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CAREERS, CONNECTIONS AND CORRUPTION RISKS IN EUROPE

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ABSTRACT

Why do officials in some countries favor entrenched contractors while others assign public contracts more impartially? According to the research, such variation responds to differences in political institutions, economic development and historical preconditions. This paper instead emphasizes the interplay between politics and bureaucracy. It suggests that corruption risks are minimized when the two groups involved in decision-making on public contracts—politicians and bureaucrats—have known different interests. This is institutionalized when politicians are accountable to the electorate, while bureaucrats are accountable to their peers, and not to politicians. We test this hypothesis with a novel experience-based measure of career incentives in the public sector— utilizing a survey with over 85,000 individuals in 212 European regions—and a new objective corruption-risk measure including over 1.4 million procurement contracts. Both show a remarkable subnational variation across Europe. The study finds corruption risks significantly lower where bureaucrats' careers do not depend on political connections.

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Introduction

Prosperous societies require well-functioning institutions. Today, most scholars agree that wealth, health and happiness are highly dependent on institutional quality generally, and on the absence of corruption more specifically (see for example Holmberg, Rothstein and Nasiritousi 2009; Mauro 1995; Veenhoven 2010). Analyzing causes of corruption has consequently attracted considerable attention from scholars of comparative politics, economics, law and history, and research has made substantial progress during the last two decades (for influential studies see for example Keefer 2007; La Porta et al. 1999; Persson and Tabellini 2003; Rothstein 2011; Treisman 2007). An important insight is that the interests of elite groups and the public do for the most of the time not convey. Unconstrained elites have incentives to take advantage of their positions and enrich themselves and their clique at the expense of general welfare; contemporary and historical examples of this are overwhelming (Acemoglu and Robinson 2012; Fukuyama 2011; North, Wallis and Weingast 2009). Those who have the greatest chances for corruption, and whose action might have the most far-reaching consequences, in scale as well as role models, are thus in a constant "moral hazard" (Miller 2000, 289). However, the large variations in corruption levels and welfare provision worldwide suggest that such moral hazards can be handled under the right circumstances. This paper tries to specify those circumstances and to investigate a central implication of the hypothesis.

Our proposal starts from the premise that, when groups with known different interests are forced to work together, they monitor each other, which pushes both groups away from self-interest towards the common good. Abuse of power will be more common if everyone in the elite has the same interest, because no one will stand in the way of self-interested behavior, while abuses of power will be less common if groups with different interests are represented in the elite, because everyone must adjust their behavior so that it can hold up to public scrutiny. There is of course a real increased risk for whistleblowing in elites with divided interests, but it is probably even more important that everyone anticipates that risk, and adjusts their behavior accordingly. Mainly following Gary Miller (2000; with Hammond 1994; with Falaschetti 2001; with Knott 2008), this paper suggests that, if incentivized in different ways, politicians and bureaucrats are two significant elite groups with known different interests. Researchers in the field of public administration have long been aware of the importance of recruitment regimes and career perspectives for bureaucrats (Goodknow 1900; Weber 1978 [1922]): Wilson 1887). We think that whether bureaucrats are directly dependent on politicians for their careers is a useful approximation for the separation of interests between bureaucrats and politicians.

This paper makes use of the sub-national variation within Europe, where there is an often ignored variation in corruption, prosperity and health, as well as in cultural and institutional factors (Charron, Dijkstra and Lapuente 2014). This provides an excellent opportunity for testing comparative theories on new data. We compare 212 European regions using two unique datasets. On the independent side, measuring the career incentives in the public sector, we use a new experienced-based measure, including over 85,000 individuals, while we take advantage of a novel objective corruption risk measure on the dependent side, based on over 1.4 million public procurement contract awards. The main results of our analysis corroborate the theory and demonstrate that high-level corruption risks are indeed lower when politicians and bureaucrats are incentivized in different ways, even when cultural, economic and political controls are included.

The paper contributes to the literature in at least three ways. First, most studies have focused on political institutions, or on economic and cultural factors, but have left bureaucracy outside of the story. While much has been learned about the political constraints needed for good governance, and the economic and cultural conditions often correlated with it, not assigning the bureaucracy any agency in its own right is not only a misrepresentation of reality but comes with an obvious risk of biased results. Second, those studies that have analyzed bureaucratic institutions have, due to data limitations, mainly worked with aggregated data on the national level, often with perception-based measures on both the independent and dependent sides (Dahlström, Lapuente and Teorell 2012; Rauch and Evans 2000). The perception-based measures have certainly been important for developing the knowledge in this field but have also suffered a great deal of criticism (Andersson and Heywood 2009; Kurtz and Schrank 2007). There is a pressing demand for the more experience-based and objective measures of good governance and corruption, which this study provides. Third, prevailing theories of institutional effects are often developed with a handful of countries in mind, and tested on more or less the same set of countries, which violates basic advice in comparative social science design (King, Keohane and Verba 1994). Our focus on a central part of bureaucratic institutions, namely career perspectives and a research strategy that explores sub-national variations overcome all these problems.

The paper's next section defines central concepts and explains our suggestion in more detail. This is followed by a section on the research strategy, which describes the design, presents the two new datasets and discusses methodological issues. The next section describes the most prevailing alternative explanations and how they are taken into account. The results section follows, reporting our empirical findings, alternative specifications and robustness checks. The final section concludes the paper.

How careers can affect corruption

Corruption is often defined as the abuse of public power for private gain. This paper investigates grand corruption and, more specifically, the extent to which public positions are used to benefit particular business interests (Rose-Ackerman 1999, chap. 3). Before going into the details of the investigation, we should remind ourselves that corruption is not an exception but rather the norm throughout history (North Wallis, and Weingast 2009). As already mentioned, provision of public goods inherently implies opportunities for abuse (Miller 2000; Miller and Knott 2008). Rulers can always take advantage of their positions at the expense of social welfare. If other elected officials, such as legislators, tie the hands of the executive, opportunities for rent-seeking simply move from one office to another (Miller and Hammond 1994). One precondition for this paper is therefore that there is no incentive system that credibly eliminates all possibility for abuse (Miller 2000). We can only hope to limit the problems.

All groups of individuals with decision-making abilities, elected officials as well as bureaucrats, are thus susceptible to taking advantage of the opportunities for private gain that all public policies entail. Homogenous elite groups are bound to form what Madison referred to as factions – "a number of citizens, whether amounting to a minority or majority of the whole, who are united and actuated by some common impulse of passion, or of interest, adverse to the rights of other citizens, or to the permanent and aggregate interests of the community" (Federalist # 10, 56) – and our simple point is that such factions are much harder to shape when elites are heterogeneous.

Fukuyama (2011) indicates that factions that have advanced the interests of their members and their families, at the expense of national interests, have preceded the fall of empires. All polities face the threat of potential factions that can take over the reins of power and parasitically use it to their own advantage. And, as this risk is always present, it is difficult to fight. If party machines presiding over a spoils system are fought via the introduction of powerful bureaucracies, for example, this might create powerful bureaucratic factions as a by-product. Consider the virtual monopoly of the whole policy cycle—from enacting laws in the legislature to implementing them—exercised by civil servants who occupy both administrative and political posts in countries belonging to the Napoleonic tradition (Parrado 2000). In other words, again following Miller (2000), one must consider the opportunities for rent-seeking to be universal in the public realm and, following Madison and Fukuyama (2011), one must consider the motivations for rent-seeking to be universal and not restricted only to political officials. We thus need to be pessimistic about the nature of all officials, both those who are elected and those who are not, such as highly competent trained civil servants.

Given these assumptions, we argue that a way to minimize corruption opportunities is to introduce mechanisms that systematically break down the creation of factions. One powerful mechanism is reflected in the debate on how relations between politicians and bureaucrats should be organized that started more than a century ago and has continued into the modern age, with contributions from scholars such as Heclo (1977), Moe (1989), Miller (2000), Rauch and Evans (2000), Hood and Lodge (2006), Lewis (2008), Rouban (2012) and others. Top officials need to be prevented from building a stable faction, and this can be achieved by separating the career prospects of two types of officials that occupy those positions, that is, politicians and bureaucrats. If the career prospects of politicians and bureaucrats do not depend on each other, they will be less likely to form welfare-diminishing factions. This is in turn possible to achieve if they respond to the political party and their peers, respectively, which in many developed countries are the defining features of the two groups (Alesina and Tabellini 2007). If the future prospects for bureaucrats depend on their professional status and not on following the instructions of politicians, the chances increase for bureaucrats to expose corrupt acts taken by politicians, and vice versa. In other words, when the career prospects of politicians and bureaucrats are clearly separated, there are thus embedded two-way monitoring mechanisms where politicians watch bureaucrats and bureaucrats watch politicians. If, on the contrary, careers are integrated, so that bureaucrats' careers are determined by political connections, for example, they will be more willing to form colluding factions with politicians (Dahlström, Lapuente and Teorell 2012).

For instance, granting public contracts to entrenched interests, rather than to the best bidder, requires a faction. This is illustrated by a case called *Operación Punica*, unleashed by the Spanish judicial authorities in October 2014 (*El País* 2014a). Over 50 people were involved in a complex chain of events starting from public contractors offering bribes to brokers with political connections, via elected officials, to bureaucrats writing the public tendering, and then back to politicians, who, in turn, were paid in Swiss bank accounts by ghost companies. In *Operación Punica*, politicians did not investigate subordinates' behavior, even though they later admitted that this behavior was suspicious, which illustrates that a politician who discovers that a bureaucrat has been taking advantage of her position will have fewer incentives to report the malfeasances if she is a fellow party member. The President of the Madrid region acknowledged that "I should have thought something strange was going on" (*PeriodistaDigital* 2014), after witnessing how his subordinate's car, which belonged to a businessman, was intentionally burned in what reminded the Madrid President of the "horse head scene in The Godfather" (EuropaPress 2014). Yet the Madrid President did not reveal anything until her subordinate had actually been formally accused and imprisoned in 2014.

Or take *Operación Gurtel,* where €449m of public money was lost in a series of corrupt public procurement contracts and the prosecuting judge indicted 40 politicians, political appointees and entrepreneurs (*El País*, 2015). When the career prospects of bureaucrats are linked to politicians, bureaucrats will turn a blind eye or even directly engage in the corruption activities instead of speaking up. This is exactly what happened in *Operación Gurtel,* where bureaucrats of the Madrid regional government paid bills to contractors even if they found the bills suspicious (*El País* 2013a).

There is also historical evidence suggesting that dismantling the connection between politicians' and bureaucrats' careers in Britain and the U.S. in the second half of the 19th century hampered corruption. It was common knowledge then that access to the British administration via connections contributed to corruption, exposed especially between 1810 and 1835. Officials who owed their position to political connections enriched themselves at the expense of social welfare (Rubinstein 1983). Against this, the 1854 Northcote-Trevelyan Report issued that recruitment to the British civil service should be according to open and competitive examinations (Harling 1996, Greenaway 2004). British civil servants and politicians reached a "public service bargain" according to which politicians renounced appointing civil servants and the latter renounced making political careers (Hood and Lodge 2006). This bargain is largely absent in most administrations in Southern Europe, where politicians appoint loyalists to administrative positions and civil servants become politicians (Sotiropoulos 2004).

In the U.S., there was, a coalition of good government reformers who, tired of widespread corruption, advocated a separation of politics from administration (Hoogenboom 1961, Knott and Miller 1987). Contemporary observers, such as William Clarke, noted the connection between the ability of politicians to appoint officials at will and levels of corruption: "…as official patronage, either direct or indirect, is a great if not perhaps the chief cause of corrupt elections, it logically follows that the less patronage there is, the less corruption there will be" (quoted in Frant 1993, 994). The connection between politically appointed officials and corruption was so clear in fact that, after the Civil War, it "…replaced the slave owner as the jinni of evil" (Schultz and Maranto 1998, 55). This strengthened the reformists grouped around the National Civil Service Reform League (Schultz and Maranto 1998). As a result, numerous administrations introduced civil service commissions or other mechanisms to separate the political and administrative spheres such as the council manager type of local government.

Returning to Spain, we offer a final illustration of how the relationship between the separation of the careers of politicians and bureaucrats and corruption might look. There are notable regional variations in both factors. In particular, one can see how a lack of incentives helps to cover up col-

lusive behavior between private firms and politicians in some regions, including Madrid and Catalonia, while not in others, such as the Basque country.

It is documented that a large number of politicians received bribes from construction groups, private contractors and all sorts of businesses so regularly that it became a "tradition" (*Financial Times*, 2013a). Indeed, the treasurer of the conservative party, who had accumulated €38m in Swiss bank accounts (*El País* 2013b), acknowledged that he had been responsible for a scheme of illegal funding of his party from powerful business entrepreneurs in the country.

Thanks to exhaustive judicial investigations, we know how corruption exchanges usually took place. Businessmen offered a sum—generally around 3 percent of the public tender—to politicians who, in turn, persuaded civil servants to bend the rules of the public tender offering so as to benefit a certain bidder (*El País* 2014). These practices have been common in several Spanish regions, such as Valencia, Murcia, Madrid and León (*The Guardian* 2014), as well as in Catalonia, where the former president, Jordi Pujol, and large parts of his family are under investigation for hiding money in Switzerland (*The Economist* 2014).

Judicial investigations have uncovered that the favorable treatment to contractors who had paid a bribe was possible thanks to the political control of the administration by the ruling party. Bureaucrats testifying in court admitted they were told "…which public contractors must win…" and, if they complained, they were "threatened" with dismissal. On one occasion, they were extremely anxious because the materials used by the private contractor to build a stage for a public event were of such "poor quality" that they feared that a catastrophe could occur; yet the fear of losing their job was so strong that they reported neither to the media nor to judicial authorities (*Cadena SER* 2014).

But there are exceptions within Spain, such as the above-mentioned Basque country, which ranks as the least corrupt region in the country (Charron, Lapuente and Dijkstra 2014). The Basque country also tops Transparency International's ranking of 17 Spanish regions in terms of transparency, both in general and concerning information on public contracting. Politicians also view corruption as a relatively minor phenomenon in the region (*Diario.es* 2014). For example, the MP José Antonio Rubalkaba compares the Basque country with other corruption-ridden regions in Spain, and says: "…political corruption does not exist as such in the Basque country, but only very individual cases of misappropriation" (*El Pais* 2008). Analysts tend to agree that, despite the Basque country having its own problems, there is not the "3 percent" problem that prevails in most other Spanish regions (Emilio Alfaro, *El Pais* 2008).

To gain an understanding of why the strong links between vested business and politicians are less prevalent in the Basque country than in other regions of Spain, such as Catalonia or Madrid, experts emphasize the importance of the specific organization of the Basque public administration. Unlike other regions, the Basque country has a highly prestigious *Instituto Vasco de Adminstración Pública* (IVAP), which is a government institution that was created in 1983 and is responsible for the recruitment and formation of Basque civil servants (Hernández 2010). The IVAP overviews the process of selection of senior civil servants who, unlike their peers in other Spanish regions, are not appointed at will by their political superiors. The result is a widely held understanding that careers in the Basque administration are based on transparent, fair and meritocratic criteria, and not on connections (Hernández 2010).[1]

Research Design, Data and Method

The main purpose of the empirical part is to investigate whether our hypothesis, that different career incentives for politicians and bureaucrats hamper corruption, is reflected in the data. To the present, most analyses of corruption causes have been national comparisons and scholars are often forced to work with perception-based measures, such as the well-known Control of Corruption index from the World Bank and the Corruption Perceptions Index of Transparency International. Although studies using these approaches have indeed contributed extensively to the field, they are limited by both design and data. Cross-national comparisons of causes of corruption have at least two, and sometimes three, problems in common.

First, and perhaps most important, theories tested with cross-national comparisons almost always draw information initially from differences between the same countries. We are certainly not saying that there is something wrong with developing theories inspired by empirical observations, that is only natural, but, as noted by Satori (1970) and forcefully argued by King, Keohane and Verba (1994), making theories less restrictive after empirical observations in one dataset requires new data in order for the theory to be properly tested. It otherwise comes close to data fitting, which in turn increases the risk of omitted variable bias. If we continue comparing the same countries over and

[1] We would like to thank Rafael Jiménez-Asensio – former advisor of the Basque Institute of Public Administration – Carles Ramiò – former director of the Catalan School of Public Administration – and Ines Pérez de Chávarri – correspondent in the Basque country of Spain's leading newspaper *El País* – for helpful comments regarding the structure of the Basque administration and grand corruption in the Basque country.

over again, with better matching between theory and data each time, we make this mistake collectively.

Second, there are good reasons to believe that within country differences are as important as between country differences. In Italy for example, the northern regions resemble the best performing German *Länder* in factors such as unemployment, per capita income, education and corruption, while the southern regions look more like the lowest performing countries in the EU. Similar large differences can also be found in Belgium, Spain, Romania and many other countries (Charron, Dijkstra, and Lapuente 2014). In a worldwide analysis explaining variation in economic development and productivity, Gennaioli et al (2012) find that sub-national explanatory factors often trump national level factors. Cross-national comparisons thus miss this variability as they must trust the less informative country mean and thus expose themselves to what has been called the "whole-nation-bias" (Rokkan 1970). Lipjhart (1971); later, Snyder (2001) underlined that, as comparativists are naturally limited by data availability, they need to increase the number of cases as much as possible, and sub-national comparison offers a particularly promising avenue for doing so.

Third, studies that use standard indicators of corruption and good governance are also affected by the widely held critique of these measures for being imprecise due to their heavy dependence on perceptions. The standard request is to take individual experiences and objective indicators of corruption into consideration to a greater extent and move away from perceptions (Abramo 2008; Andersson and Heywood 2009; Kurtz and Schrank 2007).

This paper avoids these three problems by analyzing sub-national data, comparing 212 European regions, with newly collected data for both the dependent and the independent variables. Our data allow us to build an experience-based measure of the career incentives in the public sector on the independent side and a novel objective corruption risk measure, based on over 1.4 million public procurement contract awards, on the dependent side. The next two sections describe these two datasets in detail.

However, before we discuss the datasets, we would like to address a key issue in any analysis at the sub-national level. In countries such as Germany, Belgium, Italy or Spain, local constituents elect regional governments that are to some degree autonomous in terms of forming their administration while, in more politically centralized countries, such as Bulgaria, Romania, Slovakia or Portugal, the regions that we target (so-called NUTS 1 and 2) are meaningful only in the sense that EU development funds are targeted directly to them and that Eurostat reports annual data on them. It can therefore be argued that administrative and political responsibility varies too much. This study argues otherwise, in that we attempt to capture all regional variation within a country. This is defend-

able, we think, as scholars have noted that the provision and quality of public services controlled by a powerful central government can nonetheless largely vary across different regions (Tabellini 2008). We will take this potential objection to our data into special consideration in our analysis, however, and re-run all models with only the politically meaningful regions in the sample.

Corruption risks

On the dependent side, this paper uses micro-level public procurement data to assess the risk of high-level corruption. This kind of data is used here in an international comparative context for the first time. The data contain information on individual public procurement tenders for EU28 between 2009 and 2013, including for example contract value, the deadline for submitting bids and the assessment criteria used. They derive from the European Union's Tenders Electronic Daily (http://ted.europa.eu/), which is the mandatory online publication for every tender that falls under the remit of the Public Procurement Directive. This means that large contracts are typically included in the database, with publication thresholds varying over time while being approximately 125 000 Euro for service contracts and 4 000 000 Euro for public works contracts. The database contains about 2.2 million contracts awarded for the entire period; however, we used data on only 1 403 939 contracts, excluding small countries without a sufficient number of contracts and dropping contracts below the mandatory publication threshold. As a result, 26 EU member states have indicators derived from public procurement micro data (EU26 henceforth).[2]

The data are of varying quality, and fields are missing for some countries. In countries such as Germany, issuers of contracts submit tender information as scanned documents while, in others, such as the Czech Republic, data flow in an integrated online system. This implies country-specific data errors. Nevertheless, in order to enhance data quality, the European Commission, DG Markt, which is the ultimate source of the database, has implemented a range of data enhancement and cleaning procedures.

We try to capture high-level corruption risk at the regional level. Our measures tap into deliberate restriction of open competition for government contracts in order to benefit a well-connected company (Fazekas, Tóth and King 2013), and we operationalize our dependent variable in two ways, differing only in the number of components included.

First, the simplest indication of restricted competition is when only one bid was submitted in a tender on an otherwise competitive market. Hence, the percentage of single-bidder contracts awarded in all the awarded contracts is the most straightforward measure we use.

[2] AT, BE, BG, CY, CZ, DE, DK, EE, ES, FI, FR, GR, HU, IE, IT, LT, LU, LV, NL, PL, PT, RO, SE, SI, SK, and UK.

TABLE 1, BIVARIATE PEARSON CORRELATION BETWEEN 'OBJECTIVE' MEASURES OF REGIONAL CORRUPTION AND SURVEY-BASED INDICATORS

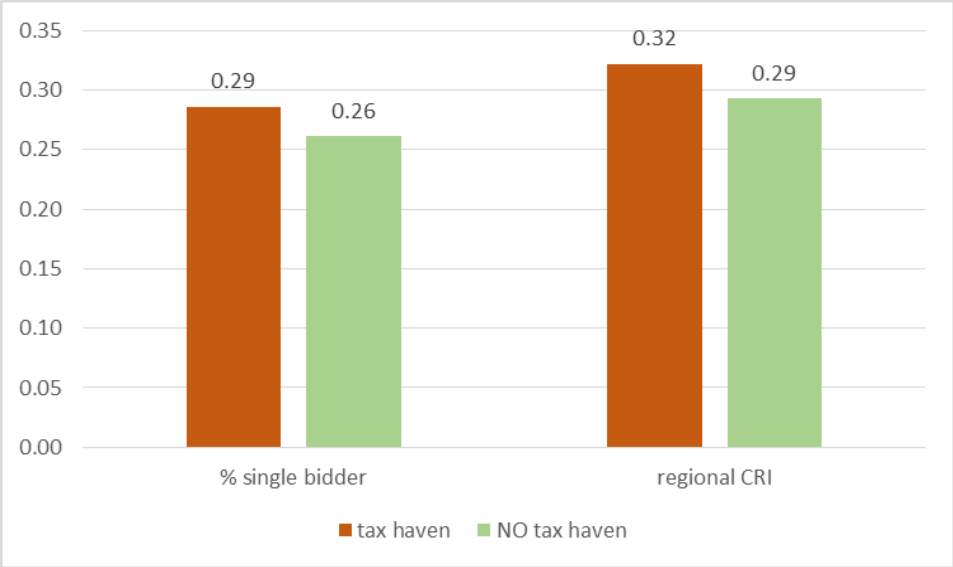
Variable	Percent single bidder	Regional CRI	Observations
Percent single bidder		0.69**	185
Regional CRI	0.69**		185
EQI (2013)	-0.61**	-0.54**	185
Corruption perception	0.55**	0.47**	185
Reported bribery	0.53**	0.59**	185

*Comment: ** significant at the 5% level*

Second, the more complex indication of high-level corruption incorporates characteristics of the tendering procedure that are in the hands of public officials who conduct the tender and suggests deliberate competition restriction. The following process-related indicators of corruption risks were thus included: i) a type of restricted, non-open tendering procedure; ii) the use of subjective, non-price related assessment criteria; iii) a very short advertisement period; and iv) a quick evaluation of bids. Each of these are large and significant predictors of single-bidder contract awards when controlling for the sector of the contracting entity (e.g. education, health), type of contracting entity (e.g. municipality, central government), year of contract award, main product market of procured goods and services (e.g. roads, training) and contract value. The average incidence of single bids received and the four processes related to 'red flags' constitute a composite indicator: the Corruption Risk Index ($0 \leq CRI \leq 1$, where 0=minimum corruption risk and 1=maximum corruption risk).

While the validity of both outcome measures predominantly stems from their direct fit with the definition of high-level corruption, their association with widely used survey-based corruption indicators and further objective indicators of corruption risks underpins their validity. As reported in Table 1, both corruption risk indicators (2009-2013 averages per NUTS region) correlate as expected with the European Quality of Government Index (EQI), which to our knowledge is the best regional measurement of institutional quality and corruption (Charron, Dijsktra and Lapuente 2014), and to two sub-components of the EQI, corruption perceptions in of public sector services and reported public sector bribery.

FIGURE 1, AVERAGE CORRUPTION RISKS OF PUBLIC PROCUREMENT SUPPLIERS REGISTERED ABROAD, EU26, 2009-2013, $N_{CONTRACT}$=14 909



To further explore the validity of our measure, we also inspect two more objective micro-level risk indicators, namely the procurement suppliers' country of origin and contract prices. First, 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 and Christensen 2014), which is shown in the case in Figure 1. Second, we 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 contract and CRI are associated with a higher price ratio. Single-bidder contracts are associated with a 7 percent higher contract value, while contracts with 1 CRI higher are associated with a 9 percent higher contract value, both reported in Table 3 below.

TABLE 3, LINEAR REGRESSION WITH RELATIVE CONTRACT VALUE, EU26, 2009-2013

Independent variable		
Percent single bidder	0.071 (0.000)	
Regional CRI		0.090 (0.000)
N	164,711	164,711
R2	0.088	0.086

Comment: Each regression controls: sector of the 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

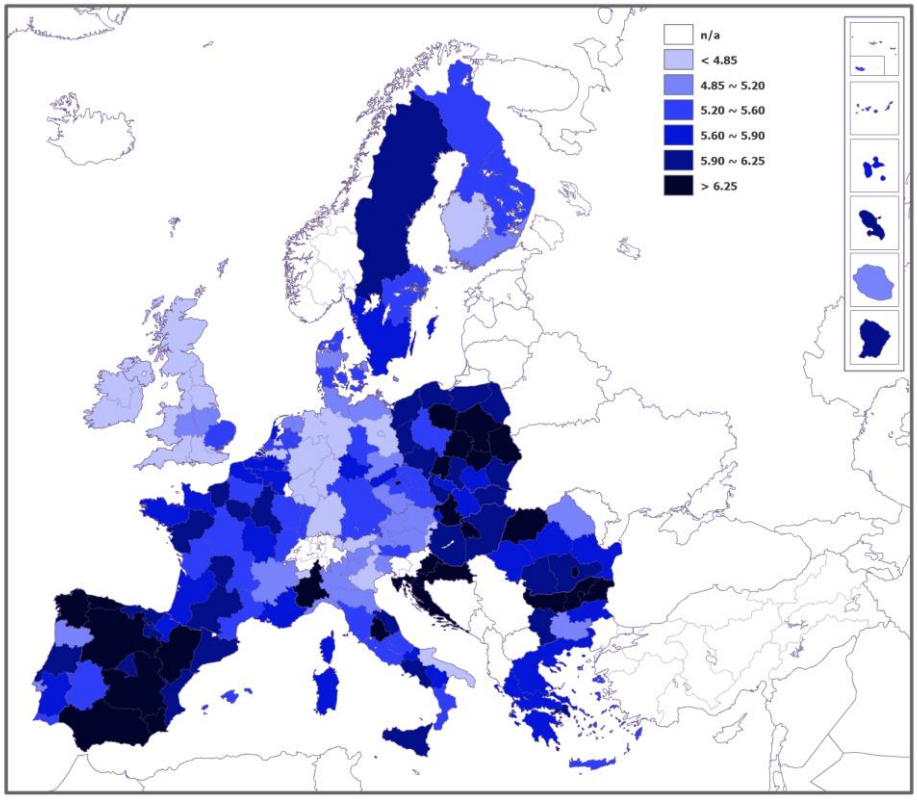
All in all, the validity checks strengthen our confidence that both our measures are indeed picking up high-level corruption risks.

Career incentives in the public sector

The primary independent variable captures the extent to which careers of public employees are independent of, in contrast to dependent on, connections. To measure this we surveyed 85,000 respondents across the European regions in the European Quality of Government Survey (EQI) (Charron, Lapuente and Rothstein 2013). We first recorded whether respondents answered that they were employed in the public sector in order to include only individuals with direct experience of what they were being asked. Roughly 30 percent worked in the public sector in some capacity. We then used a ten-scale question asking what the respondent thinks is closest to her own view: "in the public sector, most people can succeed if they are willing to work hard" (1) or "hard work is no guarantee of success in the public sector for most people – it's more a matter of luck and connections" (10).[3]

[3] The survey was sent out in February of 2013 and was conducted in the local majority language in each country/region; the results were returned in April the same year. Respondents were surveyed via telephone interviews, each of approximately ten minutes in length, with 32 questions, and the sample size in the survey was over 85,000. Moreover, the focus of the final data collected is the European Union's so-called NUTS statistical regional level, and was therefore selectively sampled with more than 400 respondents per region.

FIGURE 2, CAREER INCENTIVES FOR WORKING HARD IN THE PUBLIC SECTOR BY EUROPEAN REGION



Note: Lighter shades indicate more independence of careers.

Finally, we aggregate the scores by NUTS 1 and NUTS 2 region in each country, taking each region's mean score and its standard error (the latter is used as weights in regression analysis).

Overall, we find that there is significant variation in how public sector employees view the road to success in their field, although respondents in the majority of European regions tend to lean towards 'luck and connections' (as indicated by a score greater than '5'). We reverse the scores (so that higher values equal more meritocracy – e.g. the opposite of the map) and find that the regional scores range from least meritocratic, 1.7 (Belgrade Region, Serbia), to most, 5.7 (South Midland, England). Figure 4 shows the distribution by region in the sample (with the exception of Serbia and Ukraine). Regions that are shaded lighter are considered more meritocratic. For each region's point estimate we produce a 95% confidence intervalto show statistical significance from one region's estimate to another.[4]

[4] The standard error used to construct the confidence interval is used in several statistical models as a regional weight, weighting those regions with higher certainty higher in the estimations.

Estimation techniques

Due to the spatial nature of the data, we use primarily ordinary and weighted least squares regression.[5] However, as the data are cross-sectional, we run an obvious risk of endogenity between the two main variables. To deal with this issue, we employ a two-stage least squares (2SLS) instrumental analysis in several models, using historical and cultural instruments for modern day career incentives.

While instruments are admittedly difficult to find, we explore two possibilities. First are the literacy rates in 1880, which we argue would be a determinant of bureaucratic career incentives today. Hollyer (2011) argues that introducing civil service reforms that separated bureaucratic and political careers was only introduced when there was a pool of qualified candidates. A country or region with lower literacy rates is thus expected to be based more on patronage than regions with higher literacy rates, while a country or region with higher rates of literacy in the past had a wider pool from which to hire employees and thus, over time, stronger incentives for rulers to introduce meritocracy. Theoretically, past literacy rates should not be directly correlated with corruption levels but through other direct channels (such as our hypothesis). Past literacy rates have been used in several previous empirical studies as an instrument for testing cultural or institutional development (Charron and Lapuente 2013; Tabellini 2010).

Second, building on Weber (2002) and Becker and Woessmann (2009), who find that, historically, counties in Germany with higher concentrations of Protestantism have had better education and economic development, we use the proportion of Protestant residents in a region as an instrument for a more developed bureaucracy. In addition, Tabellini (2010) uses Protestantism in a sample of European regions as an instrument to explain beneficial aspects of modern day culture, which in turn lead to greater levels of economic development.

In many cases, we have regional estimates for both literacy rates and Protestantism, where we could not find statistics at the regional level. However, we employ country averages. Of course the validity of the instruments hinges on their statistical relationship with career incentives as well as their being uncorrelated with the unobserved determinants of corruption. We provide several tests of

[5] We experiment with several weights. First, since our regions are of varying sizes, with some very large in population and (Catalonia, Bavaria, etc.) and some quite small (Bolzano, Azures) we weight each region by it relative population sample, giving more weight to regions with larger populations and thus more information. Second, we re-run using the inverse of the standard error of the estimates of meritocracy by region. Third, we re-run models without weights.

instrumental validity in these models. More detail on the two instrumental variables is given in Appendix 2.[6]

Another issue of concern is our unit of analysis (regions in countries). We ran a test of heteroskadascitic y (ivhettest in STATA) from bivariate corruption-career models. These show weak signs of heteroskadesticity due to country clustering ($p=0.11$) while, in later models with more control variables, the test shows stronger signs ($p<0.01$). This issue leads to a second potential violation of OLS—that our observations might not be independent due to the regions being nested in countries. This implies that the data are clustered (around countries) and that the slope estimates and, in particular, the standard errors can be biased due to issues of group-wise heteroskadasticity. There is ongoing debate on how to model this issue, where three possibilities can be considered (Wooldridge 2003): first, use clustered standard errors in normal or weighted regression; second, employ a fixed effects model, which isolates the variation of the variables within countries; third, use a random effects hierarchical model, which allows for random country intercepts. On the basis of this and the nature of our data, we elect to take the country context into account via clustered (country) standard errors and to run models with hierarchical estimation (regions nested in countries). We also re-run the primary models with country fixed effects in robustness checks. We further provide both country and regional level variance in our tables, as recommended (Rabe-Hesketh and Skrondal 2008).

Alternative explanations

Although the main purpose of this paper is to study implications of the suggestion made above, we also take into account explanations from comparative studies of control of corruption that are reasonable at the regional level.

First, we follow authors who regard economic development as a prerequisite for good government and low corruption. Different versions of this argument can be found in the work of Lipset (1960), Boix and Stokes (2003), or Welzel and Inglehart (2008). We control for the overall level of economic development and for the rates of growth in the last years in order to capture both the level and recent trends in regional economic development. For this, we take the purchasing power per capita for the most recent year (2012) and the year 2000 (the furthest year back that is available) from Eurostat. The growth rates are taken over this period.

[6] Pairwise correlations between between our measure of corruption and the two instruments (past literacy rates and Protestantism) are relatively low – between -0.34 and -0.38. We report several tests in all models to test for instrumental validity.

Second, we follow a large body of literature on trust and good government that has found how low-corruption countries (Zack and Knack 2001, Rothstein and Uslaner 2005) and low-corruption regions (Putnam 1993, Tabellini 2010) tend to have populations with high levels of social capital. We take the average degree of generalized trust into account from a recent study by Charron and Rothstein (2015). The level of civic participation is captured via rates of electoral turnout for the latest regional level election (where applicable).

Third, since the accumulation of political power has been noted as being important for understanding corruption (Andrews and Montinola 2004), we control for four variables used in previous regional studies of corruption (Charron and Lapuente 2013): i) the fractionalization of a region's parliament for the latest year available (calculated as 1 minus the Herfindal Index for each region in the sample with a corresponding regional parliament), which is intended to capture the "clarity of responsibility" (Tavitis 2008); ii) the proportion of years a region has been governed by a single party; iii) whether the regional has a minority government; iv) how long the current party or coalition has been in power; and v) which, if one exists, is the electoral threshold that acts as an entry barrier for new political competitors at the regional level.[7]

Fourth, certain religions appear in many studies to be associated with levels of corruption, where the expectation is that countries or regions will have higher corruption where a greater proportion of the population practices a hierarchic religion (La Porta et al. 1999). Since the sample focuses on European regions, we take the proportion of self-identified Catholics for each region, averaged from the latest two rounds of the European Social Survey. In addition, ethnic diversity is often pointed to as a hinder to clean government (Alesina et al. 2003), which is controlled for here with the percentage of non-EU born residents by region (Eurostat).

Fifth, although the causal relationship is debated, countries with higher levels of income/wealth inequality tend on average to have higher corruption (You 2005). We use a Theil index of inequality of wages in six sectors of employment with the latest regional data (2010) from Galbraith and Garcilazo (2005) and the percentage of residents at risk for poverty by region in 2012 (Eurostat).

Sixth, several studies have looked at gender inequalities and corruption levels and found strong correlations among these two factors (Wängnerud 2009), pointing out that greater levels of participation of women equate with lower levels of corruption (Swamy et al. 2001). We control for the percentage of women in a region's parliament taking data from Sundström (2013)

[7] For such party and electoral institutional variables, as well as voter turnout, the number of regional observations falls to 128, as only 'politically relevant' regions (those with a corresponding elected chamber at the level sampled in our study) are included.

Finally, we control for a geo-political factor—whether the region is the country's capital—and demographic factors—such as the region's population and population density, taken from Eurostat.

In some cases (data from ESS, women in parliament, Theil measure of wage inequality) the NUTS regions provided did not correspond to those in our data for all countries. In all cases, the NUTS regions from other sources were lower (smaller regions); thus we aggregated from NUTS 2 to NUTS 1 or NUTS 3 to NUTS 2 using regional population weights taken from Eurostat.

Results

We begin by looking at the bivariate relationship between corruption and career incentives, which is relatively strong.[8] The bivariate correlations with both our measures of the dependent variables are significantly correlated in the expected direction with career independence ($p=<0.0000$). We provide scatterplots in the appendix (Figure A1) that show that, on average, regions with more independent career incentives are associated with lower corruption.

When we include control variables, reported in Table 4, we show their effects one at a time and then finish with two full models (models 8 and 9). The "percent single bidder" is used in all models as the dependent variable, whereas our other measure (CRI) can be found together with a third measure for validity (bribery) in the appendix (Table A2).

In model 1, we find a robust effect of independent bureaucratic careers on corruption, and indistinguishable effects of population density and capital regions. In models 2 and 3, economic development, broadly speaking, is accounted for with PPP per capita from 2011 (model 2) and from 2000 (model 3). The latter model also includes the total regional PPP growth per capita over this time period. Corroborating much earlier empirical literature, economic development—past and present—is strongly associated with lower corruption levels. Growth is positive, which is what we would expect (lesser developed regions tend to grow faster), yet the effect is negligible.

Cultural variables are examined in models 4 and 5. First, we test the effects of religion and find that the percentage of self-identified Catholics in each region is positive but that its effect is insignificant. In model 5, both social trust and our measure of diversity (percent of non-EU born population) show a significant relation with lower levels of corruption.

[8] We check several bivariate regressions with different specification (OLS, WLS, 2SLS) and show scatterplots in Figure A1.

Model 6 includes our measures of inequality, wage and gender. We find that the percentage of women in a sub-national parliament is significantly related to lower corruption. For example, the model predicts that a 10% increase in the women in parliament would result in a decrease in corruption of 0.1, *ceteris paribus*.

Model 7 includes only politically relevant regions. We find that neither the fractionalization nor the voter turnout is associated with higher or lower corruption on average. The negative effect of higher levels of career independence on corruption remains strongly robust in all the models.

Model 8 is the full model (without past PPP or growth, which were insignificant). We find that, although several variables, such as PPP per capita, fall below statistical significance, career independence remains strongly robust to the inclusion of all variables. Model 9 includes only politically relevant regions, together with significant factors from model 8, plus PPP per capita in 2011. In all cases, career independence in the public sector is a significant predictor of corruption levels. Interestingly, the percentage of women in parliament is strongly robust in all models in which it is included, corroborating several past studies (Swamy et al. 2001).

As several of the explanatory variables correlate between 0.4 and 0.5 with our career measure (in particular, PPP per capita and social trust), we include the variance inflation factor (VIF) for every model to show the extent to which multicollinearity might have an impact on the efficiency of the estimates. In none of the cases do we observe a serious problem. We find the effects to be uniform, irrespective of the measure of corruption used (see Table A2 in the appendix for results for the CRI and bribery measures). Finally, for robustness, all models in Table 4 are re-run using MLM estimation, and the full model is re-run removing all outlier regions.[9] No significant differences are observed in the results.[10]

[9] We define outliers as those regions having greater than 4/n on the Cook's D statistic (a formula taking into account leverage and residuals of each observation). Using this rule of thumb, we identify seven outlying regions and re-run the models without them. The regions are: GR2, IE02, ITE2, PL62, RO11, RO32 and SK01.

[10] Visuals of the residual plots and plots of residuals versus actual values of the full model 8, as well as outliers, are given in the appendix.

TABLE 4, THE EFFECT OF CAREER INDEPENDENCE IN THE PUBLIC SECTOR ON CORRUPTION

Variable	1	2	3	4	5	6	7	8	9
Careers	-0.09**	-0.07**	-0.06**	-0.07**	0.05**	-0.09**	-0.06**	-0.05**	-0.06**
	(0.03)	(0.03)	(0.02)	(0.02)	(0.01)	(0.02)	(0.01)	(0.01)	(0.01)
Pop. density (log)	-0.002							0.004	
	(0.01)							(0.05)	
Capital region	-0.03							0.03	
	(0.03)							(0.04)	
PPP 2011 (log)		-0.10**						-0.03	-0.06
		(0.03)						(0.05)	(0.05)
PPP 2000 (log)			-0.09**						
			(0.03)						
PPP growth (2000-2011)			0.0001						
			(0.006)						
Percent Catholic				0.11				0.10	
				(0.07)				(0.06)	
Percent non-EU born					-0.01**			-0.001	
					(0.002)			(0.002)	
Social trust					-0.21			-0.20*	-0.11
					(0.13)			(0.08)	(0.11)
Wage ineq. (Theil)						-0.96		0.13	
						(1.51)		(0.93)	
Percent women parliament						-0.01**		-0.005**	-0.003*
						(0.001)		(0.001)	(0.002)
Party fractionalization							0.30*		0.21
							(0.14)		(0.14)
Voter turnout							-0.002		-0.001
							(0.002)		(0.02)
Constant	0.56**	1.53**	1.53**	0.44**	0.54**	0.75**	0.48**	0.86*	1-01
	(0.12)	(0.31)	-0.24	(0.13)	(0.07)	(0.09)	-0.15	(0.36)	(0.55)
No observations	186	186	186	181	182	182	127	176	122
Countries	20	20	20	20	20	20	10	20	10
R^2	0.27	0.36	0.36	0.33	0.42	0.45	0.36	0.59	0.44
Mean VIF	1.06	1.12	1.86	1.15	1.25	1.11	1.07	1.92	1.85

*Comment: The dependent variable is percent of single bidders. WLS estimation with robust cluster (country), standard errors in parentheses. Observations are weighted by population. VIF is the mean variance inflation factor, which displays the extent to which multicollinearity might affect the efficiency of a given model. Models 7 and 9 are run with 'politically relevant' regions only, hence the drop in observations. **p<0.01, *p<0.05*

For a more concrete interpretation, we look at Table 5, which elucidates the marginal effects of career independence on corruption. We highlight predicted levels of corruption at the minimum value, 25th percentile, mean and 75th percentile and max levels of career independence, along with standard errors and confidence intervals. The model indicates that the lowest levels of corruption differ significantly from mean values and above, while the highest values are significantly distinguishable from just under the 75th percentile and below. We find that a min-max change in career independence is associated with almost three times fewer single-bid procurement contracts in a region (0.25 to 0.09). It is possible to turn these results into savings for governments using regression results shown in Table 3. Three standard deviation increases in career independence (about a 2 point increase) implies a 0.6-1.3% price decrease across Europe: that is a 14-31 billion EUR savings per year for the whole of EU in 2010 prices.[11]

TABLE 5, MARGINAL EFFECT OF CAREERS ON CORRUPTION – FROM FULL MODEL WITH CONTROLS

Careers	Predicted corruption	Standard error	95% c.i.	
Min	0.25	0.03	0.19	0.30
25th percentile	0.19	0.015	0.16	0.22
Mean	0.16	0.01	0.14	0.18
75th percentile	0.14	0.01	0.12	0.16
Max	0.09	0.02	0.06	0.12

Comment: marginal effects calculations from post-estimation command margins in STATA. Estimates from model 8 (full model) are given in Table 4.

To address the potential issues of endogenity, Table 6 reports models using a 2SLS specification. The first three models in Table 6 are simple WLS regressions with country clustered standard errors and no controls and highlight the relationship between the instrumental variables—past literacy rates and proportion of Protestantism—with career independence in the public sector. Both are in the expected direction; they are significant at the 99% level of confidence and remain significant when included together in model 3.

Models 4-6 try to isolate the exogenous effects of career independence on corruption with the use of a 2SLS IV regression for both our measure of corruption and for the measure on bribery. These

[11] For the minimum estimate, we used model 1 in Table 7: 0.04*2.04*0.071. For the maximum estimate, we used model 1 in Table 4: 0.09*2.04*0.071.

models also include control variables (not shown). We find that the effects of career independence on both procurement and bribery are remarkably robust to this estimation. Thus we alleviate any concerns that career incentives are endogenous to corruption, that both proxy for a salient omitted variable, and even that our indicators are measured with a sufficiently damaging level of error.

TABLE 6, IV REGRESSION ESTIMATES (2SLS) FOR THREE MEASURES OF CORRUPTION

	DV=Careers			DV=Corruption		
	1	2	3	Single bids	CRI	Bribery
Careers				-0.12**	-0.04*	-0.10**
				(0.03)	(0.02)	(0.02)
Past literacy	0.01**		0.06*			
	(0.004)		(0.03)			
Protestantism		2.92**	2.27**			
		(0.62)	(0.60)			
Constant	3.80**	4.23**	3.95**			
	(0.22)	(0.12)	(0.20)			
No. obs	179	185	179	175	175	177
Countries						
R^2	0.24	0.34	0.38	0.47	0.50	0.33
Uncentered R^2				0.80	0.97	0.62
1st stage F test				16.6**	16.6**	17.07**
Kleibergen-Paap (χ^2)				14.5**	14.6**	14.9**
Hanson J test (χ^2)				0.003	1.81	5.05*

Comment: Models 1-3 OLS with country clustered standard errors (in parentheses). The dependent variable is careers. Models 4-6 use the three measures of corruption as the dependent variable and include population density (log), PPP per capita (2011, log), social trust, % of women in parliament, and robust standard errors in parentheses. In models 4-6, careers are modeled as the endogenous regressor with literacy and Protestantism as exogenous instruments. Regions weighted by population. Relevance of the instruments with careers is tested with the first stage F-test (Ho: instruments are weakly identified). The Kleibergen-Paap (Chi2) test tests whether the equation is properly identified (Ho: model is underidentified). The Hanson J statistic tests whether the instruments are valid, e.g. uncorrelated with the error term in the second stage (Ho: instruments are valid).

***p<0.01, *p<0.05*

This is based on valid instruments. For an instrument to be valid, it must be correlated with the endogenous variable (careers), nevertheless not with the error term in the second stage estimations for corruption when the other regressors are controlled for in the model. The first stage F test in models 4-6 shows that the instruments are strongly relevant (the rule of thumb is an F statistic

>10). The Kleibergen-Paap test shows that our model is not under-identified, while the Hanson' J statistic', which tests the correlation between the instruments and the second stage error term, shows that the instruments are quite valid in the first two cases. In the third case (bribery), we find that the instruments are somewhat correlated (p=0.04) with the residuals in the second stage, meaning that the estimates of model 6 (bribery) should be interpreted with more caution.

Thus far, we have accounted for several factors associated with corruption on a regional level, but some factors from the literature are difficult to disaggregate from the country level with existing data. For example, Brunetti and Weder (2003) point to the level of press freedom being negatively associated with corruption, while Keefer (2007) highlights the effects of the age of a country's democratic institutions as affecting the level of corruption, and much debate has centered around the effects of ethnic diversity and corruption (Alesina et al. 2003). In the next table we therefore ask whether our results hold when we account for country factors. Table 7 checks for further robustness and focuses on the factors that were not accounted for in the regional level analysis—age of democracy, freedom of the press and ethnic heterogeneity are also checked in the table below, which uses both MLM and WLS (with country clustered, robust standard errors) to estimate the effects of the variables on the two levels.[12]

All models include controls from Table 7 at the regional level, and each country level factor is taken one at a time, building up to the full model in models 7 and 8. In sum, corroborating several previous studies, regions in countries with a longer history of democracy and higher levels of press freedom tend on average to have lower corruption, while states that are more ethnically diverse tend to have regions with higher levels of corruption. In none of these models that account for country level effects does the impact of career independence on corruption fall from significance, demonstrating strong and robust evidence for our hypothesis. Interestingly, the random components of the MLM models show that the standard deviation at the country level is near '0' in the models, while the standard deviation of regions at the second level is in large part insignificant. There is also little residual variance of the dependent variable at the country level relative to the regional level, in particular when the three country level factors are included, again highlighting the relevance of the regional level of analysis, which supports using the region as the primary unit of analysis. Finally, we find the results robust to our other measure of corruption (see Table A2, models 3 and 6 in Appendix 1).

[12] Country level data taken from the Quality of Government Institute's homepage, (Teorell et al. 2013).

TABLE 7, THE EFFECT OF CAREER INDEPENDENCE ON CORRUPTION ACCOUNTING FOR COUNTRY LEVEL FACTORS

Variable	1	2	3	4	5	6	7	8
Careers	-0.04**	-0.04**	-0.06**	-0.06**	-0.04**	-0.04**	-0.02*	-0.02*
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.006)	(0.007)
Country level variables								
Years of democracy	-0.002**	-0.002**					-0.002*	-0.002
	(0.0005)	(0.001)					(0.001)	(0.001)
Ethnic fractionalization			0.003** (0.001)	0.003** (0.001)			0.006** (0.002)	0.006** (0.002)
Press freedom					0.006*	0.006*	0.005*	0.005*
					(0.002)	(0.002)	(0.002)	(0.002)
Constant	0.45	0.45	0.89*	0.88*	0.31	0.31	-0.04	-0.004
	(0.29)	(0.26)	(0.33)	(0.34)	(0.47)	(0.49)	(0.33)	(0.34)
Random Variance Components								
Sd (cons)	1.04e-11 (6.41e-10)		3.04e-12(1.48e-10)		2.54e-14 (1.77e-12)		3.65e-12(2.42e-10)	
Sd (residual)	0.08 (0.045)		0.08(0.05)		0.07 (0.04)		0.07 (0.04)	
Obs	180	180	180	180	180	180	180	180
Countries	20	20	20	20	20	20	20	20
R^2		0.58		0.54		0.61		0.66
Wald model test Pr(χ^2)	269.4		1027.9		170.2		1267.6	
Log likelihood (iteration 0)	0.889		0.889		0.923		0.982	
Log likelihood	1.102		1.056		1.137		1.196	
Estimation method	MLM	WLS	MLM	WLS	MLM	WLS	MLM	WLS

Comment: The dependent variable is ***percent of single bidders.*** *All models include (not shown): PPP per capita (logged, 2011), social trust, population density (logged) and % women in parliament. Other regional level variables from Table XX were dropped due to insignificance. WLS (weighted least squares) estimation reports country clustered, robust standard errors in parentheses; in such models the regional level observations are weighted by the population. MLM is estimated with the same regional controls as the WLS models and allows for random country intercepts. Units weighted by population and country-clustered standard errors are in parentheses. **p<0.01, *p<0.05*

Conclusions

Institutional quality matters. But the way in which institutional quality can be achieved is subject to debate among scholars and practitioners. It was long argued that institutional capacity was the result of an appropriate investment of resources, but economists have shown that this might not be the solution after all and that, quite the opposite, cheap money can foster irresponsible political behavior similar to that experimented in oil booms (Fernandez-Villaverde, Garicano, and Santos 2013; Tabellini 2010).

Consequently, attention has shifted towards incentives, in particular towards the incentives provided by institutions regulating the relationship between citizens and politicians. The idea underlying scholarly works emphasizing the importance of democracy for the long-term prosperity of nations (Acemoglu and Robinson 2012), reformers´ proposals of open-list electoral systems and party primaries in corruption-ridden countries (*Financial Times* 2013) and recent massive anti-corruption rallies in Athens, Madrid and Rome that demand a *real democracy*, is that improving the accountability of the representatives to the represented will minimize corruption. Let's make the agents as accountable as possible to their principals!

Such suggestions overlook the crucial role of the bureaucracy. To the extent we trust the results presented in this paper, the aim should not be to make agents (bureaucrats) as responsive as possible to their principals (politicians) but, quite the contrary, make them independent of each other. The empirical analyses have indeed shown that, controlling for the usual confounders in the literature, making bureaucrats less reliant on political connections reduces the risks of corruption. Conversely, where bureaucrats' career incentives exclusively follow professional criteria, we find the lowest levels of corruption risk.

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Appendix 1

TABLE A1, FURTHER DESCRIPTION OF VARIABLES: SUMMARY STATISTICS AND SOURCES

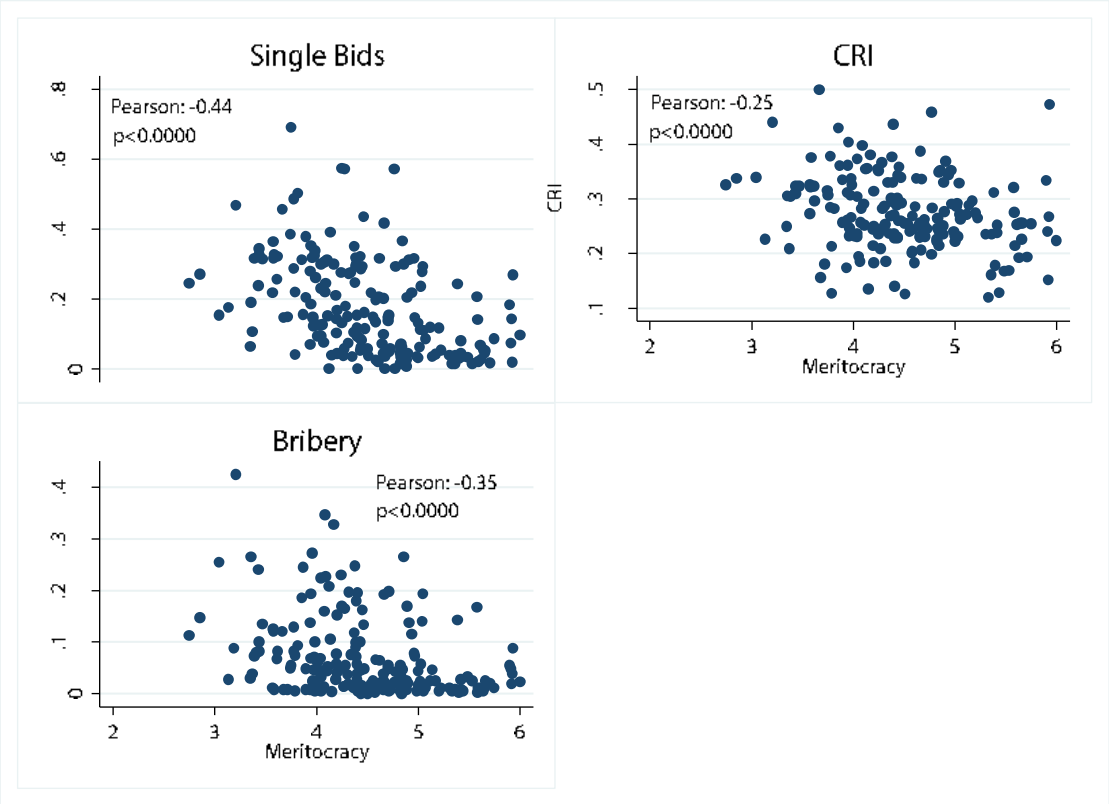
Variable	Obs	Mean	Std. Dev.	Min	Max	Source
Regional level						
Proportion single bids	186	0.24	0.14	0.01	0.73	Fazekas et al (2013)
CRI	185	0.27	0.07	0.12	0.50	Fazekas et al (2013)
Bribery (proportion)	189	0.07	0.08	0.00	0.43	Charron, Dijkstra & Lapuente (2014)
Careers	189	4.48	0.68	2.75	6.00	Author created
pop. Density (log)	189	2.50	-1.65	0.02	8.49	Eurostat
Captial region	189	0.11	0.32	0	1	Eurostat
PPPp.c. (2011, log)	189	10.00	0.39	8.88	10.93	Eurostat
PPPp.c. (2000, log)	189	9.68	0.51	8.13	10.79	Eurostat
PPP growth (2000-2011)	189	40.12	32.27	5.45	181.65	Eurostat
Wage Inequality (2010)	187	0.00	0.00	0.00	0.03	Galbraith and Garcilazo (2005)
Poverty Risk (2008)	181	16.17	6.71	4.90	38.40	Eurostat
% women parl	182	27.60	8.19	10.00	44.97	Sundström (2013)
Social Trust	189	0.43	0.18	0.09	0.81	Charron and Rothstein (2015)
Party Fractionalization	128	0.67	0.12	0.37	0.86	Author calculated, raw data from: www.parties-and-elections.eu
Reg. Voter turnout	128	58.66	13.43	29.45	92.90	Author created, raw data from: www.parties-and-elections.eu
Protestant	185	0.10	0.16	0.00	0.70	Author created, raw data from 2010 & 2012 ESS data (Appendix 2)
Catholic	185	0.39	0.32	0.00	0.98	Author created, raw data from 2010 & 2012 ESS data
% non EU-born	183	5.64	5.40	0.00	30.06	Eurostat
Literacy rates (1880)	183	55.4	25.2	8.88	97.5	Author collected from various sources (Appendix 2)
Country level						
Consec. Yrs dem	189	48.94	18.30	16.00	63.00	Polity IV
Ethnic fractionliazation	189	0.73	3.70	0.05	25.81	Alesina et al (2003)
Press freedom (2013)	189	23.61	8.64	10	42	Freedom House
Gini index	185	32.12	3.57	24.70	38.45	World Development Indicators

TABLE A2, ESTIMATIONS WITH ALTERNATIVE MEASURES OF CORRUPTION: REGIONAL AND COUNTRY LEVEL VARIABLES FOR FULL SAMPLE AND POLITICALLY RELEVANT REGIONS (FULL MODELS ONLY)

Variable	CRI	CRI	CRI	Bribery	Bribery	Bribery
Careers	-0.02**	-0.03***	-0.012*	-0.03***	-0.03***	-0.015*
	(0.009)	(0.01)	(0.062)	(0.008)	(0.001)	(0.008)
Pop. density (log)	-0.002	0.06**	-0.005*	0.003	0.01	0.004
	(0.003)	(0.02)	(0.003)	(0.004)	(0.04)	(0.004)
Capital region	-0.009	-0.03		0.05*	0.01	
	(0.03)	(0.03)		(0.02)	(0.02)	
PPP 2000 (log)	-0.003	0.02	0.015	-0.05*	0.03	-0.01
	(0.02)	(0.03)	(0.011)	(0.026)	(0.03)	(0.02)
PPP growth (2000-2011)						
% Catholic	0.01			0.001		
	(0.02)			(0.04)		
% non-EU born	0.001			0.001		
	(0.001)			(0.001)		
Social trust	-0.09**	-0.06**	-0.07*	-0.03	-0.13**	-0.05
	(0.04)	(0.02)	(0.04)	(0.05)	(0.06)	(0.05)
Wage ineq. (Theil)	0.06			1.67*		
	(0.78)			(0.63)		
% women parliament	-0.005***	-0.004***	-0.004***	-0.005**	-0.004**	-0.003**
	(0.001)	(0.001)	(0.001)	(0.002)	(0.02)	(0.01)
Party fractionalization		0.11			0.12	
		(0.07)			(0.15)	
Voter turnout		0.0001			0.0003	
		(0.0005)			(0.001)	
Yrs. consec. Democracy			-0.0003			0.001
			(0.0005)			(0.001)
Ethnic fractionalization			0.001			0.001
			(0.001)			(0.0007)
Press freedom			0.002**			0.006***
			(0.001)			(0.001)
Constant	0.57**	0.14	0.30***	0.83**	0.006	0.18
	(0.13)	(0.26)	(0.09)	(0.24)	(0.33)	(0.16)
Random Variance Components						
Sd(cons)			0.0009(0.006)			0.00005(0.0002)
Sd (residual)			0.042 (0.024)			0.038(0.023)
Wald Chi2			319.6			958.7
Obs	176	122	180	178	123	180
Countries	20	10	20	20	10	20
R^2	0.54	0.48		0.61	0.50	
Mean VIF	1.92	2.35		1.92	2.34	
Estimation	WLS	WLS	MLM	WLS	WLS	MLM

*Comment: WLS (weighted least squares) with robust country clustered standard errors (in parentheses). MLM is multilevel estimation with robust clustered standard errors (in parentheses). ***p<0.01, **p<0.05, *p<0.10*

FIGURE A1, BIVARIATE SCATTERPLOTS OF THE THREE CORRUPTION VARIABLES WITH THE CAREER VARIABLE (ENTIRE SAMPLE AND WITHIN COUNTRIES BY CORRUPTION VARIABLE)



Appendix 2: Further details on the instrumental variables

I. Protestantism

We collected data from the European Social Survey using the question "Which Religion or denomination (do you) belong to at present?" We coded all respondents who answered affirmative to 'Protestant' as '1' and any other religious denomination, lack of denomination or 'refusal' as '0'. The 'don't know/refusal' rate was less than 0.4% in all samples used. We then aggregated the individual level responses to the closest available regional NUTS code that the ESS provides for each country, and individual units were weighted using the recommended design weights provided by the ESS to ensure better representativeness. In some cases, our NUTS level did not match that of the ESS (they provided NUTS 2, while we have NUTS 1); we then aggregated the NUTS 2 level data to NUTS 1, weighting by regional population. As not all countries and regions are included in every round of the ESS, we take the average score of the last two rounds in order to include all regions in our sample.

II. Average literacy rates in 1880 (approximate)

Our data sources are heterogeneous and are thus subject to some measurement error. However, we use this measure not as an 'exact' level of literacy but as a proxy for the approximate level of historical human capital and inequalities in development near the turn of the 20th century.

Argument: literacy and education offered the opportunity of a civil service post and the added prestige of a close association with public authority. A country/region with lower literacy rates was more 'elitist' and was thus expected to be based more on patronage than regions with higher rates.

i. Countries with regional level sources

Italy, Portugal, Spain, France, West Germany, U.K., Belgium,

Literacy rates by region, 1880, from Tabellini (2010)

For UK's missing regions, the region of London is taken from (Blaug 1975), while Northern Ireland is taken from Flora, 1987.

East German (Prussian) regions

Estimates for 1880 used from linear predictions from 1870 and 1900 data from Flora (1973)

Austria and Czech Republic

Good (2002) provides a measure of regional inequality of Austro-Hungarian regions (Alpine, Bohemian, Southern and Carpathian). Used together with an exact estimate of Galician (Carpathian) regions in Poland from Corrsin (1988), we calculate the regions in current day Czech and Austrian regions (minus Burgenland). Estimates for capital regions (Prague and Vienna) are taken from

Regions of Hungary, Slovakia, Romania (3), Croatia (1), Burgenland (AT) in the Hungarian part of the Austro-Hungarian Empire

Rates of 1880, aggregated from county level data to today's regions (from Toth 1996)

Poland

Regions in Poland in 1880 were divided into three different empires (Austria Hungary – Galacia and Silesia provinces -, Prussia and Russia), and the regional differences in literacy rates were noteworthy. We take rates for the five Russian regions of Lodzkie, Lubuskie, Mazowieckie, Podlaskie, Swietokrzyskie from Janos (2000), while the regions in Galacia (Malopolskie and Podkarpackie) are taken from Corrsin (1988). Prussian regions (Lubelskie, Zachodniopomorskie, Opolskie, Warminsko-Mazurskie and Pomorskie) were taken from Flora (1973) and calculated for 1880 using linear extrapolation from 1870 and 1900 data. The remaining four regions were divided between two or more empires in 1880 – Russia and Prussia (Wielkopolskie and Kujawsko-Pomorskie) Prussia and Austrian-Silesia (Dolnoslaskie) and Prussia, Russia and Galacia (Slaskie). Due to a lack of county population data in 1880, we take simple averages for the divided Russian, Prussian, Galacian and Silesian (based on Bohemia/Morovia rates) regions.

Romania

We take the three regions in the Hungarian empire (Nord-Vest, Centru and Vest) from Toth (1996); the other five regions come from Janos (2000).

ii. Countries for which regions derive from national level estimates

Greece

Averaged male and female country rates (1870) come from Roudometof (2000).

Bulgaria

Due to conflicting estimates from two sources, we take average rates from two sources (Janos 2000, and Roudometof, 2000).

Averaged male and female rates (1881) are from Roudometof, (2000) and total rates from Janos (2000).

Sweden, Denmark (Copenhagen region specified) and Finland

Rates at 1880. For Finland, rates of Protestants only (church census) come from Markussen (1990).

Ireland

From Flora (1987)

Sources:

Flora, 1987. State, Economy, and Society in Western Europe 1815-1975: A data handbook in two volumes.

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