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# **Breaking the cycle? How (not) to use political finance regulations to counter public procurement corruption<sup>3</sup>**

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## **Abstract**

There are widespread perceptions and countless documented cases of tight-knit networks of politicians and businessmen colluding for allocating public procurement contracts in return for political party donations. In the absence of systematic evidence, neither the magnitude of the problem nor the effectiveness of policies curbing such corruption is well-understood. In order to advance our understanding of these phenomena, this paper tests whether political financing regulations can contribute to controlling corruption in public procurement. We utilize aggregated official micro-level data on almost 3 million contracts awarded across 29 European countries in 2009-2014 to measure the risk of high-level institutionalised corruption using novel proxy indicators. Legislation regulating political finances are directly measured by coding national laws in 2009-2014. In cross-country panel regression and difference-in-difference models, we find that introducing additional political financing restrictions does not have a measurable negative impact on public procurement corruption risks. In fact, the observed effect is positive in most models. The observed relationship remains the same for most constitutive components of political financing regulations. Several challenges remain for a conclusive judgement of political party financing regulations' effectiveness to curb corruption such as measuring implementation rather than legislation, allowing for longer lead-time for regulatory impact, or considering institutional inter-dependencies.

# 1. Introduction

“under the cover of irregular funding to the parties, cases of corruption and extortion have flourished and become intertwined [...] What needs to be said, and which in any case everyone knows, is that the greater part of political funding is irregular or illegal. The parties and those who rely on a party machine [...] have had, or have, recourse to irregular or illegal additional resources. If the greater part of this is to be considered criminal pure and simple then the greater part of the political system is a criminal system. I do not believe there is anybody in this hall who has had a responsibility for a large organisation who can stand up and deny what I have just said.” (speech by Bettino Craxi in della Porta & Vannucci, 1999, p. 2).

There are presumably very few more succinct and honest descriptions about the corrupting potential of political party finances ever made by a political leader than this speech by Bettino Craxi, long-term leader of the Italian Socialist Party, made in the Chamber of Deputies in 1992 shortly after he won national elections. The phenomenon he describes is of global reach, affecting high as well as low income countries’ democratic representation and quality of institutions (OECD, 2013).

Legal and illegal money in politics has the potential of corrupting the party system and democratic institutions whenever it is used to support candidates in exchange for preferential treatment in the allocation of public funds. Donors can be paid back through a range of channels such as favourable regulation, sale of public property, or preferential access to government contracts. Among these, donating to election campaigns<sup>4</sup> in return for public procurement contracts is a corrupt exchange which is widely considered as one of the most frequently used mechanisms, and has in turn, received the highest scrutiny. It has been uncovered in diverse countries such as Czech Republic, Brazil, Italy, US, Romania, and Russia even though evidence in many cases is only suggestive and indirect (Boas, Hidalgo, & Richardson, 2014; Bromberg, 2014; Doroftei & Dimulescu, 2015; Mironov & Zhuravskaya, 2011; Počarovský, 2014). It is hardly a surprise that allocating government contracts to favoured companies is a prime method for returning campaign donations, as it accounts for large amounts of public spending, it can be easily centralised in the hands of a few, and contract award decisions enjoy a wide discretion of political office holders.

However, evidence on what works for breaking, or curbing this mutual flow of legal or illegal political financing and government contracts to favoured companies is scant. Political financing regulations represent a key set of anticorruption instruments which received some academic attention and considerable support from international organisations such as GRECO or OECD. They are attractive as they seem to tackle directly the root of the problem. However, no systematic study exists which establishes whether and under which conditions such regulations are effective in reducing public procurement corruption linked to campaign finances. The only comparable study to ours looks at variation across states within the US, taking corruption-related convictions as a measure of corruption which implies an arguably much less specific impact mechanism (Milyo & Cordis, 2013).

It may well be that tackling the corrupting effect of political financing in public procurement directly by party financing regulations is not the most effective strategy or that it requires a

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<sup>4</sup> The terms political financing, party financing, campaign finances, campaign financing are used interchangeable throughout this article as they are by and large related to the same set of transactions.

minimum amount of effective tools to lead to any discernible effect. Alternative policies in public procurement or broader ‘indirect anticorruption policies’ such as meritocratic bureaucracies could play an enabling role or be more effective tools (OECD, 2007; Rothstein, 2011).

In order to start unpacking these issues and to provide the first direct evidence of political financing regulations’ impact on corruption and favouritism in government contracting, we set out to explore the following research question:

Whether and under which conditions do political financing regulations contribute to controlling high-level institutionalised corruption in government contracting?

Although we only provide evidence on the macro patterns of this relationship across Europe, the innovative data and research design provide initial suggestions on what works and they lay the foundations for further research teasing out the details of each causal chain and promising tools. Our approach is based solely on ‘objective’ administrative data on both sides of the regression models. Corruption in public procurement is measured over time in 29 European countries by two ‘objective’ corruption risk indicators: single bidding on competitive markets and a composite score labelled as ‘Corruption Risk Index’. Political party financing regulations are measured with data arising from the new large-scale European research project DIGIWHIST<sup>5</sup> and following a methodology pioneered by the International Institute for Democracy and Electoral Assistance (IDEA)<sup>6</sup>. By directly measuring changes in legislative constraints on political party financing such as bans on donations from corporations, we can begin to identify the causal impact such regulations have.

The article is structured as follows: first, the theoretical framework is set out, which conceptualises the link between political party finances and government contracts as a cycle of corrupt exchanges. Second, the administrative datasets used and innovative indicators of both theoretical concepts – political financing regulations and public procurement corruption - are described. Fourth, results are presented which point at how generally political financing regulations are ineffective in curbing public procurement corruption at best. Finally, a set of further research avenues are proposed which could build on the proposed data and methodology, but could address some of the limitations we had to face.

## 2. Theoretical framework

There are two key terms playing a central role in our theoretical framework: political financing and high-level institutionalised corruption in government contracting. Each is defined briefly before the introduction of the theoretical framework. Political financing in electoral democracies refers to the “(legal and illegal) financing of ongoing political party activities and electoral campaigns (in particular, campaigns by candidates and political parties, but also by third parties)” (Falguera, Jones, & Ohman, 2014, p. 2). Hence, regulation of political financing encompasses diverse regulatory tools aiming, among others, to set limits on donations (e.g. bans on some types of donors or donation amounts), party spending (e.g. upper ceiling of how much a party can spend on an election), and public funding (e.g. bans on using government funds for party purposes). Political financing regulations often also contain provisions for fines and punishment for misconduct.

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<sup>5</sup> [digiwhist.eu](http://digiwhist.eu)

<sup>6</sup> <http://www.idea.int/political-finance/>

High-level institutionalised corruption is a distinct phenomenon from other diverse forms of corruption which have been discussed in the literature such as bribery or bureaucratic corruption (Heidenheimer & Johnston, 2001; Johnston, 1996). Given the narrow focus of the empirical analysis of public procurement data, it is sufficient to develop a corruption definition which closely fits this context, (OECD, 2007). By implication, the corruption definition focuses exclusively on high-level institutionalised corruption or government favouritism, as isolated instances of low-level bribery is relatively uncommon in public procurement (Fazekas, Tóth, & King, 2013b). In public procurement, institutionalised grand corruption refers to the allocation and performance of public procurement contracts by bending prior explicit rules and principles of good public procurement in order to benefit a closed network while denying access to all others (Mungiu-Pippidi, 2006; North, Wallis, & Weingast, 2009; Rothstein & Teorell, 2008). The goal of such corruption is to steer the contract to the favoured bidder without detection, often recurrently and in an institutionalised fashion (World Bank, 2009). This can be done in a number of ways, including avoiding competition (e.g., unjustified sole sourcing or direct contract awards), favouring a certain bidder (e.g. tailoring specifications to a particular company), and sharing insider information (Fazekas, Tóth, & King, 2013a). Such corruption may involve bribery and transfers of large cash amounts as kickbacks, but it is more typically conducted through broker firms, subcontracts, offshore companies, and bogus consultancy contracts. By implication, not everything designated as corruption in this article represents illegal activity.

## **2.1 The cycle of corruption, government contracts, and party funding**

The cycle of high-level institutionalised corruption in government contracting and legal or illegal political financing is best conceptualised as an exchange of favours between private and public actors on a regular, highly institutionalised basis (the discussion extensively builds on della Porta & Vannucci, 1999). It consists of a stable flow of mutual favours - private money and public contracts – among the high-level members of the corrupt network.

The exchange at the heart of this corrupt cycle is about a favour from private to public actors such as money or in-kind benefits in return for preferential treatment in public procurement tenders provided by public actors. In order to grant access to government contracts, public actors, i.e. candidates, must win elections which is a risky endeavour requiring considerable financial resources. Hence, political party and campaign donations represent a major form of private to public favours supporting a corrupt network. For making the whole enterprise worthwhile, that is lucrative, private actors (companies, etc.) need to extract rents from government contracts: they should be productive enough to benefit from higher than standard competitive prices or lower than standard competitive quality. The desire to keep such money flows secret makes the use of high secrecy jurisdictions for policy capture and rent extraction so frequent (Tax Justice Network, 2013). As courts are typically not available to enforce agreements and contracts among members of a corrupt group, they have to develop private and informal means for controlling each other's actions (Grodeland, 2005). Trust among key individuals and mutual blackmail are central to collective action of captor groups (Gambetta, 2009; Lambsdorff, 2002). Corrupt groups achieving intra-group trust and effective means of enforcing agreements have the capacity to broker deals across many months, even years, making the exchange of campaign donations and government contracts only approximate (i.e. not necessarily 100 EUR of donation for 200 EUR of contracts) with payments belonging to a broader scheme rather than a narrow one-to-one exchange.

In the cycle of high-level institutionalised corruption, public procurement, and political financing, actors are typically numerous, span through the public-private divide, and control multiple key decision making positions in both spheres. In a typical case, there are four different types of actors involved (della Porta & Vannucci, 1999; Gounev & Bezlov, 2010; Szántó, Tóth, & Varga, 2012; Wedel, 2003): i) politicians, ii) bureaucrats and law enforcement agents; iii) entrepreneurs, and iv) brokers. Politicians, bureaucrats, and members of law enforcement agencies (e.g. prosecutors, judges) are the ones who can influence the content of government contracts and the procedures regulating their award. As long as they command sufficient discretion in public decision making (both in specific tenders and the rules governing contract award) they can maintain the flow of public favours to private actors. As they have to compete for key decision-making positions, they need substantial private resources to gain those positions, in particular campaign donations (OECD, 2014). Entrepreneurs manage the companies through which the corrupt network extracts rents from government contracts and they finance political party machinery and campaigns (Levi & Reuter, 2006). Companies benefitting from favouritistic government contracts have to be sufficiently well-managed and productive to be able to earn rents on top of the real cost of contractual delivery. The extracted rents have to be channelled back to political parties and candidates or used for private consumption of corrupt actors. Distributing rents through cash transfers, offshore accounts, and company networks without detection requires a great deal of complexity and opacity, which also implies a formidable management problem from the viewpoint of the corrupt network (i.e. who got which amount when and how). Various types of brokers may play a crucial role in the cycle of corruption, contracts, and political finances by providing expert technical knowledge and facilitating inter-personal trust in the absence of formal institutions for enforcing contracts (Jancsics & Jávör, 2012; Wedel, 2012). Expert technical knowledge concerns the technologies of corruption and related activities such as how to hide large money flows behind offshore accounts or run open public procurement procedures in a biased fashion guaranteeing the success of the pre-selected bidder. Facilitating within-corrupt group trust is done for example by serving as a bridge between individuals lacking any prior personal connection or establishing intra-corrupt group accounts and financial controls. Such diverse set and large numbers of actors can be assembled in a multitude of organisational forms ranging from decentralised, loose networks to highly hierarchical organisations following a top-down chain of command.

The central characteristic of the cycle of corruption, contracts, and political financing is that it trespasses the classic and in most cases legally well-established public-private divide. On the one hand, private actors get influence over government decisions on contracts; while on the other hand, political actors get influence over private companies' decisions on finances, profit allocation, hiring or subcontracting (Hellman, Jones, & Kaufmann, 2003; Rothstein & Torsello, 2013). Private actors achieve access and influence over public procurement tenders through their political party or campaign contributions (OECD, 2014) which sometimes even take the form of a payment for political position and decisions. See for example the campaign contributions of shell companies in Russia delayed just after election results are known, suggesting a sort of bonus for successful politicians (Mironov & Zhuravskaya, 2011). It is certainly not the only way to secure access and influence, in fact many companies are likely to use a combination of strategies (Rajwani & Liedong, 2015). Public actors achieve access and influence over private decisions through their informal ties to entrepreneurs by using the 'revolving door', or even by simultaneously holding public and

private offices. In addition, the public buyer's post-award power of withholding contract signature, delaying payments or demanding extra-contractual payments all represent effective tools to influence private actors.

The cycle of corruption, contracts, and party financing relies on the capacity of each the participating actor to deliver on corrupt promises. Regarding private to public favours, delivering according to corrupt deals requires the unchecked capacity of private actors to provide campaign contributions to political actors. Regarding public to private favours, keeping corrupt promises requires candidates (i.e. political actors) to win elections and control key decision making positions in the bureaucracy which is the function of their own resources as well as that of their opponents. Due to its circular logic of such corrupt exchanges, it is sufficient to disrupt the flow of favours in only one point to disintegrate the whole corrupt network. Nevertheless, any effective disruption has to be systemic (Rothstein, 2011), cutting the flow of mutual favours completely, as most corrupt networks tend to be wealthy and adaptive to changing environmental conditions. The two sets of exchanges give rise to two distinct anticorruption strategies each of which on its own is sufficient to break the whole cycle if implemented effectively.

1. Controlling private favours:

This means limiting the capacity of private actors to use political financing for creating informal, particularistic relationships with selected political actors. This set of strategies encompasses by and large all political financing regulations (Etzioni, 2009) such as disallowing some types of private contributions to political parties and candidates, providing public funding to political parties so that they are less dependent on private contributions, curbing spending by political parties so that the need for money in elections is lessened, and strengthening oversight to enforce existing rules.

2. Controlling public favours:

This implies limiting the capacity of public actors to return particularistic favours in particular by increasing the uncertainty of acquiring and holding on to political power and bureaucratic position. While a wide set of tools may contribute to this goal, creating and sustaining an increasing competition among political parties and candidates is of prominence (Eggers, 2014). Healthy electoral competition, among others, depends on allowing new entrants to contest established parties and making sure that no party commands resources making competition unfair.

## **2.2 Political financing regulations as a double edged sword**

Political financing regulations influence both sets of exchanges hence can be part of both types of anticorruption strategies. However, the same sets of instruments may act in contradictory directions depending on the mechanism dominating over others. The discussion of each mechanism and its empirical support underpin the hypotheses tested in this article.

First, tightening political financing regulations can make it harder for companies to donate to political parties demanding government contracts in return and also can render political parties more independent of such donations by for example increasing formula-based public funding. The anticorruption potential of this mechanism is demonstrated by a range of empirical studies documenting the link between corporate donations and public procurement

success. For example, in Brazil, companies' campaign contributions translate into additional contracts won worth 14 times more than the contributions (Boas et al., 2014), the same figure in the US is only 2.5 times (Bromberg, 2014). Unfortunately, neither of these studies could establish how much actual performance is expected in return for these contracts from suppliers making the true amount of corrupt rents earned unknown. A much more direct evidence on the benefits of political party donations in the US (outside of procurement) comes from the sentencing practice of the Securities and Exchange Commission which handed out considerably softer judgements for the CEOs of companies donating to political parties such as on average 6 fewer years of prison sentence (Fulmer & Knill, 2013). In Russia, companies with at least 5% revenue from procurement contracts increase their illicit political party financing transfers by about half a few weeks around elections and gain substantially more procurement contracts than their non-donating peers afterwards (Mironov & Zhuravskaya, 2011). In Latvia, companies whose campaign contributions were not diversified, i.e. only contributed to the governing party unexpectedly losing office in 2002, lost roughly 30% of their revenues compared to the control group (arguably to a large degree due to lost procurement income) (Dombrovsky, 2008). Emerging micro-level tendering evidence from Czech Republic and Romania suggests that red flags such as single bidder contracts more typically accompany firms donating to political parties than their comparable peers (Doroftei & Dimulescu, 2015; Počarovský, 2014). Such evidence of the particularistic link and the theoretical argument under a corrupt exchange point at the following testable hypothesis:

H<sub>1</sub>: Tightening political financing regulations contributes to curbing high-level institutionalised corruption in government contracting.

The mechanism underpinning this hypothesis can come in a number of forms, whereby the timing of reform and its effect is of crucial importance. Electoral campaign donations from private actors are designed to help candidates for political position to gain office. These donations are made to electoral campaigns before the voting outcome is known while payback is only possible if the candidate wins. This particular sequencing of the corrupt cycle suggests that political financing regulations may not be able to curb high-level corruption evenly over time. Rather, political party financing regulations introduced before elections can have an effect of corruption in public procurement after elections only.

Second, tightened political finance regulations can influence the resources political parties and candidates have for competing against each other, hence the nature and intensity of electoral competition. One more widely tested relationship in this respect is the effect of public funding on party competition and structure with the overwhelming conclusion that the effect is negligible although in some cases it might have helped selected parties to consolidate their organisations (Pierre, Svåsand, & Widfeldt, 2000; Scarrow, 2006). More generally, the amount of party finance regulations such as payout thresholds across Europe has been shown to have no impact on the emergence of new parties and the permeability of the party system; but having a negative impact on the rate of entry of new parties into national parliaments (van Biezen & Rashkova, 2014). Such lack of effect comes as no surprise given the evidence on the lack of relationship between money and electoral success for example in the US (Milyo & Cordis, 2013). However, when the financial resources available for competing parties and candidates are greatly unequal political competition can be distorted which can be achieved by restrictions on the kinds of funds parties and candidates can collect (Potter & Tavits, 2015). Achieving disparity in funding can be



regulated through political finance laws enacted by incumbent parties for example was the case in Romania (Roper, 2002). The relationship between deficient electoral competition and public procurement corruption in countries like Italy and Romania provides further support for the claim of potentially damaging effect of political finance regulations (Coviello & Gagliarducci, 2010; Fazekas, 2015; Klasnja, 2016). Taken together, the possibility that political finance regulations are strategically modified by incumbents to deprive their political opponents of crucial resources suggest the following counter-hypothesis:

H<sub>2</sub>: Tightening political financing regulations increases high-level institutionalised corruption in government contracting.

Interestingly, when corrupt governments pretend to reform party finances to hide their increasing corrupt activities is empirically equivalent, at least on the macro level, but implies a different mechanism.

Third, both of these hypotheses, however, can be confronted with a counter-hypothesis of no impact as the above described mechanisms might not work effectively or other impacts may even override them which argument is supported by the only comparable study finding no relationship (Milyo & Cordis, 2013). There are many indications that political financing regulations have little bearing on actual practices, especially in countries where effective anti-corruption tools are in great need (Global Integrity, 2015). If regulations are not implemented or only selectively implemented they are unlikely to influence corruption risks in public procurement. For example, a ban on corporate donations can be easily bypassed by organising private donations by corporations or donating to NGOs linked to parties rather than parties directly (Bromberg, 2014). In addition, looking at the whole repertoire of establishing particularistic links between private and public decision makers, political party donations can be replaced by alternative strategies such as companies hiring ex-politicians. Moreover, if party finances are truly only marginally important for party success regulating them would achieve little in way of influencing electoral results and corruption. If any of these mechanisms plays a major role in linking political financing regulations to procurement corruption, we can expect that:

H<sub>3</sub>: Tightening political financing regulations has no impact on high-level institutionalised corruption in government contracting.

## **3. Data and indicators**

### **3.1 Public procurement tender data**

The database derives from public procurement announcements in 2009-2014 in the EU27 (EU28 minus Malta <sup>7</sup>) plus Norway and Switzerland (European Economic Area). Announcements appear in the so-called Tenders Electronic Daily (TED), which is the online version of the 'Supplement to the Official Journal of the EU, dedicated to European public procurement. (DG GROWTH, 2015).<sup>8</sup> The data represent a complete database of all public procurement procedures conducted under the EU Public Procurement Directive by member states or the European Commission regardless of the funding source (e.g. national, EU funded). The database was released by the European Commission - DG Market which also has conducted a series of data quality checks and enhancements. TED contains variables appearing in 1) calls for tenders, and 2) contract award notices. All the countries' public

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<sup>7</sup> Malta is excluded as it has too few contracts awarded in this period to run the regression analysis.

<sup>8</sup> Source data can be downloaded from: <https://open-data.europa.eu/en/data/dataset/ted-csv>

procurement legislation is within the framework of the EU Public Procurement Directive and are therefore directly comparable (European Commission, 2014). The source TED database contains over 2.8 million contracts of which 2.3 million are used in the analysis due to exclusions: 1) countries with too few observations such as Malta, 2) contracts below mandatory reporting thresholds<sup>9</sup>, and 3) contracts on non-competitive markets<sup>10</sup>.

## **3.2 Measuring risks of high-level institutionalised corruption in public procurement**

Developing comparative indicators of institutionalised grand corruption in public procurement for all European countries represents a key methodological innovation of this article. The approach follows closely the corruption risk 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).

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 open, fair, and transparent competition are circumvented. By implication, it is possible to identify the input side of the corruption process, that is fixing the procedural rules for limiting competition, and also the output side of corruption, that is signs of limited competition. By measuring the degree of unfair restriction of competition in public procurement by modelling such input-output relations, proxy indicators of corruption can be obtained. Full details of the measurement approach and the resulting indicators can be found in Appendix A.

## **3.3 Political financing legislation in Europe**

For the purpose of our analysis we collected yearly information on the existence and scope of political finance regulations in all 29 countries between 2009 and 2014. The primary source of information is the openly available database EuroPam, a component of the project DIGIWHIST on fiscal transparency and anti-corruption tools<sup>11</sup>. EuroPam largely relies on the political finance coding framework included in the Political Finance Database published by International IDEA.

EuroPam presents a series of thematic categories, along which information on more specific regulatory tools is mapped. The four general categories include: bans and limits on private income, public funding, regulations on spending, and reporting, oversight and sanctions. Each of these categories has sub-categories within it, e.g. in the first category, bans and limits to private income, the sub-categories include: a) bans to foreign donations, b) bans on corporate donations, c) bans on donations from trade unions, d) bans on anonymous donations, e) other bans on donations and f) donation limits. Finally, within these categories there are individual questions registering the existence of a particular tool. For example, within bans on foreign donations, the database registers separately bans for political parties and bans for individual candidates. The database contains a total of 37 individual items. A full list of items and their categories and sub-categories is provided in Appendix C.

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<sup>9</sup> <http://www.ojec.com/threshholds.aspx>

<sup>10</sup> That is markets with less than 10 contracts in the observation period suggesting too little spending for sustaining multiple competing firms. Here, markets are defined by product market and geographical location.

<sup>11</sup> Europam.eu

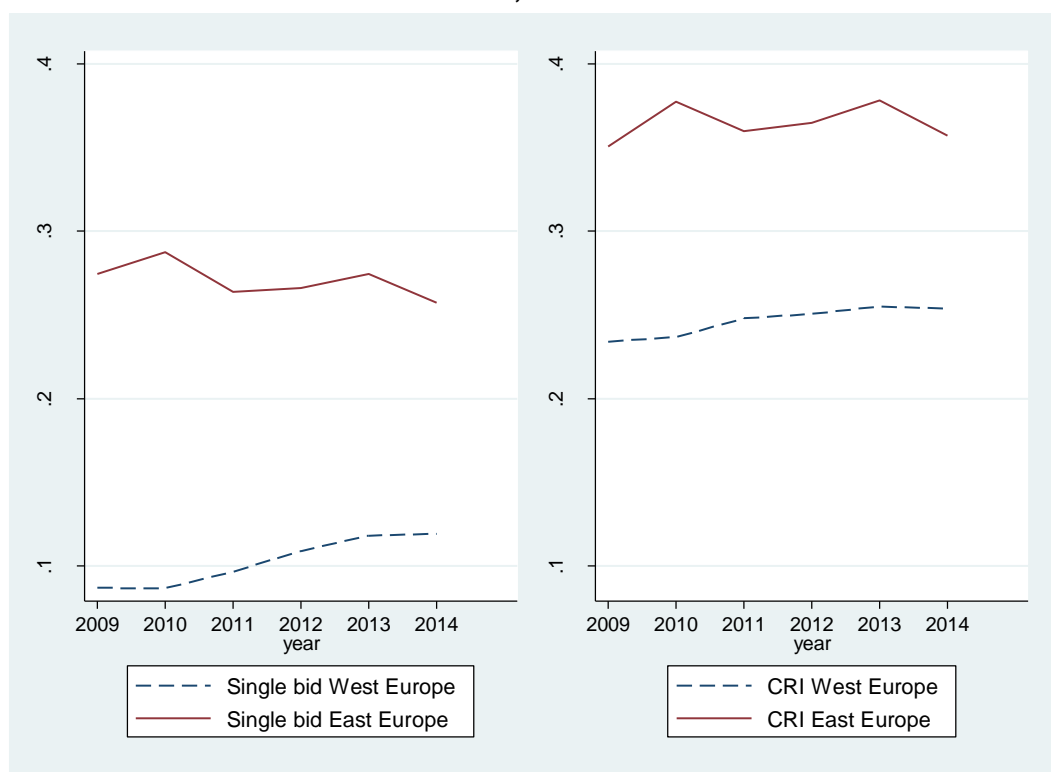
For the years 2012 and 2015, EuroPam offers a matrix of all items and registers the existence of each item with a 1, and its absence with 0. We take a simple average of all items per year per country in order to build a continuous measure of political finance regulation score, ranging from 0 to 1. The change of this score by year will capture any increase or decrease in the extensiveness of political finance regulations.

In order to count on a full panel, we manually coded the existence of each individual item per country for the years 2013 and 2014, as well as 2009-2011. EuroPam does not record the specific year in which a regulatory item is introduced, but rather the existing stock of regulations in the years 2012 and 2015. By implication, the authors manually coded laws to create a country-year panel database based on the information provided by EuroPam on the legislation that contains each particular item<sup>12</sup>.

## 4. Descriptive statistics and trends

Figure 1 shows the general trends in the average ratio of our two measures of corruption risk: single bidders and CRI by year and region. Although the two measures capture slightly different phenomena, their behaviours over region and time resemble greatly. They both show a stark difference between corruption risks in Eastern and Western Europe, with the former registering between 1.5 and 5 times higher levels. Additionally, both measures show a slight upward trend for Western Europe and in the case of single bidder a slight downward trend for Eastern Europe, suggesting convergence over time.

**FIGURE 1 : CORRUPTION RISK TRENDS, 2009-2014**

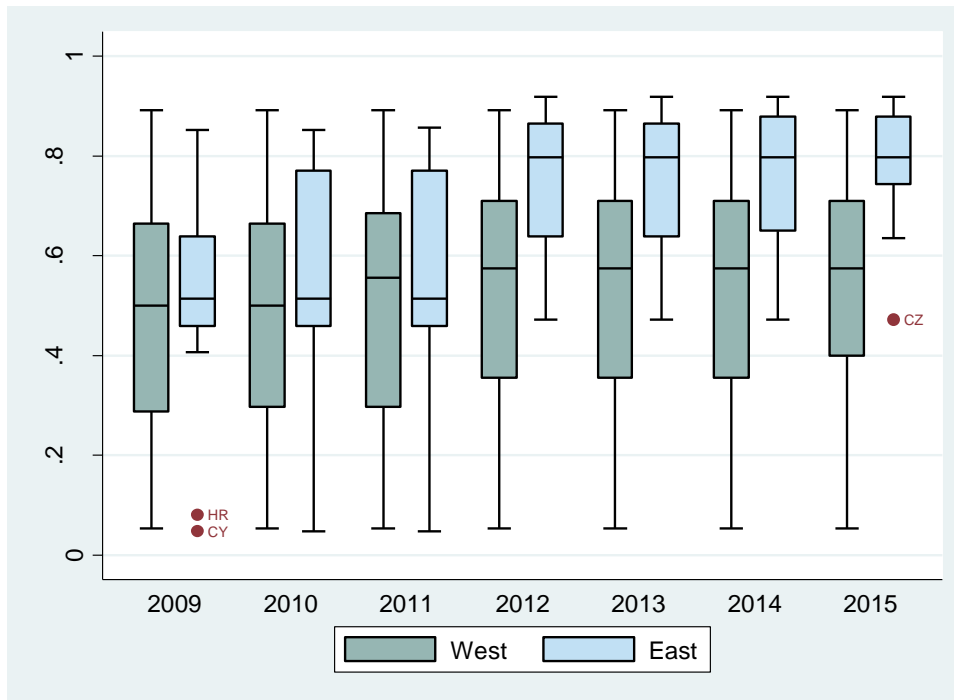


The boxplot in Figure 2 shows the summary of the distribution of our main explanatory variable, the score of political finance regulations by year and region. It can be noted that

<sup>12</sup> As EuroPam is still in a pilot stage, both EuroPam data and our own coding may be subject to minor changes in the future.

while the median in both regions remains similar until 2011, Eastern Europe experiences a stark jump in regulation for the following years. It can also be observed that while the spread of the distribution is rather large throughout the period for Western Europe, Eastern countries cluster around similar values of political finance score towards the end of the period.

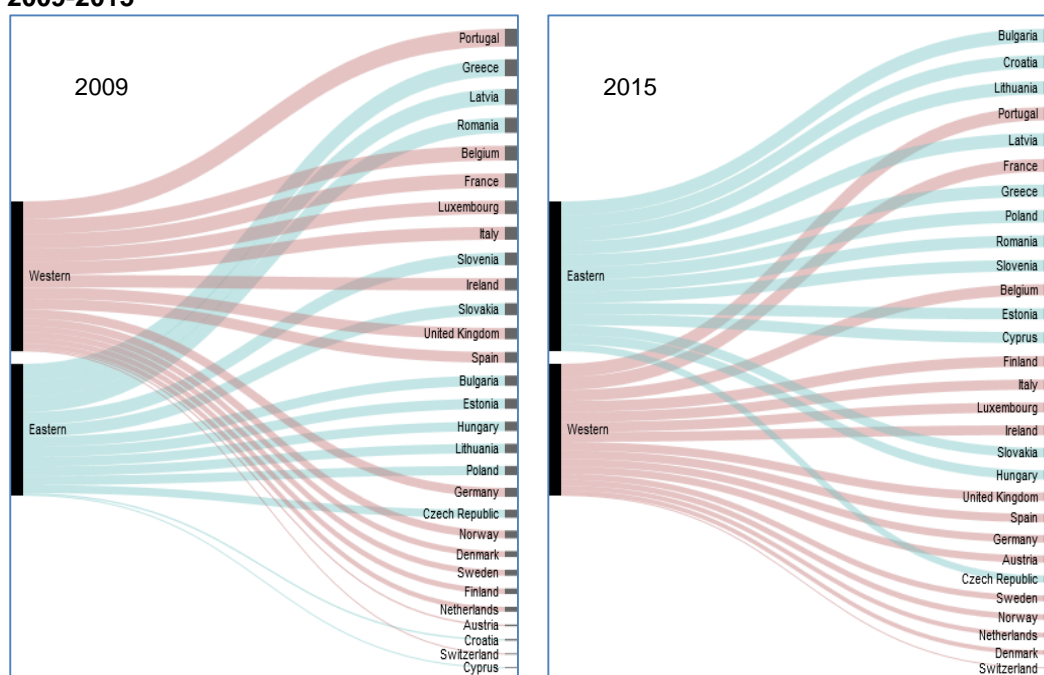
**FIGURE 2 : DISTRIBUTION OF POLITICAL FINANCE REGULATIONS SCORES, 2009-2015**



Finally, the Sankey diagrams in Figure 3 (i.e. diagrams where arrow width reflects country score and country ordering displays their relative ranks) show the comparison in country rankings in political finance score between 2009 and 2015. It ratifies the previously mentioned pattern by which Eastern countries take the lead and cluster at the end of the period, suggesting a strong wave of political finance regulation reforms.

We include more details of the descriptive statistics of the political finance score in Appendix B.

**FIGURE 3 : POLITICAL FINANCE REGULATIONS RANKINGS AND SCORE, COMPARISON 2009-2015**



## 5. Results

In order to test the effects of a series of political finance anti-corruption mechanisms on corruption risk, we conduct a series of panel data regressions in our 29 European countries between 2009 and 2014. In particular the following model is estimated:

$$CorrRisk_{i,t} = \alpha_i + \beta PolFin_{i,t} + \beta X'_{i,t} + \varepsilon_{i,t}$$

Where *CorrRisk* is a measure of corruption risk in country *i* in year *t*, which will take two alternative forms in our estimations: the average of the ratio of tenders for which only one bidder submitted an offer (Single Bidder), and the more comprehensive corruption risks measure also incorporating tendering red flags (CRI). The main explanatory variable that we put to test is *PolFin*, a continuous score reflecting the level of political finance regulations existing in country *i* in year *t*, ranging from 0 (no political finance regulations) to 1 (highest possible level of financial regulations). The aspects of regulations that are considered in this analysis follow the thematic structured proposed by the EuroPam database, where the main fields of regulation comprise: a) bans of foreign donations to parties and candidates; b) bans on trade union donations; c) bans on anonymous donations; d) other bans on donations; e) reporting standards from parties and candidates and f) political finance oversight institutions. Our indicator is a simple average of the existence of all items belonging to all thematic categories, as listed in the Appendix A. In addition, *X* represents a vector of covariates that will differ by the type of estimation carried out, but in its fullest form include, per country *i* and year *t*: a measure of annual GDP growth, a measure of GDP per capita, an approximate measure capturing regulatory burden by the cost of starting up a business, a proxy measure of technological progress and citizen engagement capturing the number of internet users; a dummy for Eastern European countries and a final proxy measure capturing the level of industrial development of the economy by computing the value added of the industrial sector as % of national GDP. All these covariates are in theoretical terms potential additional explanatory factors for corruption risks in a country. Overlooking them could easily lead to

omitted variable bias where changes in both the explanatory and dependent variable may be driven by these omitted aspects. Finally,  $\varepsilon$  is the random error measure by country  $i$  in year  $t$ . As previously mention, our period of analysis spans from 2009 to 2014.

Table 1 presents the results of the baseline estimations adapted to three different multivariate regression analyses: a pooled OLS regression with country-clustered standard errors, a first-differenced estimation and a fixed effects panel data regression. The pooled OLS estimations (models 1 and 2) have the objective of presenting a first approximation to the association between our political finance score and the risk of corruption by maximizing the number of observations and capturing the effect of the levels of regulation, while disregarding changes over time. Although we estimate the pooled OLS regressions by clustering the standard errors by country, this measure does not fully take into account path-dependency. A second alternative we report is the first-differenced estimation (models 3 and 4), in which only yearly changes in the explanatory factors are regressed on yearly changes on our corruption risk indicator. These estimations only take into account contemporaneous associations instead of the lagged effects of the regressors. A final and preferred estimation type is fixed effects (models 5 and 6) where path-dependency is taken into account by adding a country-specific constant term to the baseline estimation and therefore any potential time-invariant significant explanatory variables (such as legal tradition, cultural norms or religious composition) are not biasing the results. Moreover, fixed effects is a more efficient estimator than first-differences whenever  $T > 2$ . Random effects estimations were disregarded as we had indication that they did not pass the random-versus-fixed effects Hausman test.

**TABLE 1: BASELINE ESTIMATIONS OF THE EFFECT OF POLITICAL FINANCE REGULATIONS ON CORRUPTION RISK**

		(1)	(2)	(3)	(4)	(5)	(6)
		Pooled OLS	Pooled OLS	First Diff	First Diff	Fixed Effects	Fixed Effects
VARIABLES		Single bidder	CRI	Single bidder	CRI	Single bidder	CRI
Political score	finance	0.06*	0.01	0.04	0.04**	0.10**	0.10***
		(0.03)	(0.07)	(0.05)	(0.02)	(0.04)	(0.03)
GDP growth		0.00	0.00			0.00	0.00
		(0.00)	(0.00)			(0.00)	(0.00)
GDPpc		-0.00	-0.00	-0.00**	-0.00	-0.00***	-0.00**
		(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Setup buss cost		0.01**	0.00	0.00	-0.00	-0.00	-0.00
		(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Internet		-0.00	-0.00*	0.00	0.00	0.00	-0.00
		(0.00)	(0.00)	(0.01)	(0.01)	(0.00)	(0.00)
Eastern		0.12***	0.07*				
		(0.02)	(0.04)				
Industry		0.00	0.00	0.00	0.00	0.00	-0.00
		(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Observations		163	158	133	129	163	158
R-squared		0.62	0.43	0.07	0.02		
R-squared (overall)						0.32	0.23

Robust standard errors in parentheses. Constant terms are omitted. \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$ . Numbers are rounded to the second decimal.

The overall results in Table 1 suggest an interesting puzzle: the impact of increasing the institutional tools against corruption in the area of political finance is positive. In other words, a higher political finance regulation score is associated with higher risk of corruption. For example, in model 5, increasing the overall political finance regulation score by one standard deviation or 0.24 points (approximately moving from the Italian score to that of Poland in 2009) is associated with 1.3 percentage points higher single bidder share in the same year.

These counterintuitive results may be driven by contemporaneous variation around the time the new regulations are introduced rather than actual causal relationship. In order to account for such bias and allow for a delay in the effect of political finance reform, Table 2 reports similar estimations as in Table 1, but replacing the contemporaneous indicator of our political finance regulations score with its lagged measure.

**TABLE 2: LAGGED EFFECT OF POLITICAL FINANCE REGULATION ON CORRUPTION RISK**

VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)
	Pooled OLS	Pooled OLS	First Diff	First Diff	Fixed Effects	Fixed Effects
	Single bidder	CRI	Single bidder	CRI	Single bidder	CRI
Pol fin score = L,	0.07*	-0.01	0.08	0.08**	0.10**	0.04*
	(0.03)	(0.09)	(0.06)	(0.02)	(0.05)	(0.02)
GDP growth	0.00	-0.00				
	(0.00)	(0.01)				
GDPpc	-0.00	-0.00	-0.00	-0.00	-0.00***	-0.00**
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Setup buss cost	0.01***	0.00	0.00	-0.00	-0.00	-0.00
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Internet	-0.00	-0.00**	0.00	-0.00	-0.00	-0.00
	(0.00)	(0.00)	(0.01)	(0.00)	(0.00)	(0.00)
Eastern	0.11***	0.06				
	(0.02)	(0.04)				
Industry	0.00	0.00	0.00*	-0.00	0.00	0.00
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Observations	135	131	105	102	135	131
R-squared	0.65	0.43	0.09	0.06		
R-squared (overall)					0.33	0.24

Robust standard errors in parentheses. Constant terms are omitted. \*\*\* p<0.01, \*\* p<0.05, \* p<0.1. Numbers are rounded to the second decimal.

The results in Table 2 are reinforcing our previous findings: the coefficient of political finance regulation varies from non-significant to positive depending on the model specification. Hence, even by considering a one-year lagged effect of political finance regulations, the result going against our general hypothesis persists ( $H_1$ ). Similar estimations with longer lagged effects report non-significant coefficients for political finance regulation.

Given how counterintuitive these results are, we continue to explore alternative ideas affecting the nature of the link between political finance regulations and corruption risks. Along these lines, we first test the idea that political finance instruments might only have an impact when reforms to political finance regulation have been of high magnitude. For this, we transform our continuous measure of political finance regulations score into a categorical variable with three categories, none to small change, moderate change and large change.

**TABLE 3: IMPACTS OF POLITICAL FINANCE REGULATION ON CORRUPTION RISK: CATEGORICAL EXPLANATORY VARIABLE**

VARIABLES	(1)	(2)	(3)	(4)
	OLS	OLS	OLS	OLS
	D5 Single bidder	D5 CRI	D5 Single bidder	D5 CRI
Polfin reform level = 2	0.05 (0.03)	0.02 (0.02)	0.07* (0.04)	0.02 (0.03)
Polfin reform level = 3	0.04 (0.03)	0.09*** (0.01)	0.13* (0.07)	0.15*** (0.04)
GDPpc			-0.00 (0.00)	-0.00 (0.00)
Setup buss cost			-0.00 (0.01)	-0.00 (0.00)
Internet			0.01 (0.00)	0.00 (0.00)
Observations	28	27	25	25
R-squared	0.06	0.12	0.24	0.19

Robust standard errors in parentheses. Constant terms are omitted. \*\*\* p<0.01, \*\* p<0.05, \* p<0.1. Numbers are rounded to the second decimal.

Strikingly, we find evidence that in those countries which underwent more profound reforms, the impact of political finance regulatory reform leads to an increase in corruption risk with statistical significance in three of our four estimations. The effect size is very small, varying between 0.09 and 0.015 standard deviations in our two corruption risk indicators. This means that in countries which underwent large reforms, a change in about 0.1 points in our political finance score translates into less than a one percentage point increase in single bidding share. Moderate changes in political finance score generally have a weaker and mainly insignificant effect on corruption risks across the specifications than extensive reforms, nevertheless the coefficients are positive too.

Next, we test whether the impact of political finance regulations depends specifically on the type of reform being implemented. For this, we take a separate measure of the political finance regulation score of components, following the thematic structure proposed by EuroPAM: a) regulation on foreign donations; b) corporate donations; c) trade union donations; d) anonymous donations; e) other bans on donations; f) monetary limits to donations; g) level of reporting standards; h) institutions of political finance oversight.



**TABLE 4A: INDIVIDUAL POLITICAL FINANCE REGULATION INSTRUMENTS AND CORRUPTION RISKS: SINGLE BIDDER**

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Fixed effects							
VARIABLES	Single bidder							
GDPpc	-0.00***	-0.00***	-0.00***	-0.00***	-0.00***	-0.00***	-0.00***	-0.00***
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Setup buss cost	-0.00	-0.00	-0.00	-0.00	-0.00	-0.00	-0.00	-0.00
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Internet	0.00	0.00	0.00	0.00	0.00	-0.00	0.00	0.00
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Industry	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Foreign donations	0.07***							
	(0.02)							
Corporate donations		0.09***						
		(0.03)						
Trade union donations			0.06*					
			(0.03)					
Anonymous donations				0.05*				
				(0.03)				
Other bans					0.05**			
					(0.02)			
Donations limits						0.05*		
						(0.03)		
Reporting standards							0.05**	
							(0.02)	
Political oversight								0.03
								(0.03)
Observations	163	163	163	163	163	163	163	163
R-squared (overall)	0.28	0.34	0.31	0.31	0.31	0.29	0.29	0.29

Robust standard errors in parentheses. Constant terms are omitted. \*\*\* p<0.01, \*\* p<0.05, \* p<0.1. Numbers are rounded to the second decimal.

**TABLE 4B: INDIVIDUAL POLITICAL FINANCE REGULATION INSTRUMENTS AND CORRUPTION RISKS: CRI**

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Fixed effects							
VARIABLES	CRI							
GDPpc	-0.00*	-0.00**	-0.00*	-0.00*	-0.00*	-0.00	-0.00	-0.00
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Setup buss cost	-0.00	-0.00	-0.00	-0.00	-0.00	-0.00	-0.00	-0.00
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Internet	0.00	-0.00	0.00	0.00	0.00	0.00	-0.00	-0.00
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Industry	-0.00	-0.00	-0.00	-0.00	0.00	-0.00	0.00	-0.00
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Bans on foreign donations	0.05***							
	(0.02)							
Bans on corporate donations		0.06***						
		(0.02)						
Bans on trade union donations			-0.01					
			(0.02)					
Bans on anonymous donations				0.04**				
				(0.02)				
Other bans on donations					0.04***			
					(0.01)			
Donations limits						0.04**		
						(0.02)		
Reporting standards							0.07***	
							(0.02)	
Political finance oversight								0.05**
								(0.02)
Observations	158	158	158	158	158	158	158	158
R-squared (overall)	0.19	0.19	0.16	0.17	0.22	0.18	0.17	0.18

Robust standard errors in parentheses. Constant terms are omitted. \*\*\* p<0.01, \*\* p<0.05, \* p<0.1. Numbers are rounded to the second decimal.

We consistently find that none of the specific instruments taken separately have significant effect in lowering corruption. On the contrary, most of the estimations show again a positive and significant relationship.

After finding evidence refuting H<sub>1</sub> general hypothesis, but supporting H<sub>2</sub> and to a much lesser extent H<sub>3</sub>, we further aim to test H<sub>1</sub> also taking into account the sequencing of reform, elections, and politicians' ability to pay back with contracts. Hence, we only expect an impact of political finance reform if it was a major reform preceding national elections. This more specific formulation of the hypothesis receives no support from regression models either. When we allow for multiple years for the effects to show up in the measurement of procurement corruption risks (Table 5), all coefficients are insignificant.

Furthermore, difference-in-differences estimation results are also found in Appendix D pointing once again at the invalidity of H<sub>1</sub>.

**TABLE 5: POLITICAL FINANCE REGULATION AND ELECTIONS, IMPACTS ON CORRUPTION RISK.**

VARIABLES	(1)	(2)	(3)	(4)
	Fixed effects Single bidder	Fixed effects CRI	Fixed effects Single bidder	Fixed effects CRI
Elections with prior major polfin reform			0.00 (0.02)	0.01 (0.01)
Elections with prior major polfin reform = L	-0.02 (0.017)	0.01 (0.01)	-0.02 (0.02)	0.01 (0.01)
GDPpc	-0.000*** (0.00)	-0.00** (0.00)	-0.00** (0.00)	-0.000* (0.00)
Setup buss cost	0.00 (0.00)	-0.00 (0.00)	0.00 (0.00)	-0.00 (0.00)
Internet	0.01 (0.00)	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)
Industry	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)
Observations	135	131	135	131
R-squared (overall)	0.30	0.21	0.21	0.23

Robust standard errors in parentheses. Constant terms are omitted. \*\*\* p<0.01, \*\* p<0.05, \* p<0.1. Numbers are rounded to the second decimal.

## 6. Conclusions and future research agenda

In cross-country panel regression and difference-in-differences models, we find that introducing additional political party financing restrictions does not have a measurable negative impact on corruption risks, if anything the effect is positive. The observed relationship remains the same for constitutive components of party financing regulations. In the models investigated, effect sizes, significant as well as insignificant ones, are very small, ranging around 1-5% point change in single bidder shares. By way of comparison, improving public sector meritocracy by one standard deviation on bureaucrats' self-reported experience with meritocratic promotion results in about 12% lower single bidder share on the same sample of countries (Charron et al., 2015 Table 4). The positive significant effect of political finance regulations on public procurement corruption risks in some models, unfortunately, does suggest that they may be used strategically by corrupt elites to cover up their increasing particularistic grip on government contracting or strategically modifying the rules of electoral competition to their own advantage.

However, our results are by no means conclusive. Instead they represent the first imperfect attempt to rigorously test widely held assumptions about the effectiveness of controlling money in politics through regulations. Several challenges remain for a conclusive judgement of political finance regulations' effectiveness to curb corruption each of which will be possible to thoroughly assess as more data is made available by DIGIWHIST at [digiwhist.eu](http://digiwhist.eu). A few potential extensions to our work:

- Measuring implementation of political party financing regulations rather than de jure legislation;
- Allowing for longer time between changes in legislation and expected changes in public procurement corruption risks;
- Considering institutional inter-dependencies, in particular normative constraints on party financing set by voter preferences or public procurement legislation aiming to curb the pay-back mechanism; and
- Comparing findings of European countries with other contexts such as the US.

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## Appendix A – Measuring corruption risks

### Defining ‘objective’ indicators of corruption risk

The simplest indication of restricted competition in line with our theoretical definition is when only one bid was submitted in a tender on an otherwise competitive market which typically allows for awarding contracts above market prices and extracting corrupt rents (output side). Hence, the percentage of single-bidder contracts awarded in all the awarded contracts is the most straightforward measure we use.

A more complex indication of high-level corruption also incorporates characteristics of the tendering procedure that are in the hands of public officials who conduct the tender and suggests deliberate competition restriction (input side) (Fazekas et al., 2013a). This composite indicator, which we call the Corruption Risk Index (CRI), represents the probability of corrupt contract award in public procurement defined as follows:

$$CRI^i = \sum_j w_j * CI_j^i \quad (1)$$

$$\sum_j w_j = 1 \quad (2)$$

$$0 \leq CRI^i \leq 1 \quad (3)$$

$$0 \leq CI_j^i \leq 1 \quad (4)$$

where  $CRI^i$  stands for the corruption risk index of contract  $i$ ,  $CI_j^i$  represents the  $j$ th elementary corruption indicator observed in the tender of contract  $i$ , and  $w_j$  represents the weight of elementary corruption indicator  $j$ . Elementary corruption indicators can be either corruption inputs or outputs.  $CRI = 0$  indicates minimum corruption risk while  $CRI=1$  denotes maximum corruption risk observed. Based on qualitative interviews of corruption in the public procurement process, a review of the literature (OECD, 2007; Pricewaterhouse Coopers, 2013; World Bank, 2009), and regression analysis, we identified the components of the CRI in addition to single bidding:

1. 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.
2. 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.
3. If the advertisement period, i.e. the number of days between publishing 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.
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 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 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 advertisement 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 likely associated with corruption. Thresholds were identified using regression analysis, in particular analysing residual distributions (for more on this see (Fazekas et al., 2013a)).

We restricted the sample in two ways: 1) Competitive markets: we only examine tenders in markets with at least 10 contracts awarded throughout 2009-2014, where markets are defined by product type (CPV level 3) and location (NUTS level 1) within each country. 2) Regulated tenders: we only used those tenders which are above EU thresholds in order to avoid the noise of too small contracts and voluntary reporting which follows erratic patterns across countries and over time. These together removed 17% of the observations.

**TABLE 1. SUMMARY OF ELEMENTARY CORRUPTION RISK INDICATORS**

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 (accelerated, restricted, award without publication, negotiated, tender without competition)
	Length of advertisement 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 also used to identify 'red flags' which are most likely to signal corruption rather than any other phenomena such as low administrative capacity. Ultimately, those variables and their categories were selected which were large and significant predictors of single bidder contracts. The regression set-up controlled for a number of likely confounders of bidder numbers: (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.

The logic of regression analysis is the following: if in a certain country, 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 the analysed country's 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 advertisement 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 the CRI of the country in question. 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.

Each of the two corruption risk indicators have its pros and cons. The strength of the single bidder indicator is that it is very simple and straightforward to interpret. However, it is also more prone to gaming by corrupt actors due to its simplicity. The strength of the composite indicator approach (CRI) 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 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 by allowing for the exact formulation of the components to vary reflecting differences in local market conditions. The main weakness of CRI is that it can only capture a subset of corruption strategies in public procurement, arguably the simplest ones, hence it misses out on sophisticated types of corruption such as corruption combined with inter-bidder collusion.

## **Validity of corruption risk indicators**

The validity of both the single bidder indicator and the CRI stems from their direct fit with the definition of high-level corruption in public procurement and the theoretical model of corrupt rent extraction. Further analysis on their association with widely used survey-based macro-level corruption indicators as well as with micro-level objective indicators of corruption risks underpin their validity, i.e. suggest that they proxy corruption rather than any other phenomena such as low administrative capacity.

The single bidder indicator and the CRI (as a 2009-2013 average per country using number of contracts) correlate as expected with widely used perception-based corruption indicators such as the World Governance Indicators' Control of Corruption, Transparency International's Corruption Perception Index, and Global Competitiveness Index's Favoritism in decisions of government officials (

Table 2). In addition, a 2013 Eurobarometer survey of bidding companies' experience of corruption across the EU provides the most directly comparable survey-based indicator of corruption in public procurement, which also co-varies with both single bids and the CRI as expected<sup>13</sup>.

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<sup>13</sup> While three perception indicators (WGI, TI, and GCI) indicate less corruption with higher values, our indicators and the Eurobarometer indicator are scaled in the opposite direction with higher values implying more corruption.

**TABLE 2. BIVARIATE PEARSON CORRELATIONS OF % SINGLE BIDDER AND THE CRI WITH SURVEY-BASED CORRUPTION INDICATORS, ON THE COUNTRY LEVEL, 2009-2013**

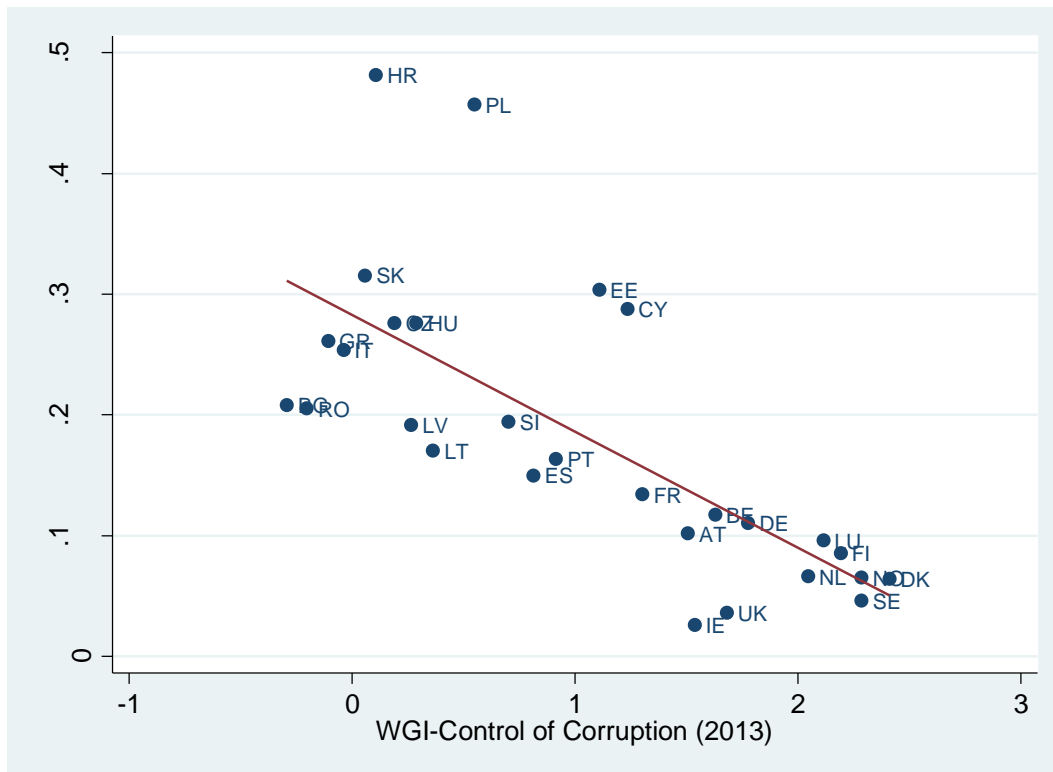
Indicator	Single bidder	CRI	N
WGI - Control of Corruption (2013)	-0.7120*	-0.6933*	28
TI- Corruption Perceptions Index (2013)	-0.6903*	-0.6662*	28
GCI - Favoritism in decisions of government officials (2013)	-0.7003*	-0.6342*	28
Eurobarometer company corruption perceptions (2013)	0.5645*	0.6163*	25

Source: TED, (Kaufmann, Kraay, & Mastruzzi, 2009; TNS Opinion and Social, 2013; Transparency International, 2012; World Economic Forum, 2010)

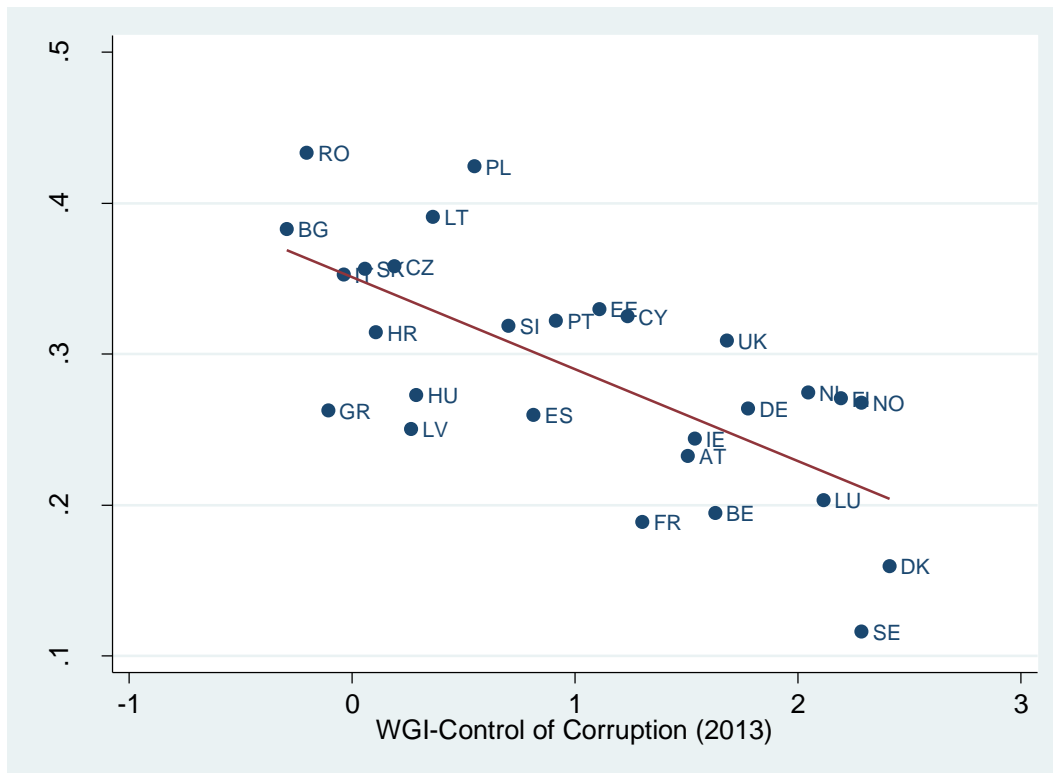
Note: \* = significant at the 5% level

In order to visually demonstrate the above described correlations, we depict the average 2009-2013 single bidder ratio (Figure 1) and CRI (Figure 2) scores of EU27 countries and Norway along with their 2013 WGI Control of Corruption scores.

**FIGURE 1. BIVARIATE RELATIONSHIP BETWEEN WGI-CONTROL OF CORRUPTION (2013) AND SINGLE BIDDER RATIO (PERIOD AVERAGE FOR 2009-2013), EU-27+NORWAY, SWITZERLAND**



**FIGURE 2. BIVARIATE RELATIONSHIP BETWEEN WGI-CONTROL OF CORRUPTION (2013) AND AVERAGE CRI (PERIOD AVERAGE FOR 2009-2013), EU-27+NORWAY, SWITZERLAND**



In order to validate our indicators not only on the macro-level, but also on micro-level, we employ two ‘objective’ risk indicators: procurement suppliers’ country of origin and contract prices. It is expected that a contract represents a higher corruption risk if it is awarded to a company registered in a tax haven as its secrecy allows for hiding illicit money flows (Shaxson & Christensen, 2014). In line with our expectations, all across the EU27 plus Norway there is a marked and significant difference in the percentage of single bidder contracts won by foreign companies registered in tax havens versus those which are not: 0,28 versus 0,26; similarly for CRI: 0,34 versus 0,31 respectively (Ncontract=28,642).

We also expect corruption to drive prices up. Although reliable unit prices are not available, we can employ a widely used alternative indicator of price, which is the ratio of actual contract value to initially estimated contract value (Coviello & Mariniello, 2014). As expected, both single bidder contracts and a higher CRI are associated with higher prices. Single bidder contracts have between 9-9.6% higher prices than multiple bidder contracts; similarly contracts with one additional red flag (i.e. 0.17 CRI points higher) are 2.5-2.7% more pricey even after controlling for major confounding factors (Table 4).

**TABLE 3. LINEAR REGRESSIONS EXPLAINING RELATIVE CONTRACT VALUE, EU27+NO, CH, 2009-2014**

Dependent variable Model	Relative contract value (contract price/estimated price)			
	(1)	(2)	(3)	(4)
Independent variable	CRI	CRI	Single bidder	Single bidder
	0.1484*	0.1607*	0.0963*	0.0903*
	(0.000)	(0.000)	(0.000)	(0.000)
Sector of contracting entity	N	Y	N	Y
Type of contracting entity	N	Y	N	Y
Year of contract award	N	Y	N	Y
Product market	N	Y	N	Y
Contract value	N	Y	N	Y
Country	Y	Y	Y	Y
N	524441	501783	524442	501784
R-squared	0.0710	0.1248	0.1096	0.1546

Note: p-value in parentheses; \*=significant at 0.1% level; each regression contains constant; relative contract values equal or smaller than 1

## Appendix B – The political finance regulation score

**TABLE 4. POLITICAL FINANCE REGULATION SCORE: DESCRIPTIVE STATISTICS**

<b>Variable/years</b>	<b>N</b>	<b>Mean</b>	<b>St. Dev.</b>	<b>Min</b>	<b>Max</b>
Political Finance Score (all years)	203	0.580	0.238	0.047	0.918
2009	29	0.488	0.241	0.047	0.891
2010	29	0.502	0.248	0.047	0.891
2011	29	0.514	0.249	0.047	0.891
2012	29	0.630	0.220	0.054	0.918
2013	29	0.632	0.221	0.054	0.918
2014	29	0.642	0.221	0.054	0.918
2015	29	0.655	0.215	0.054	0.918



## Appendix C - EuroPAM political finance scoring

**TABLE 5. EUROPAM POLITICAL FINANCE, CATEGORIES, SUB-CATEGORIES AND ITEMS**

Nr	Category	Sub-category	Item
1	<b>Bans and limits on private income</b>		
2		Bans on donations from foreign interests	
3			Is there a ban on donations from foreign interests to political parties?
4			Is there a ban on donations from foreign interests to candidates?
5		Bans on corporate donations	
6			Is there a ban on corporate donations to political parties?
7			Is there a ban on corporate donations to candidates?
8			Is there a ban on donations from corporations with government contracts to political parties?
9			Is there a ban on donations from corporations of partial government ownership to political parties?
10			Is there a ban on donations from corporations with government contracts to candidates?
11			Is there a ban on donations from corporations of partial government ownership to candidates?
12		Bans on donations from trade unions	
13			Is there a ban on donations from Trade Unions to political parties?
14			Is there a ban on donations from Trade Unions to candidates?
15		Bans on anonymous donations	
16			Is there a ban on anonymous donations to political parties?
17			Is there a ban on anonymous donations to candidates?
18		Other bans on donations	
19			Is there a ban on state resources being given to or received by political parties or candidates (excluding regulated public funding)?
20			Is there a ban on any other form of donation?
21		Donation limits	
22			Is there a limit on the amount a donor can contribute to a political party over a time period (not election specific)?
23			Is there a limit on the amount a donor can contribute to a political party in relation to an election?
24			Is there a limit on the amount a donor can contribute to a candidate?
25	<b>Public funding</b>	Public Funding	
26			Eligibility criteria for direct public funding to political parties
37			Allocation calculations for direct public funding to political parties

46			Earmarking provisions for direct public funding to political parties
57			Are there provisions for free or subsidized access to media for candidates?
58			Are there provisions for any other form of indirect public funding?
65			Is the provision of direct public funding to political parties related to gender equality among candidates?
66			Are there provisions for other financial advantages to encourage gender equality in political parties?
67	<b>Regulations on spending</b>	Regulations on spending	
68			Is there a ban on vote buying?
69			Are there bans on state resources being used in favour or against a political party or candidate?
70			Are there limits on the amount a political party can spend?
71			Are there limits on the amount a candidate can spend?
72	<b>Reporting, oversight and sanctions</b>		
73		Reporting standards	
74			Do political parties have to report regularly on their finances?
75			Do political parties have to report on their finances in relation to election campaigns?
76			Do candidates have to report on their campaign finances?
77			Is information in reports from political parties and/or candidates to be made public?
78			Must reports from political parties and/or candidates reveal the identity of donors?
79			Institutions receiving financial reports from political parties and/or candidates
86		Political finance oversight	
87			Is it specified that a particular institution(s) is responsible for examining financial reports and/or investigating violations?
94			Other institutions with a formal role in political finance oversight
101			Sanctions for political finance infractions

## Appendix D - Difference-in-difference estimations

In order to better isolate the impact of major political finance regulatory reforms, we build on the specific data structure allowing to conduct a quasi-experimental estimation based on the difference-in-difference (DiD) approach. We exploit the quasi exogeneity of political finance reforms taking place in Europe in the last 6 years (e.g. GRECO recommendations and monitoring), given that they mostly occurred in a single wave in 2012. Because a number of countries did not undertake any political finance reform, we are able to build our two groups for the DiD estimation comprising the years 2011 and 2012: 1) unreformed countries representing the control group, and 2) the reformed countries constituting the treatment group<sup>14</sup>. The wave of reforms taking place in 2012 is naturally our treatment.

The DiD estimation method represents an attempt to further isolate the effects of reforms by focusing on the years of most exogenous change and maximizing the distinction between reformed versus unreformed groups. The lack of significance of the interaction term suggests no effect –positive or negative- of political finance reforms, at least in the short term. The lack of a positive significant impact in contrast to our earlier OLS and panel estimations may be due to the substantial reduction in the amount of observations that arises from reducing the timeframe.

**TABLE 5: POLITICAL FINANCE REFORMS AND CORRUPTION RISKS, DIFFERENCE-IN-DIFFERENCE**

	(1) OLS	(2) OLS
VARIABLES	Single bidder	CRI
After reform	0.01 (0.01)	-0.00 (0.01)
Treatment group	0.04 (0.05)	-0.06 (0.04)
DiD	0.00 (0.02)	0.02 (0.01)
Observations	56	56
R-squared	0.04	0.12

Robust standard errors in parentheses. Constant terms are omitted. \*\*\* p<0.01, \*\* p<0.05, \* p<0.1. Numbers are rounded to the second decimal.

<sup>14</sup> Based on summery statistics, the threshold to define the group of reformed countries was an increase of at least 0.05 points in our political finance regulation score.