Government Transparency Institute

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‘Red flags’ of institutionalised grand corruption in EU-regulated Polish public procurement[2]

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The indicator development approach follows closely the composite indicator building methodology developed by the authors making use of a wide range of public procurement 'red flags' (Charron, Dahlström, Fazekas, & Lapuente, 2015; Fazekas, Chvalkovská, Skuhrovec, Tóth, & King, 2014; Fazekas, Tóth, & King, 2016; Fazekas & Kocsis, 2015).

The measurement approach exploits the fact that for institutionalised grand corruption to work, procurement contracts have to be awarded recurrently to companies belonging to the corrupt network. This can only be achieved if legally prescribed rules of competition and openness are circumvented. By implication, it is possible to identify the input side of the corruption process, that is techniques used for limiting competition (e.g. leaving too little time for bidders to submit their bids), and also the output side of corruption, that is signs of limited competition: single bid received. By measuring the degree of unfair restriction of competition in public procurement, a proxy indicator of corruption can be obtained. This indicator, which we call the corruption risk index (CRI), represents the probability of corrupt contract award and delivery in public procurement falling between 0 and 1. Based on qualitative interviews of corruption in the public procurement process in Hungary as well as a review of the literature (OECD, 2007; Pricewaterhouse Coopers, 2013; World Bank, 2009), we identified a broad list of potential components of the CRI, that is 'red flags' indicating corruption risks in public procurement. Of this broader list, only those entered the final CRI which turned out to be significant and substantial predictors of single bidding in line with our proposed model of corrupt rent extraction (more on the regression models used below).

We ended- up having 6 components[3] for the Polish national CRI (Table 1). Each of these is discussed briefly here, for more details see (Fazekas, Tóth, & King, 2013).

1. One of the most straightforward 'red flag' of corruption is single bid submitted. Since we are only examining competitive markets, the apparent lack of competition allows for awarding above market price contracts and extracting corrupt rents.
2. A simple way to fix tenders is to avoid the publication of the call for tenders in the official public procurement journal as this would make it harder for competitors to prepare a bid. This is only considered in non-open procedures as in open procedures publication is mandatory.
3. While open competition is relatively hard to avoid in some tendering procedure types such as open tender, others such as invitation tenders are by default much less competitive; hence using less open and transparent procedure types can indicate the deliberate limitation of competition, hence corruption risks.
4. Different types of evaluation criteria are prone to fiddling to different degrees, subjective, hard-to-quantify criteria often accompany rigged assessment procedures as it creates room for discretion and limits accountability mechanisms.
5. If the submission period, i.e. the number of days between advertising a tender and the submission deadline, is too short for preparing an adequate bid, it can serve corrupt purposes; whereby the issuer informally tells the well-connected company about the opportunity well ahead.
6. If the time used for deciding on the submitted bids is excessively short or lengthened by legal challenge, it can also signal corruption risks. Snap decisions may reflect

[3] An additional component can be potentially added to the CRI: share of the winner in the issuer's market (this requires more extensive. It requires further work which is in progress,

premediated assessment, while legal challenge and the corresponding long decision period suggests outright violation of laws.

For continuous variables above such as the length of submission period, thresholds had to be identified in order to reflect the non-linear character of corruption. This is because most values of continuous variables can be considered as reflections of diverse market practices, while some domains of outlier values are more associated with corruption. Thresholds were identified using regression analysis, in particular analysing residual distributions (for more on this see (Fazekas et al., 2013).

We restricted the sample to experienced issuers of tenders on competitive markets in order to minimize the chances that we are measuring honest errors or inexperience rather than corrupt practices. Thus we only examine tenders in markets with at least 10 contracts awarded throughout 2009-2014, where markets are defined by product type (CPV[4] level 3) and location (NUTS[5] level 1) within each country.

Table 1. Summary of elementary corruption risk indicators ('red flags' in bold)

Proc. phase	Indicator name	Indicator values
submission	Call for tenders publication (non-open procedures)	0=call for tender published in official journal 1=NO call for tender published in official journal
	Procedure type	0=open 1=non-open (restricted, negotiated, tender without competition, competitive dialogue)
	Length of submission period	Number of days between the publication of call for tenders and the submission deadline
assessment	Weight of non-price evaluation criteria	Sum of weights for evaluation criteria which are NOT related to prices
	Length of decision period	number of days between submission deadline and announcing contract award
outcome	Single bidder contract (valid/received)	0=more than 1 bid received 1=1 bid received

In addition to the identification of thresholds in continuous variables, regression analysis was used to ensure "red flags" measure corruption, and to make the indicator comparable across different sectors and countries (where different corruption techniques might be used). In this analysis, we consider "red flags" as indicating corruption only if they predict single bidder contracts. We also control for a number of likely confounders in these regressions. These

[4] CPV=Common Procurement Vocabulary. For more info see: http://simap.europa.eu/codes-and-nomenclatures/codes-cpv/codes-cpv_en.htm

[5] NUTS=Nomenclature of territorial units for statistics. For more info see: http://epp.eurostat.ec.europa.eu/portal/page/portal/nuts_nomenclature/introduction

controls are: (1) institutional endowments measured by type of issuer (e.g. municipal, national), (2) product market and technological specificities measured by CPV division of products procured, (3) contract size (log contract value in EUR), and (4) regulatory changes as proxied by year of contract award.

Regression results indicate that there is considerable market access restriction, hence likely institutionalised grand corruption, going on in Poland during the 2009-2014 period, by and large following the same techniques and 'tricks'. These results on their own demonstrate that corruption is widespread in public procurement. Arriving at robust regression models with considerable explanatory power in Poland while using the same regression set-up and variables as in other EU countries point at the feasibility of cross-country comparisons too.

The logic of our analysis is the following: if not publishing the call for tenders in the official journal for open procedures is associated with a higher probability of a single bidder contract award, it is likely that avoiding the transparent and easily accessible publication of a new tender is typically used for limiting competition. This would imply that call for tenders not published in the official journal becomes part of CRI. Taking another example, if we found that leaving only 5 or fewer days for bidders to submit their bids is associated with a higher probability of a single bidder contract compared to periods longer than 20 calendar days (a more or less arbitrary benchmark category), this would indicate that extremely short submission periods are often used for limiting competition. Then this would provide sufficient grounds to include the '5 or fewer days' category of the decision period variable in CRI. Following this logic, in addition to the outcome variable in these regressions (single bidder) only those variables and variable categories are included in CRI which are in line with a rent extraction logic and proven to be significant and powerful predictors.

Once the list of elementary corruption risk indicators is determined with the help of the above regressions, each of the variables and their categories receive a component weight. As we lack the detailed knowledge of which elementary corruption technique is a necessary or sufficient condition for corruption to occur, we assign equal weight to each variable and the sizes of regression coefficients are only used to determine the weights of categories within variables. For example, if there are four significant categories of a variable, then they would get weights 1, 0.75, 0.5, and 0.25 reflecting category ranking according to coefficient size. The component weights are normed so that the observed CRI falls between 0 and 1. The full definition of components and their weights can be found in Appendix A.

The strength of this composite indicator approach is that while individual strategies of corruption may change as the environment changes, they are likely to be replaced by other techniques. Therefore, the composite indicator is a far more robust proxy of corruption over time than a single variable approach.

In an international comparative perspective, a further strength of CRI is that it balances national specificities with international comparability. On the one hand, it provides a comparative indicator in as much as the logic of indicator building and the underlying indicators are the same in each country. On the other hand, component weights and variable category thresholds (e.g. the definition of accelerated procedure in terms of submission period length differs by country and year) reflect the different national contexts. The same overall scale of country level CRIs (0-1) allows for using the three indices as one scale both for joint analysis and comparative work.

Validity of corruption indicators

While the validity of both corruption risk measures predominantly stem from their direct fit with the definition of high-level corruption, their association with widely used survey-based macro-level corruption indicators as well as with mico-level objective indicators of corruption risks underpin their validity. Below, we report validity tests using the full European sample of TED data which support not only validity for Poland, but also for the whole continent.

Both corruption risk indicators (2009-2013 averages per NUTS region) correlate as expected with the regional European Quality of Institutions index (EQI), population corruption perceptions and self-reported bribery of the same regional representative survey of 2013 (Charron, Dijkstra, & Lapuente, 2010) (Table 2).

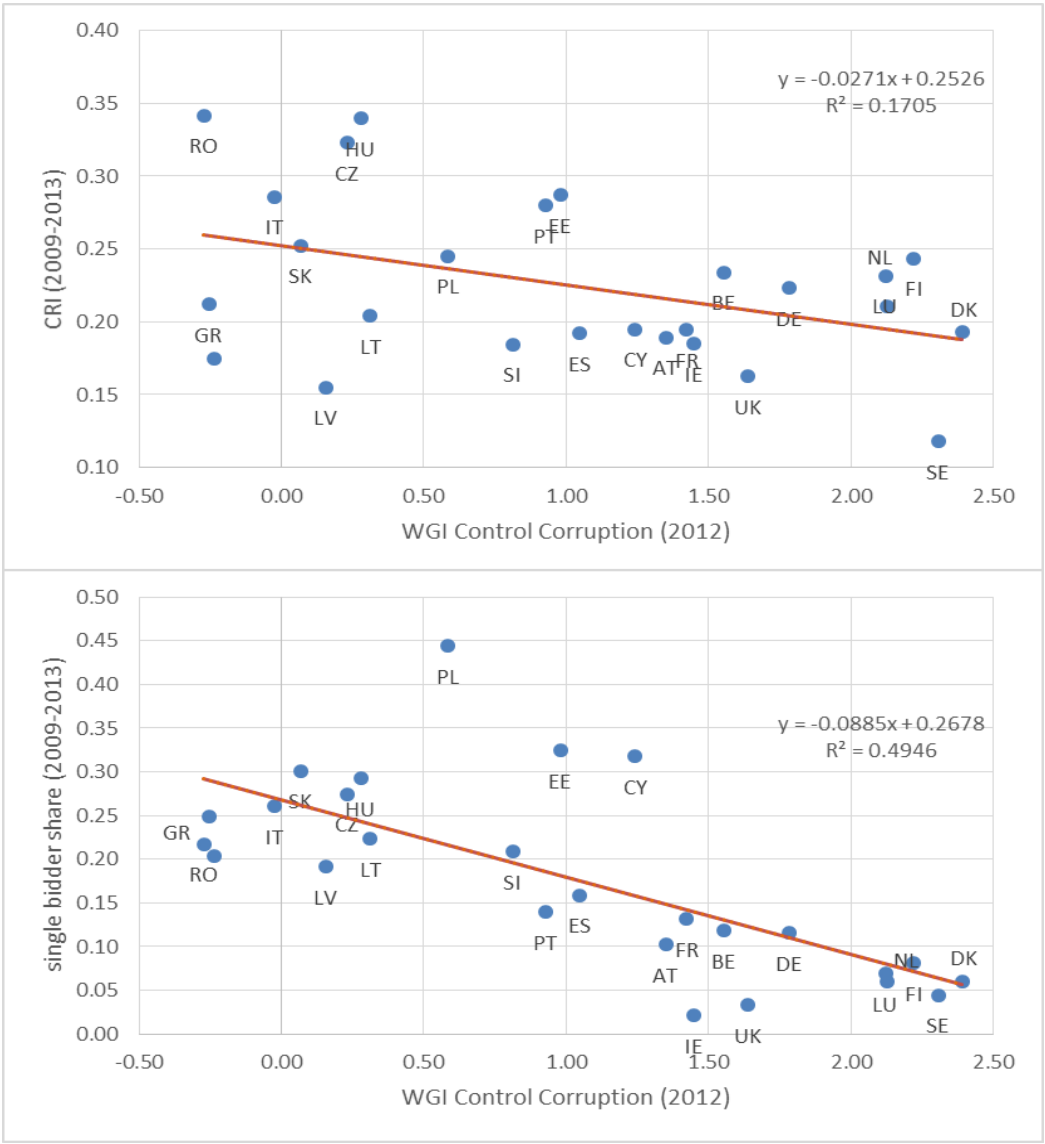
Table 2. Bivariate Pearson correlation between 'objective' measures of regional corruption and survey-based indicators

Variable	% single bidder	Regional CRI	N
% single bidder		0.69*	185
Regional CRI	0.69*		185
EQI (2013)	-0.61*	-0.54*	185
Corruption perception	0.55*	0.47*	185
Reported bribery	0.53*	0.59*	185

Source: TED and (Charron, Dahlström, Fazekas, & Lapuente, 2015)
*Note: * = significant at the 5% level*

On the level of countries, one simple indication that the corruption indices are valid is their association with widely acknowledged and used corruption indices such as the World Bank's Control of Corruption indicator. (Figure 1: top panel for CRI, bottom panel for the share of single bidder contracts). While validity tests are confirmatory in both cases, the association is much stronger for the single bidder indicator than for CRI.

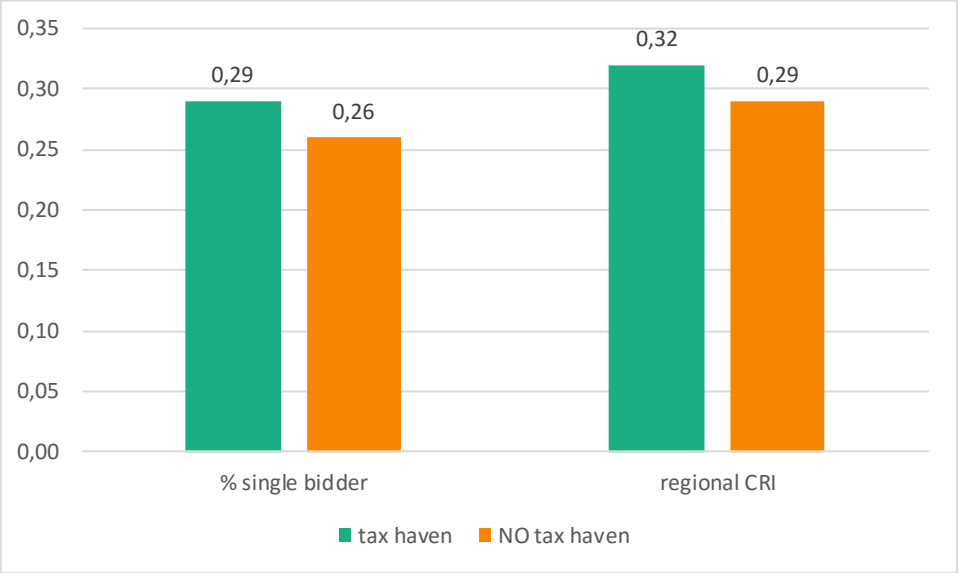
Figure 1. Bivariate relationship between WGI-Control of Corruption (2012) and CRI and share of single bidder contracts (both are period averages for 2009-2013)



Source: TED

In addition to macro-level evidence of validity, two micro-level 'objective' risk indicators are inspected for further exploring validity: procurement suppliers' country of origin and contract prices. It is expected that higher corruption risk contracts are won by companies registered in tax havens as their secrecy allows for hiding illicit money flows (Shaxson & Christensen, 2014). In line with our expectations there is a marked and significant difference with regards to both indicators (Figure 2).

Figure 2. Average corruption risks of public procurement suppliers registered abroad, EU26, 2009-2013, Ncontract=14 909



Source: TED

We also expect corruption to drive prices up. A simplistic, albeit widely used, indicator of price in the absence of reliable unit prices is the ratio of actual contract value to initially estimated contract value (Coviello & Mariniello, 2014). As expected both the single bidder indicator and CRI are associated with a higher price ratio. Single bidder contracts are associated with 7% higher contract value, while contracts with 1 CRI higher are associated with 9% higher contract value (Table 3).

Table 3. Linear regression explaining relative contract value, EU26, 2009-2013

dependent variable	relative contract value (contract price/estimated price)	
independent variables		
single bidder contract	0.071	
CRI		0.090
sign.	0.000	0.000
each regression contains constant controls: sector of contracting entity, type of contracting entity, year of contract award, country of contract award, main product market of procured goods and services, and contract value		
N	164,711	164,711
R^2	0.088	0.086

Source: TED

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Appendix A – weights of CRI components

Table A1. Component weights of CRI reflecting variable and category impact on corruption outcomes, normed to have an overall sum of 1

Variable	component weight
single received/valid bid	0.167
no call for tender	0.167
procedure type	
1=accelerated negotiated	0.125
2=accelerated restricted	0.000
3=award without publication	0.167
4=competitive dialogue	0.000
5=negotiated with competition	0.042
6= negotiated without competition	0.083
ref. cat. 7=open	0.000
8=restricted	0.042
missing procedure type	0.000
weight of non-price evaluation criteria	
1: 0 <= non-price criteria weight <= 5	0.055
2: 5 < non-price criteria weight <= 20	0.167
3: 20 < non-price criteria weight <= 40	0.110
4: 40 < non-price criteria weight <= 67	0.000
5: 67 < non-price criteria weight <= 100	0.000
missing non-price criteria weight	0.000
short submission period	
3: length of submission period: 0-25 days	0.083
2: length of submission period: 26-42 days	0.000
1: length of submission period: 43-1000 days	0.167
4: missing data	0.000
5: there is or no call for tender	0.000
length of decision period	
1: length of decision period: 0-18 days	0,167
2: length of decision period: 19-29 days	0.083
3: length of decision period: 30-63 days	0.042
4: length of decision period: 64-10000 days	0.000
5: missing length of decision period	0.125
6: there is or no call for tender	0.000