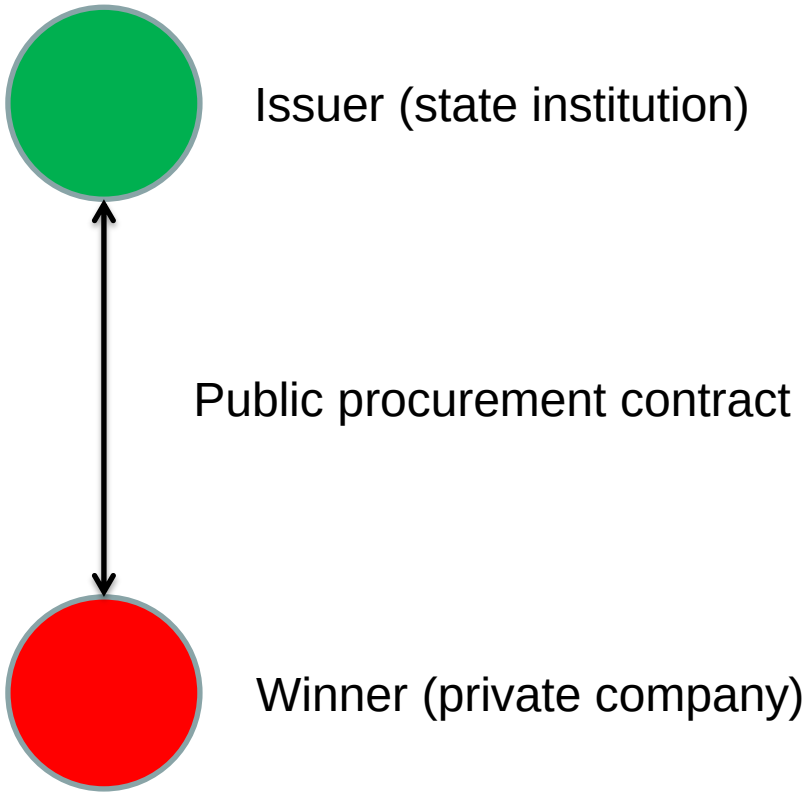
- H_{21}: Centralisation of Political Power of 2011-2012 did not change network centrality position of captured organisations;

- H_{22}: Centralisation of 2011-2012 made captured organisations more central in the network.

Network data analysed

- Two-mode network: issuer-winner
- Only big actors: 3+ contracts of >1m HUF
- Two time periods: comparative analysis
  - 2009M1-2010M4: previous (MSZP) gov.
  - 2011M1-2012M7: current (FIDESZ) gov.
- Weighted graph: CRI

Baseline connection



Network Data

	N contract	N issuer	N winner	N edge	total contract value (million EUR)*
2009-2010M4	8121	887	1244	5365	2,089.75
2011-2012M7	7748	973	1491	5602	991.44

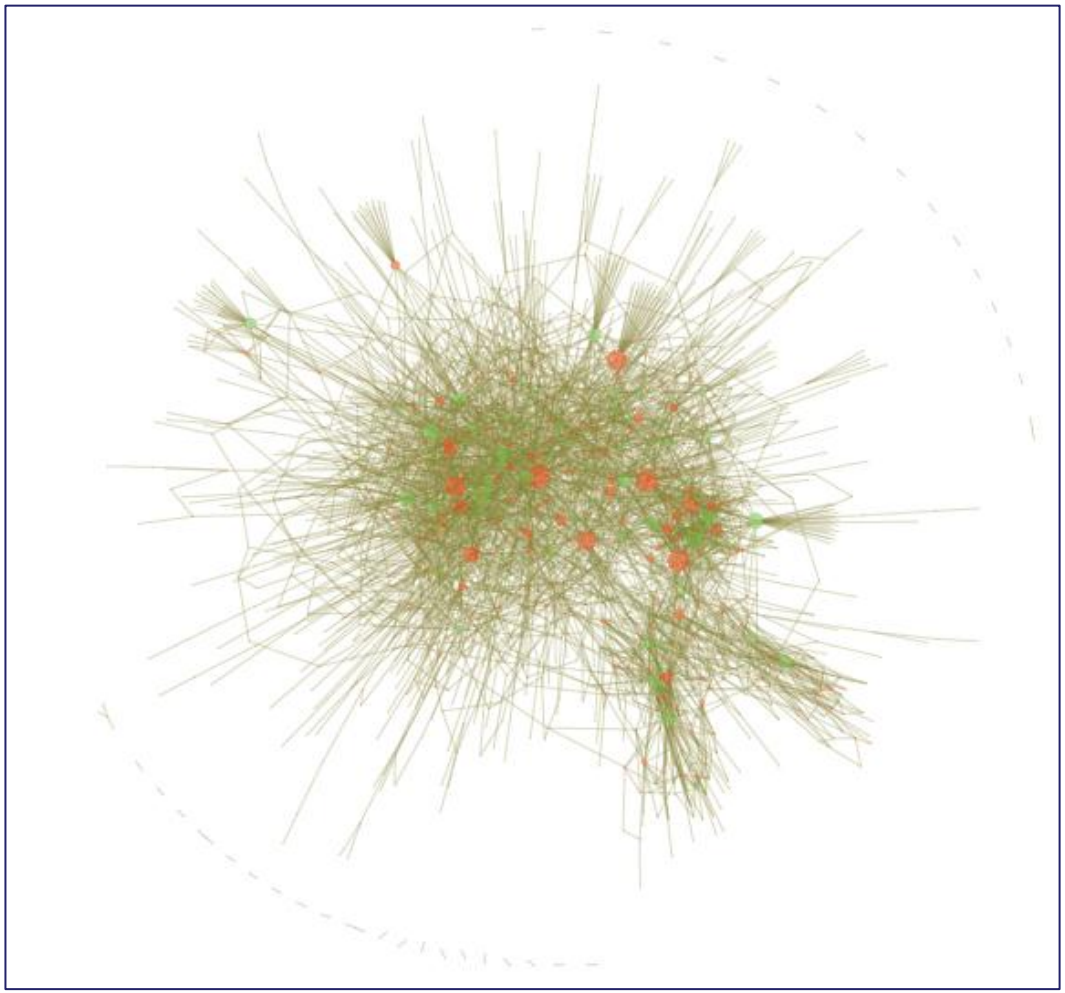
RESULTS

Low degree of overlap

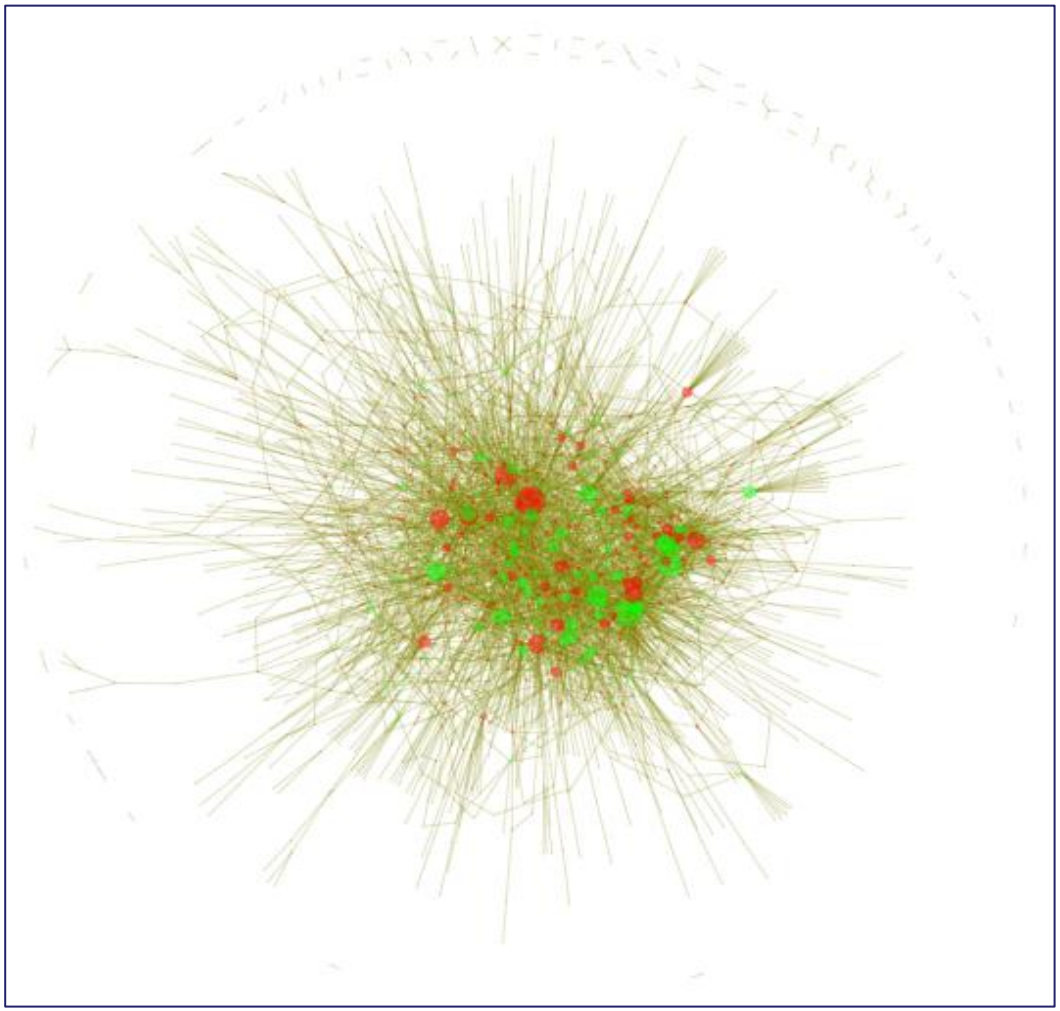
Overlap of organisations in the networks of the two periods, Hungary, 2009-2012

periods	N			%		
	total	issuers	suppliers	total	issuers	suppliers
2009-2010 only	1,057	381	676	30.02	28.14	31.2
2011-2012 only	1,392	469	923	39.53	34.64	42.59
both periods	1,072	504	568	30.45	37.22	26.21
Total	3,521	1,354	2,167	100	100	100

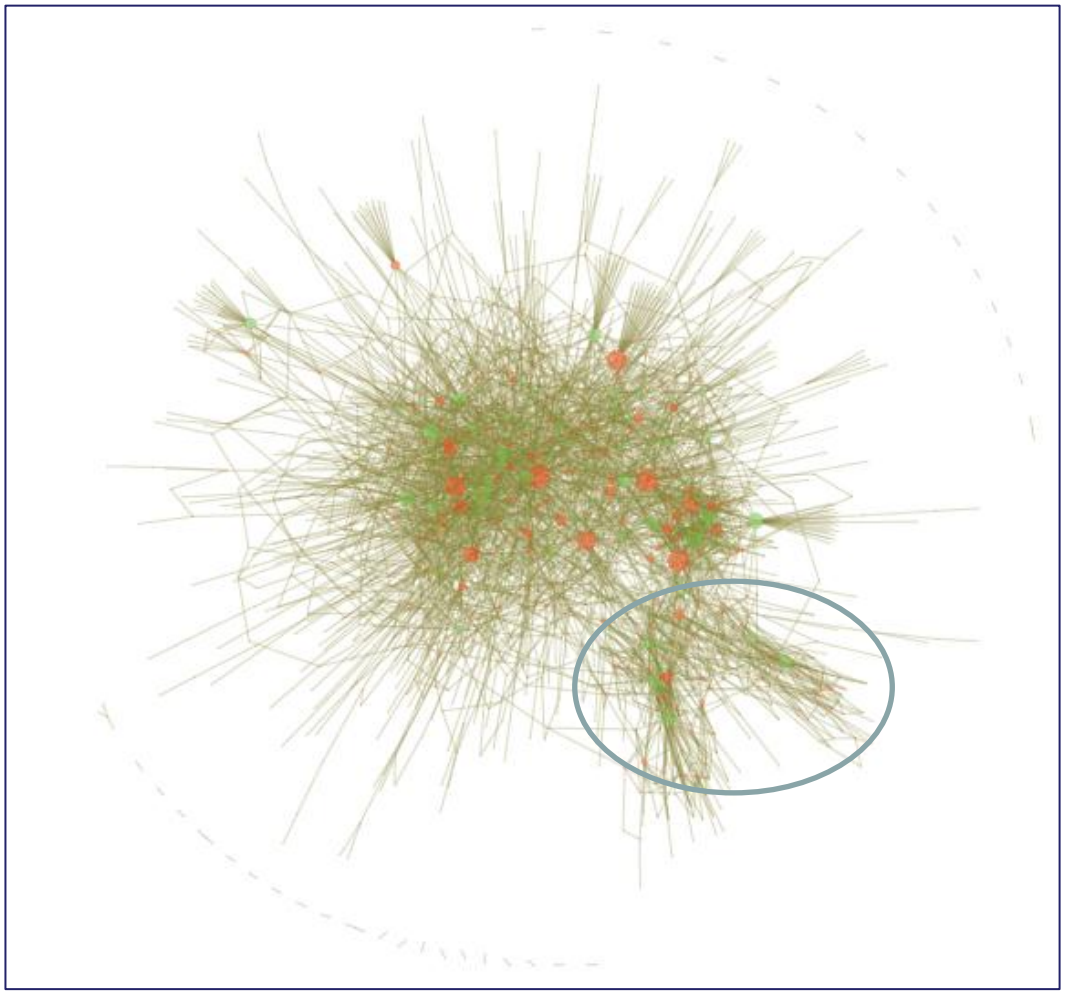
Total contractual network 2009M1-2010M4



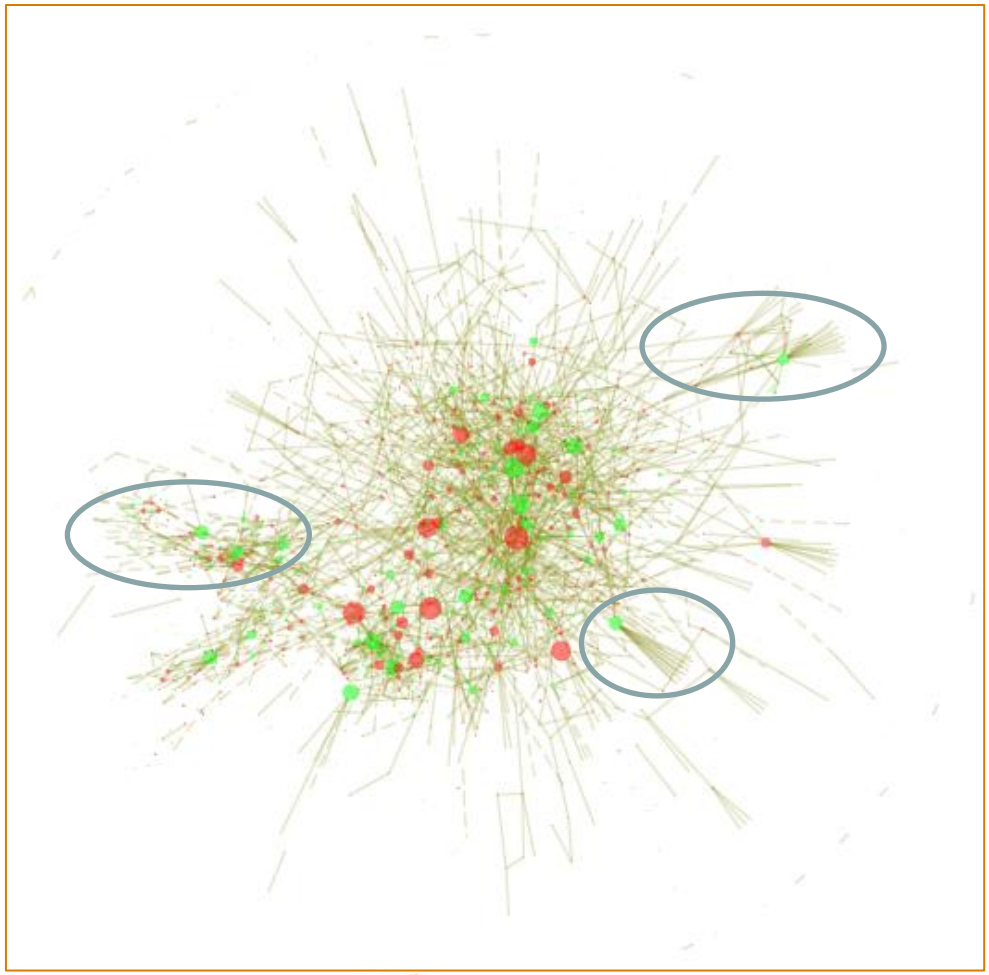
Total contractual network 2011M1-2012M7



Total contractual network 2009M1-2010M4



Contractual network with low and high CRI (lower and upper 20%), 2009M1-2010M4



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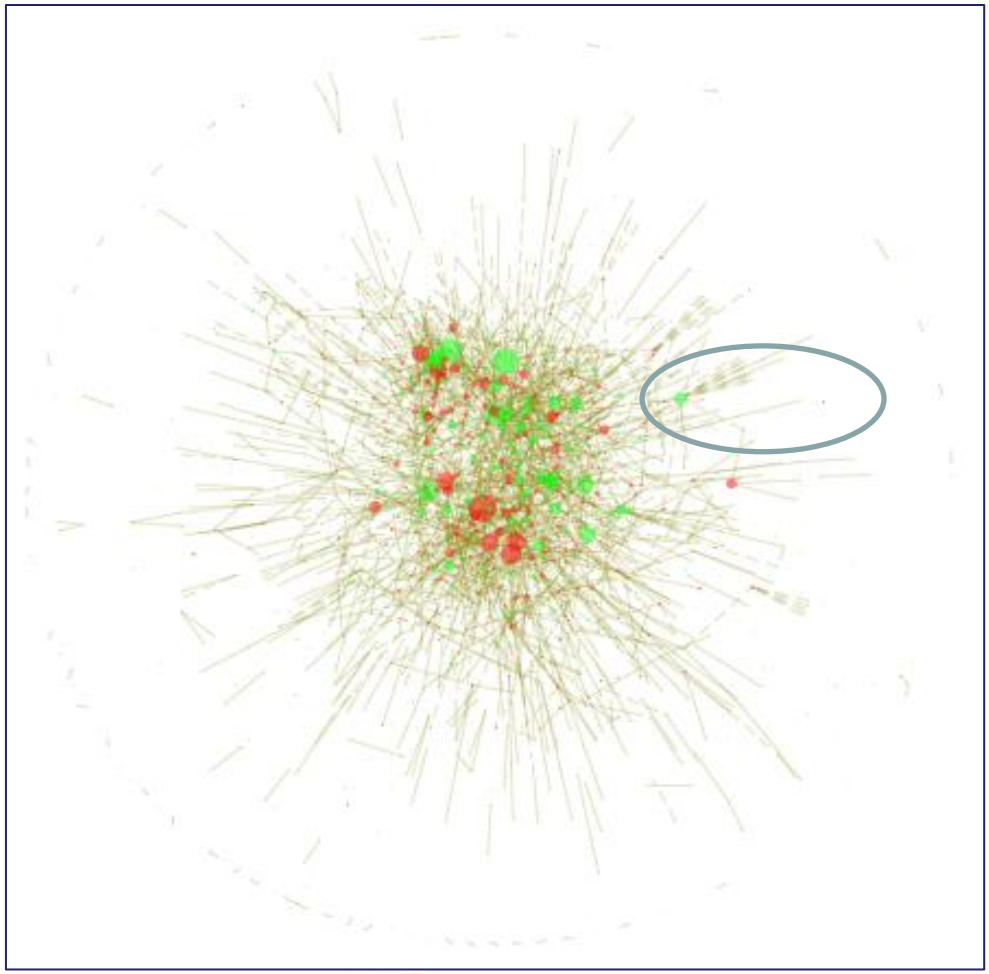


Types of actors – results from cluster analysis

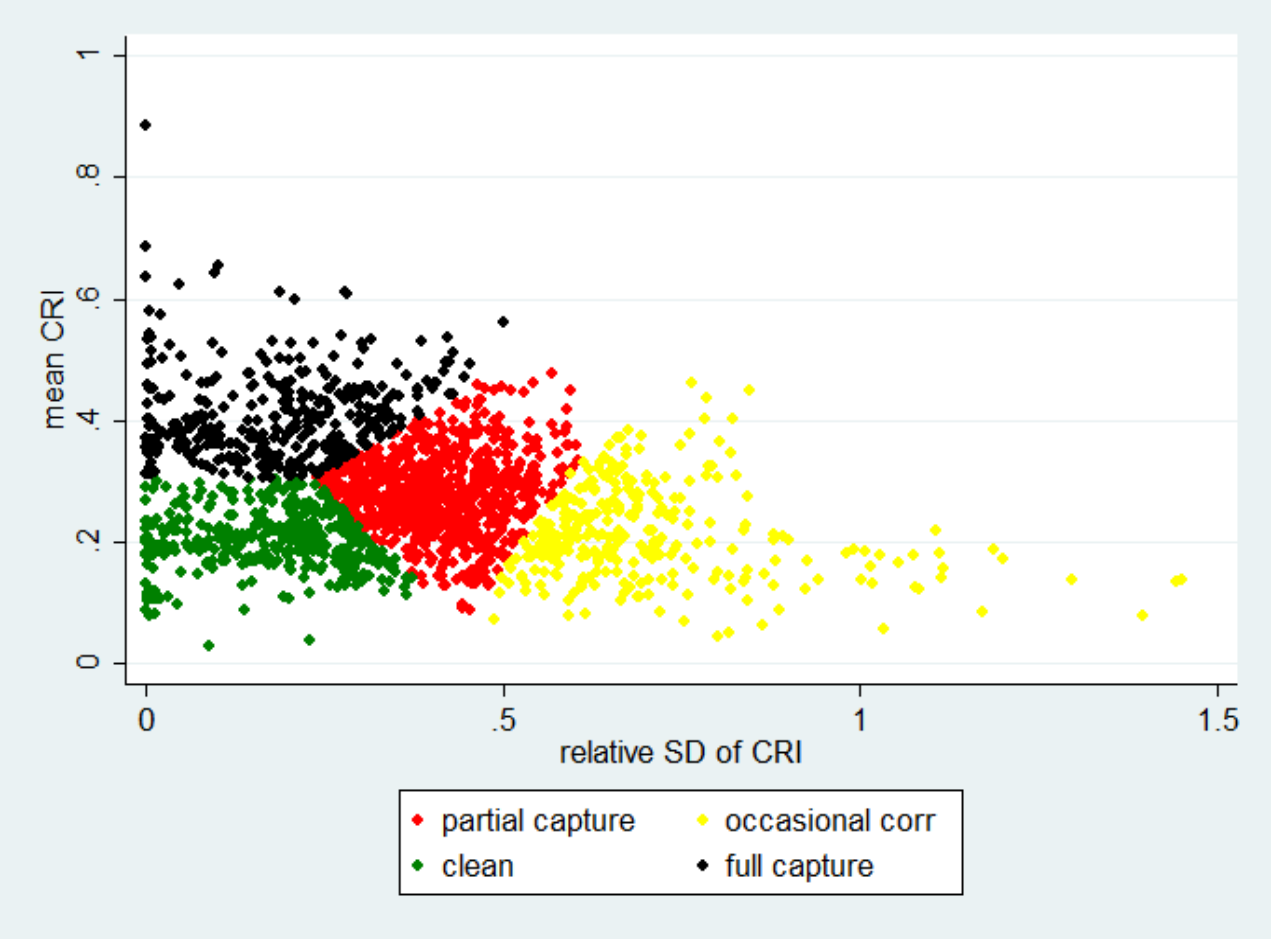
	Relative SD of CRI	
CRI	**Low**	**High**
Low	clean	Ocassionally corrupt
High	Totally corrupt	Partially corrupt

Clusters of actors by average CRI and relativ standard deviaton of CRI

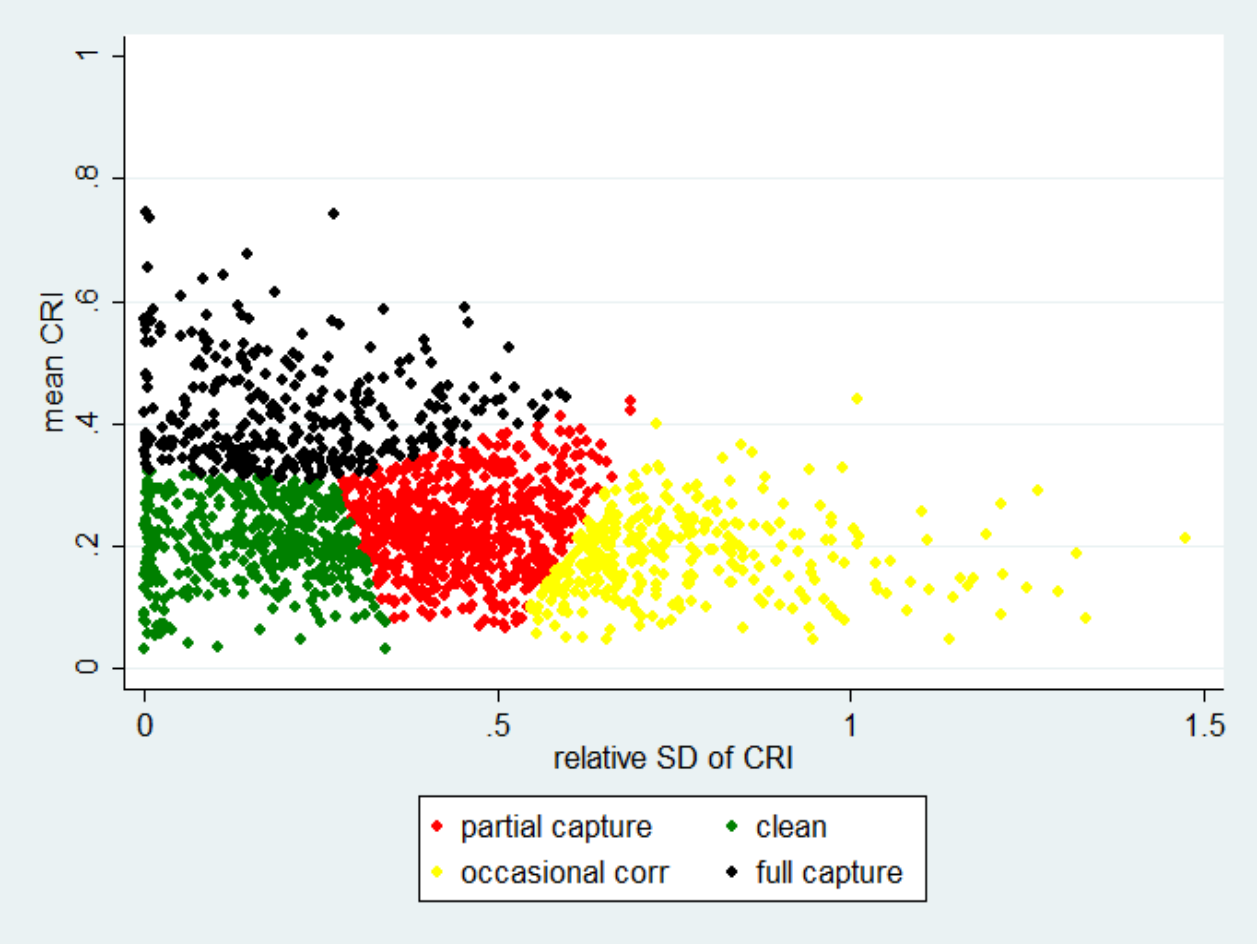
Clusters' mean value of the clustering variables, 2009-2012

	2009M1 – 2010M4		2011M1 – 2012M7	
cluster/stat	CRI(stand.)	Relative st.dev.of CRI	CRI(stand.)	Relative st.dev.of CRI
clean	0.268	0.103	0.226	0.117
occasional corruption	0.242	0.517	0.240	0.481
partial capture	0.304	0.304	0.314	0.282
full capture	0.549	0.140	0.459	0.119
Total	0.332	0.260	0.312	0.244

Scatterplot of clusters by CRI and relative SD of CRI, 2009M1-2010M4



Scatterplot of clusters by CRI and relative SD of CRI, 2011M1-2012M7

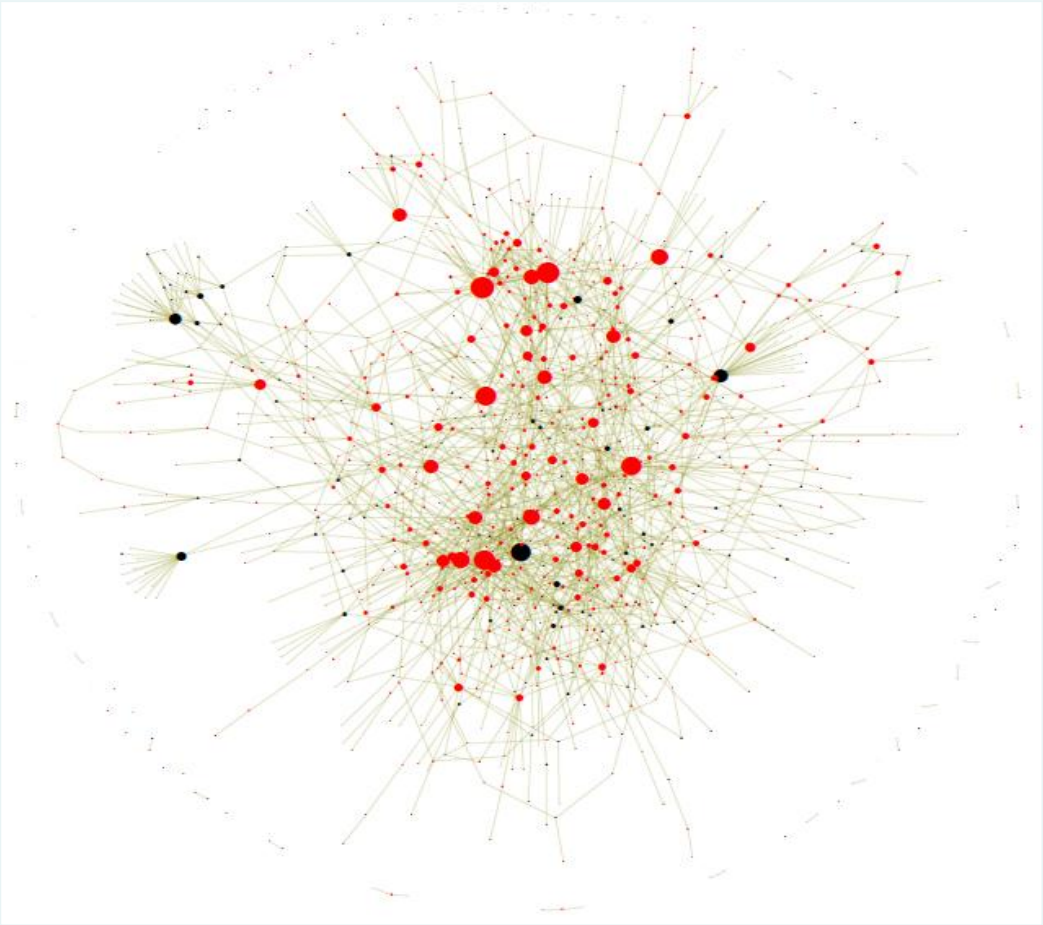


Distribution of four clusters 2009-2012

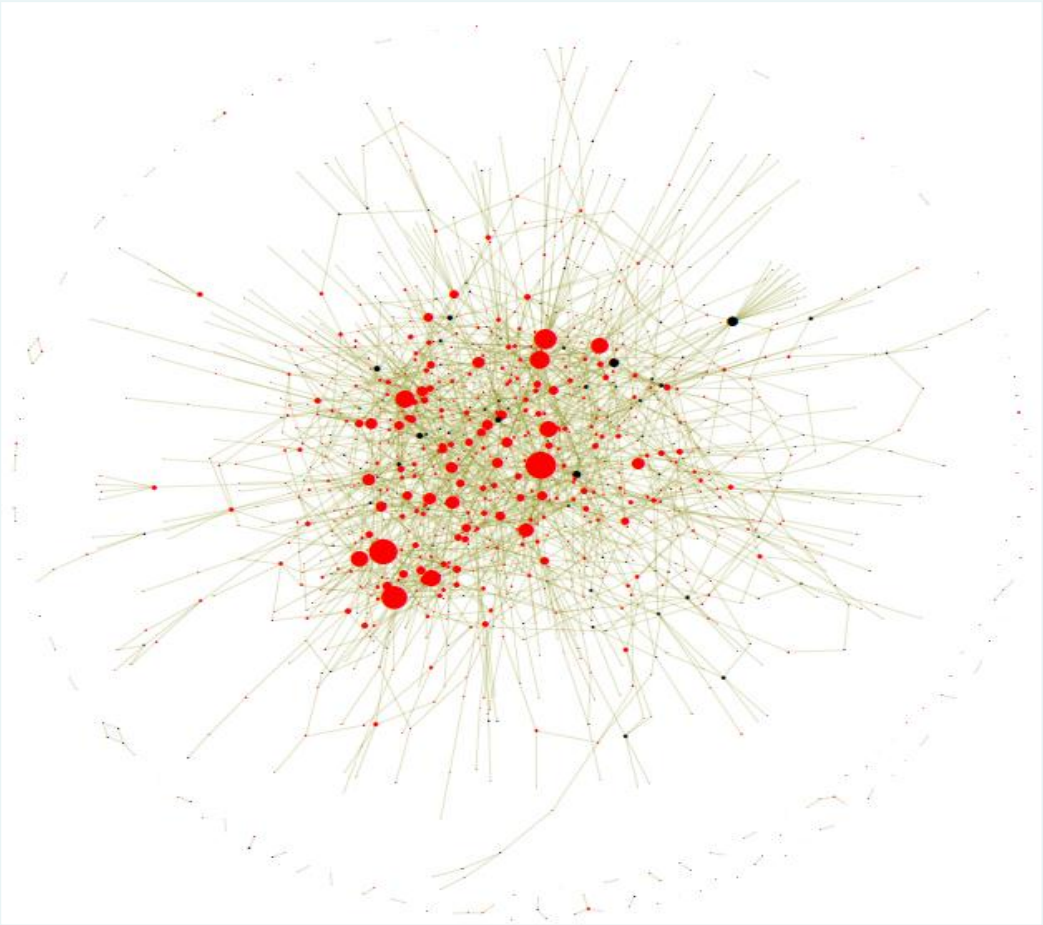
Number and proportions of actors in the four clusters, 2009-2012

	2009M1 – 2010M4			2011M1 – 2012M7		
cluster/stat	N	%	cum. %	N	%	cum. %
clean	447	24.9	25	430	22.3	22
occasional corruption	319	17.8	43	296	15.3	38
partial capture	674	37.6	80	817	42.4	80
full capture	352	19.6	100	381	19.8	100
Total	1,792	100		1,924	100	

Contractual network of partially and fully captured actors, 2009M1-2010M4



Contractual network of partially and fully captured actors, 2010M1-2012M7



The network structure of two period, 2009-2012

Average centrality indices per clusters, 2009-2012

	2009-2010			2011-2012		
cluster/group mean	Eigenvector	Closeness	Betweeness	Eigenvector	Closeness	Betweeness
clean	0.0087	99	0.0008	0.0079	110	0.0007
occasionally corrupt	0.0178	40	0.0028	0.0244	33	0.0027
partial capture	0.0170	11	0.0034	0.0149	44	0.0030
full capture	0.0034	200	0.0013	0.0031	239	0.0009
Total	0.0124	75	0.0022	0.0125	96	0.0020

DISCUSSION

Measurement

- CRI: More data from supplier side (e.g. firms' profitability, performance, history)
- The proxy problem (sensivity analysis):
  - More test reqiured for analyse the stability of CRI
  - More test of reliability (CRI for revailed corrupt cases)
  - Other weighting method
  - for Hungary longer period (2005-2012)
- To what degree is CRI an universal instrument for measuring corruption?
  - Data from other countries, from EU member states & Russia,

Corruption, State Capture & political changes

- The level of corruption is the same, but some changes in network structure. In the second period (2011-2012) the network of highly corrupted actors is more centralised
- Understanding mechanisms
- Analysis at actors' name (from PP dataset we know all actors' name)
- Which kinds of network formations correspond to what kind of rent extraction
- How can structurally similar network configurations arise shortly after the change of government in spite of a wholesale change of actors and policies?

Thank you for your attention!

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www.crcb.eu

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