Decentralization, Political Competition and Corruption*

Facundo Albornoz
University of Birmingham

Antonio Cabrales
Universidad Carlos III de Madrid and CEPR

May 3, 2013

Abstract

We study the effect of decentralization on corruption in a political agency model from the perspective of a region. In a model where corruption opportunities are lower under centralization at each period of time, decentralization makes easier for citizens to detect corrupt incumbents. As a consequence, the relationship between fiscal decentralization and corruption is conditional on political competition: decentralization is associated with lower (higher) levels of corruption for sufficiently high (low) levels of political competition. We test this prediction and find it is empirically supported. Also, we show how the preferences of voters and politicians about fiscal decentralization can diverge in situations where political competition is weak.

JEL-Classification: H11, D72, D73, P16

Key-words: decentralization, centralization, political agency, corruption, quality of politicians.

*This paper circulated previously as "Support for Decentralization, Quality of Politicians and Development". We are thankful to the editor and two referees for their suggestions. Esther Hauk, Marcelo Leiras, Mariano Tommasi and seminar participants at Aarhus University, University of Birmingham and Universidad de Navarra, among others, provided helpful comments. We thank Alejandro Vicondoa for his excellent research assistance. We are specially thankful to Toke Aidt for his valuable comments and for providing the data on corruption, political competition and decentralization. Albornoz is grateful for support from the ESRC (RES-062-23-1360).

1 Introduction

How do fiscal and political decentralization affect the corruption opportunities in a region? Are centralized schemes of government more or less associated with the possibility of electing corrupt politicians? Neither theory nor empirical work provide an univocal response.[1] For example, while Fisman and Gatti (2002), or Barenstein and de Mello (2001) find a positive effect of decentralization in reducing corruption, Treisman (2002) shows evidence of the opposite effect. In this paper, we argue that the effect of decentralization on corruption is conditional on the level of political competition: decentralization is associated with lower levels of corruption provided there is a sufficiently high level of political competition. We also provide evidence that this is indeed the case. To the main question, we add an additional one: is it possible that the political class preferences over centralization diverge from what the citizens actually prefer? We find that this divorce between politicians and voters may emerge in situations characterized by low levels of political competition.

We begin our analysis by comparing two different fiscal schemes, which differ in who decides the level of public good provision and, thereby, in the payoff consequences of those decisions. In one scheme, a central agency decides the level of public good to be provided in the region, taxes accordingly and delegates the implementation of provision to local politicians. Combining centralized decisions with decentralized execution is a common institutional arrangement in many countries[2] but it has received relatively little attention in the literature. This is specially relevant for developing countries where local politicians administrate the funds received from the central government.[3] This fiscal scheme is a weak form of centralization in the sense that the central government delegates the actual delivery to the local government but it keeps the decision power.[4] For expositional purposes, however, we refer to this fiscal arrangement as centralization.[5]

[1] The literature is discussed in section 2.

[2] Examples include both unitary states, like France, UK and Chile and federal states like Germany Spain, Argentina, South-Africa and Brazil. See, for example, (Hueglin and Fenna, 2006).

[3] Nicolini, Posadas, Sanguinetti, Sanguinetti, and Tommasi (2000) discuss the case of Argentina. Another example of thus system can be found in South-Africa, where the form taken by the post-apartheid federal system is such that centralized decisions are implemented by accountable local governments (Hueglin and Fenna, 2006).

[4] It is stronger than deconcentration, which is considered the weakest form of decentralization (http://www1.worldbank.org/publicsector/decentralization/admin.htm)

[5] This type of centralization is of course not unique and stronger forms are common as well. We discuss the implications on our results of complete centralization in section 5.

Importantly, the recognition that the delivery of public goods is often done at the regional level by a politically accountable authority introduces a novel advantage associated with centralization. Given that the delivery of public goods is carried out by regional authorities even when decisions are made by a central government, centralized schemes offer an unexplored advantage. The advantage of a central authority determining the public good provision at sub-central levels is precisely the lack of direct control of the local outcomes. Thus, the center can mandate a level/type of public good that is detached from the potentially biased self-interest of sub-central politicians. This way, the advantage of a central authority does not require any additional assumptions on the different nature of the political class.[6]

As previously identified by the literature, local politicians have (private) better information about the actual cost of delivering the public good (different states of the world would determine different optimal levels of provision). How they use this informational advantage depends on their type, the political process and the level of fiscal autonomy. We consider two types of local politicians, those motivated by ego/pride-rents (and hence honest, in this model) and those materially motivated, which can lead them to behave dishonestly. Since the states of nature in the center and the region may differ, the center may make inappropriate decisions for the region. When her/his signal is that the state of nature is good (costs are low), the center mandates a high level of public good. When the signal is that the state of nature is bad (costs are high), the mandate is to provide a low level of public good. When the signals are mismatched with the true state of the nature, local politicians must either have insufficient funds to meet the central requirements or receive excessive taxation for their needs, which they can pocket (if dishonest) or use as a signal of honesty in order to be re-elected.

Under decentralization, decisions are taken by the local government. In this case, honest local politicians provide the socially optimal amount of the good, at the appropriate cost. The dishonest local politicians always pretend the public good is expensive, deliver a low amount of the good and personally pocket the difference when it is not expensive. This implies that the relative benefit of decentralization is increasing in the quality of the regional political class. As a consequence, the support to decentralization should be increasing in the level of trust enjoyed by local political parties. We provide evidence

[6]As a consequence, we avoid assuming that politicians of the central government are more altruistic (as in Blanchard and Shleifer (2001)) or more talented, as stated by John Stuart Mill more than a century ago in the following way: "*the local representative bodies and their officers are almost certain to be of a much lower grade of intelligence and knowledge, that Parliament and the national executive*" (quotation taken from Treisman (2002)).

consistent with this result at a supra-national level: the public support to the European Union is inversely correlated with the sentiments of trust in the local (national) political system. Importantly, as regional authorities are elected and can potentially be re-elected, voters can read in the provision of the public good the type of the incumbent. This is relevant as they use this information in their decisions on whether to re-elect the incumbent or vote for a challenger. It is in this sense that decentralization allows for a better selection of politicians. To explore this feature, we develop a political agency model with probabilistic voting that elaborates on Besley and Smart (2007).

Exploring how politicians are selected identifies a novel disadvantage associated with centralization. If the provision of public good reveals to some extent the type of the local government, centralization makes it more difficult to detect that type. As a consequence, it facilitates the re-election of potentially corrupt incumbents. Hence a trade-off may arise, as centralization can reduce temptations to the local politicians at the expense of reducing the capacity of elections to select better politicians. Importantly, we find that the dominant effect is conditional on the level of political competition at the regional level. Thus, our model generates a subtle effect of decentralization on corruption, which adds to an open debate about the effects of decentralization on corruption.[7] Moreover, we provide evidence consistent with this result. We show that the negative relationship between corruption and decentralization, uncovered for example by Treisman (2002), is conditional on the level of political competition. For high levels of political competition, the effect of decentralization is indeed positive.

We conclude our analysis by exploring another source of citizens' disaffection with the political and fiscal system. We show that it is possible to generate situations in which politicians, independently of their type, impose centralization and do not respond to the demand for a change in the direction of decentralization. Interestingly, we show that this divorce between voters and the political class in terms of the organization of the country or the region critically depends on the level of political competition. That political parties respond only partially and slowly to shifts in public opinion is well known in the political science literature (e.g. Adams, Clark, Ezrow, and Glasgow (2004)) and, as we discuss below, examples of this divorce can be found in the cases of Catalonia and Argentina.[8]

To recapitulate, this paper is organized in the following way. In Section 2,

[7] For a review see Besley and Smart (2007).

[8] At the supranational level, the EU provides a good example of conflictive views over integration between mainstream politics and a large mass of the population (Steenbergen, Edwards, and de Vries, 2005).

we discuss the related literature. Section 3 presents the model, characterizes the solutions for both centralization and decentralization and shows that the support to decentralization increases in regional divergences and the quality of the local political class. In section 4, we introduce political competition and clarify the effect of decentralization on corruption. We also examine the potential divorce between voters and politicians and show that the citizens' support to decentralization may be unrepresented for low levels of political competition. In section 5, we test the main result of our model and provide evidence of the conditional effect of decentralization on corruption. We conclude in section 6 where we discuss some variations to the model.

2 Literature Review

Several studies shed light on the costs and benefits associated with fiscal centralization. The traditional trade-off basically goes in this way: a decentralized structure will take better account of the preferences of the people but it will impose coordination costs, when there are externalities or scale advantages in the delivery of the public good (Oates, 1972). More recently, the literature on decentralization and corruption identified some additional interesting trade-offs. An argument favoring decentralization is that it is associated with greater accountability (Tomassi and Weinschelbaum, 2007; Seabright, 1996). This argument is stronger if individuals observe the provision of the public good in other regions and they use this information to evaluate their local politicians (Besley and Case, 1995), and also in the presence of sufficiently strong political competition (Shleifer and Vishny, 1993) or press freedom (Lessmann and Markwardt, 2009). Besides, centralization can generate undesired conflicts of interest between regions if decisions are made by a central legislature which may be reflected in an inefficient and unequal degree of central provision of the public good (Besley and Coate, 2003). These positive features of decentralization may be counterbalanced by a greater danger of corruption and rent seeking associated with the fact that local governments are easier to capture by local elites (Bardhan and Mookherjee, 2000, 2005, 2006). Our results complement this literature in providing new arguments in favor and against decentralization, in emphasizing the role played by the selection of regional politicians and in clarifying how the advantages and disadvantages of each fiscal scheme depend on the level of political competition.

We emphasize the impact of economic conditions on the political viability of decentralization. In this sense, decentralization can be a consequence of economic development via improvements in the quality of the political class.

But in our model it can also be due or changes in preferences over public good consumption. This induces a note of caution in interpreting cross country evidence on the relationship between decentralization, corruption and growth.[9] Specifically, it is not necessarily true that decentralization causes less corruption and more growth. In fact, the empirical literature provides conflicting evidence. While Fisman and Gatti (2002) or Barenstein and de Mello (2001) find a positive effect of decentralization, Treisman (2002) finds the opposite result; a discrepancy which Nupia (2007) explains through a lower level of local political accountability in developing countries.[10] This is important to the extent that decentralization is often recommended to developing countries as a device to promote growth and reduce corruption (World Bank Independent Evaluation Group, 2008).

The work of Hindriks and Lockwood (2009) relates to our point that electoral accountability differs across fiscal schemes. In a different framework, they also find that centralization reduces the capacity to select good politicians. In our analysis, this result emerges from the fact that politicians pool in their decisions on public good provision when the state of the nature is bad and, importantly, we associate the magnitude of this problem with the level of political competition.

Another paper that takes into account redistributive politics and centralization is Hatfield and Padró i Miquel (2008), which studies a context in which public goods provision is redistributive and where decentralization can be used as a commitment device to solve a time-consistency problem of governments that for short-run redistributive reasons would impose capital taxation that is excessive from a long run perspective.

3 Model

We analyze the economy of the region. There are two fiscal authorities, one at the region and the other at the center.[11] Citizens derive utility from a public good (G) and money. Each individual receives income from his labor market participation and pays taxes to the government. The government uses tax revenues to fund the provision of the public good but it can take part of the revenues for personal consumption.

[9] See, for example, Treisman (2002).

[10] Treisman (2002) argues that the reason of the discrepancy is the use of a different set of controls, which suggests that the relationship is not fully robust.

[11] In theory, this could also be a country and a supranational structure.

The capacity to provide the public good (θ_j) depends on the state of nature, only observed by the government. This can be either H or L, where $\theta_H > \theta_L$ with probabilities p and $1-p$, respectively. In the state $j \in \{H, L\}$ the per capita cost of providing one unit of the public good is $\theta_j^{-\frac{1}{2}}$. Thus, the per capita tax required to provide G is $\tau \geq G\theta_j^{-\frac{1}{2}}$.

Voters' utility takes the form $u_i = 2G^{\frac{1}{2}} - \tau + w_i$. The optimal public good provision is given by $G^* = \arg\max 2G^{\frac{1}{2}} - G\theta_j^{-\frac{1}{2}} + w_i$. It follows that a social planner who knew θ_j would provide $G^* = \theta_j$ and would collect $\tau^* = \theta_j^{\frac{1}{2}}$.

We view government through the lens of the political agency model.[12] This involves some typical ingredients. There is a principal-agent relationship between voters and government. The principal is constituted by the voters who delegate the decision making to the government, the agent. The government has private information on the state of nature: the ability to provide public goods (θ_i). The informational advantage provides the possibility for the politician in office to behave opportunistically. As the motives for holding office are not purely altruistic, a problem of accountability emerges. Elections offer a possibility to (at least partially) reward or punish governments suspected of dishonest behavior. Voters observe taxes and public good provision and employ this information to form an opinion concerning the incumbent's type. If citizens infer that the government might not be honest, the incumbent is not reelected and voters elect another candidate. Actions in office can also signal honesty. As we will show in the analysis below, an incumbent interested in re-election will find opportunities to demonstrate honesty. In these cases, the incumbent is re-elected. In other circumstances, the voters can not infer the type of the politician in office and the incumbent's chances of win the election are the same as for any other candidate. Finally, there will be cases where the provision of public good is uninformative about the politician's type and hence the incumbent can run for re-election with the same probability of winning as any challenger.

There are three dates, 0, 1 and 2. In the first date ($t = 0$), the region holds a referendum on whether to accept a centralization plan. Under centralization, the center determines the public good provision, collects taxes from the region, transfers the corresponding funds to the government of the region, and then the regional government executes the center‘s instructions. Under decentralization, the government of region decides the level of public good and taxes accordingly.

[12]Besley (2006) offers a comprehensive discussion of political agency models.

An important element centralization is that the level of government that makes decisions is the only one that has the information about the state of nature ex-ante, i.e. before executing the decision. This happens because the body of civil servants that will do study the problem is either centralized or devolved to the region. Hence, when centralizing, the actual provider of the good, the regional government, will only find out the state of nature while "on the job". On the other hand, the citizens know that there are only two states of the world, and they can force (possibly through the judiciary or the press) ex-post inspections and potentially punishments if (and only if) the provision is different from the two possible optimal levels or from the one mandated by the central government, the only verifiable aspects of public good provision.

In the following period ($t = 1$), the citizens elect a politician. As there is no incumbent, one of the candidates is elected at random. In $t = 2$, the citizens make an inference about the quality of the incumbent and vote accordingly. If the incumbent is not reelected, a challenger is randomly chosen.

3.1 Decentralization

Politicians/citizens come in two types. One of those types derives ego or pride rents from office (the E-type henceforth). An E-type obtains utility Δ each period in office. The E-types are concerned about how history will judge them (or their future careers). After leaving office, if history finds the politician behaved in a dishonest way, the ego rents of the E-type politician go away with some probability δ. This possibility induces the E-types to behave as an honest social planner. Thus, an E-type in office provides $G_H = \theta_H$ and $G_L = \theta_L$ depending on whether nature is H or L.

The other breed of politicians, the R-type, only cares about monetary compensation. For this reason, an R-type in office may behave dishonestly in situations where corruption rents are possible. Under decentralization, this happens whenever the state of nature is H. Since the government holds an informational advantage, the R-type in office can provide $G = \theta_L$ even if the state is H, and he pockets the corresponding corruption rents. The corruption rents are given by

$$CR = \theta_L^{\frac{1}{2}} - \theta_H^{-\frac{1}{2}}\theta_L = \theta_L^{\frac{1}{2}}\left(1 - \theta_H^{-\frac{1}{2}}\theta_L^{\frac{1}{2}}\right) \tag{1}$$

Notice that equation (1) implies an upper bound on the value of corruption. This is because corruption in this model is exclusively determined by the informational advantage of being in office. If the value of the public good was lower than θ_L, it would be evident that the government incurred in corrup-

tion activities which would trigger audits initiated by citizens and, eventually, punishment. Also, note that the reason why the R-type takes the corruption opportunity at the first time it arises is that rents can only be obtained in state of the world H, and they can only be obtained once. This excludes the strategy for the R-type of abstaining from pocketing the corruption rents to ensure re-election. By forgoing the rents, the R-type may increase the chance of reelection, but in the following period the possible rents to be obtained are the same, and they may not arrive if the state of the world is L so it is not profitable to postpone grabbing it.[13]

We call W^H and W^L the welfare under high provision and low provision of public good, respectively. Since we assume individuals to be identical, for the time being, W^H and W^L are

$$\begin{aligned} W^H &= 2\theta_H^{\frac{1}{2}} - \theta_H^{\frac{1}{2}} = \theta_H^{\frac{1}{2}} \\ W^L &= 2\theta_L^{\frac{1}{2}} - \theta_L^{\frac{1}{2}} = \theta_L^{\frac{1}{2}} \end{aligned}$$

Notice that an R-type in government will always provide $G = \theta_L$, which is inefficient whenever the state is H. On the other hand, E-types will always provide the efficient level of public good. Thus, voters would ideally elect an E-type.

The types of the candidates are not observable. That means that a candidate is randomly elected in $t = 1$. The proportions of E-types and R-Types that run for office are given by π and $1 - \pi$, respectively. In our analysis, we will interpret π as the quality of the regional political class.

After one period in office, the incumbent can be reelected. Voters observe the level of public good and update their prior beliefs about the incumbent's type. A re-election takes place if the posterior probability that the incumbent is of an E-type is greater than the prior probability of electing a challenger of an E-type (i.e. π). How do voters update their beliefs about the incumbent's type? This depends on how much can be inferred from the public good provision. First, if the level of public good provided in $t = 1$ were θ_H, then voters would correctly infer that the incumbent is of an E-type with probability one and the incumbent would be re-elected. If the level of public good provision were θ_L, voters would know that the state of nature is L with probability $1-p$ and therefore they would assign the incumbent a probability $(1 - p) \times \pi$ of

[13] If there were more states of the world, or growth, other situations could arise. For example, the R-type could forgo corruption currently in order to reap a higher benefit in the future. Or he could extract lower rents today than the maximum possible to avoid an inspection.

being of an E-Type. As this is obviously lower than π, they would not re-elect the incumbent and a challenger would be randomly elected.

We may summarize the ex-ante expected welfare under decentralization (W^{DC}) after some manipulation as:

$$W^{DC} = \pi p\left(2 + p\left(1 - \pi\right)\right) W^{H} + \left(2 - \pi p\left(2 + p\left(1 - \pi\right)\right)\right) W^{L}$$

3.2 Centralization

As explained in the introduction we consider a weak form of centralization. Under this scheme, the center decides the level of public good to be provided to the region, collects taxes accordingly and transfers the funds to the regional government. The regional government in turn uses the transfer to provide the public good. As the center does not execute the provision of public good, the central decisions on its level are disinterested and efficient according to the state of nature observed in the center $\hat{\theta}_j$, with $j \in \{H, L\}$. However, the signal about the state of nature observed from the center may not be the one really occurring in the region. To capture this, we allow probabilities associated with each state to differ. The probabilities associated with $\hat{\theta}$ are defined by $P_H = P[\hat{\theta} = \theta_H / \theta = \theta_H]$ and $P_L = P[\hat{\theta} = \theta_H / \theta = \theta_L]$.[14] Consequently, the probability structure is as follows:

$Region/Center$	$\hat{\theta}_H$	$\hat{\theta}_L$
θ_H	pP_H	$p(1-P_H)$
θ_L	$(1-p)P_L$	$(1-p)(1-P_L)$

It is important to note that this probability structure can also reveal information about the type of the central government. Although we emphasize that corruption rents are lower for central than for local authorities, it might be possible for the central government to retain funds from the region in order to generate corruption rents. In our model, this would be the case of a central government imposing $G = \theta_L$ irrespectively of the state of the nature. That is, $P_L = 0$ and $P_H = 0$. Thus, we can rationalize dishonesty in the central provision of public good as a low correlation between the state of nature in the center and in the region. We shall discuss below the effects of this correlation on the comparison between centralization and decentralization.[15]

[14] This is a simple way to give an informational advantage to the regional authorities. Any information (or communication) structure which preserved such advantage would yield similar results.

[15] The probability structure can also reflect situations where the local government renounces the informational advantage and reveals the true state of nature to the central

We analyze now the incumbent's behavior in each of the four resulting situations. We assume no incumbent advantage. This is important because there will be situations where the provision of public good does not reveal any information about the incumbent's type and therefore an incumbent of whatever type will be able to run for re-election with the same probability of being elected as the challengers.

We discuss now each situation in detail in order to obtain the expression for welfare under centralization.

- **Situation H.** As the center transfers sufficient funds, both types of regional government are bound to provide the high level of public good. A lower provision would trigger an inspection *to check whether this was because the real state of the world was different,* the misuse of funds *would be* discovered and punished. Hence, the regional government provides $G = \theta_H$ and the utility of the citizens in the region corresponds to W^H. Since the provision of public good does not reveal any information about the incumbent's type, the challenger and incumbent have the same probability of being elected in the next election.

- **Situation I**. With probability $(1-p)P_L$, the center determines $G = \theta_H$ and collects $t = \theta_H^{\frac{1}{2}}$ to be transferred to the region. However, the true state of the nature in the region is θ_L. That means that the transfers from the center can only fund a level of public good $G = (\theta_H\theta_L)^{\frac{1}{2}}$. Utility in this case is

$$W^I = 2\left(\theta_H\theta_L\right)^{\frac{1}{4}} - \theta_H^{\frac{1}{2}}. \tag{2}$$

  In this case an inspection is always triggered to check why provision was different from the mandated level. It would confirm that the state of nature in the region prevented the government from fully executing the center's instructions. Hence, the incumbent's type is not revealed, which allows the incumbent to run again for office and be re-elected with the same probability of winning than any of the challengers.

- **Situation O**. With probability $p\left(1-P_H\right)$, the center decides $G = \theta_L$, and collects $t = \theta_L^{\frac{1}{2}}$ to transfer to the region. However, the state of nature in the region is H. This allows whoever is in office to behave strategically.

government, either by benevolence or Party discipline. We prefer not to develop this possibility, but it is clear that effective information sharing will imply a high correlation between θ_i and $\hat{\theta}_i$.

The R-type receives instructions and funds to provide $G = \theta_L$. As the cost of providing the public good is lower in the Region than what is perceived in the Center, it is possible to provide $G = \theta_L$ and keep the remaining funds for personal use. The potential rents to extract are $\theta_L^{\frac{1}{2}} - \frac{\theta_L}{\theta_H^{\frac{1}{2}}}$, which coincide with the corruption rents identified for the case of decentralization. Notice that this case arises with probability $p(1-P_H)(1-\pi)$ and that the implied utility corresponds to W^L. Since $G = \theta_L$ is consistent with the instructions given by the center, there will be no monitoring by the center. However, voters will update their beliefs about the incumbent's type in a way that they will prefer to elect a challenger. To see why, notice that, as in the case of decentralization, the probability for an incumbent to be of an E-type after providing $G = \theta_L$ is lower than the one associated with the challengers.

The E-type has an opportunity to signal his type by providing a higher level of public good than instructed. In this case, the provision of public good reveals that the incumbent is of an E-type with probability 1, which guarantees re-election. Thus, with probability $p\,(1-P)\,\pi$, the provision of public good is $G = (\theta_H \theta_L)^{\frac{1}{2}}$ with $t = \theta_L^{\frac{1}{2}}$ and the utility becomes

$$W^O = 2\,(\theta_H \theta_L)^{\frac{1}{4}} - \theta_L^{\frac{1}{2}}.$$

- **Situation L** With probability $(1-p)\,(1-P_L)$, the center decides $G = \theta_L$ and $t = \theta_L^{\frac{1}{2}}$ which is optimal when the state of nature in the region is L. Neither type of politician in office can offer a level of public good different from θ_L and therefore the citizen's utility under this state is W^L. In this situation, voters cannot discern the reasons behind the decision of providing θ_L given that they cannot observe the state of nature in the Region. Therefore, as θ_L, may also be the level provided by an R-type in situation O, voters will prefer a challenger to the incumbent and re-election becomes impossible.[16]

Collecting these observations, we can express welfare in the first period under centralization as:

$$\begin{aligned} W_1^{CE} &= pP_H W^H + (1-p)P_L W^I + p(1-P_H)\pi W^O + \\ &\quad [(1-p)(1-P_L) + p(1-P_H)(1-\pi)]W^L \end{aligned} \tag{3}$$

[16]The voters' beliefs yielding this electoral behavior are explained in more detail in section 2.1.

Welfare in the second period only differs in the case where an E-type was identified, since then the efficient provision of public good is guaranteed. In this case welfare in $t = 2$ is:

$$\begin{aligned} W_2^{CE}|p(1-P_H)\pi &= pP_HW^H + (1-p)P_LW^I + (1-p)(1-P_L)W^L + \\ &\quad p(1-P_H)(1-\pi)W^O + p(1-P_H)\pi W^O; \end{aligned}$$

that is,

$$W_2^{CE}|p(1-P_H)\pi - W_1^{CE} = p(1-P_H)(1-\pi)\left(W^O - W^L\right) \tag{4}$$

Using equation (4), after plugging in (3) we obtain:

$$\begin{aligned} W^{CE} &= 2\left[p\left(P_HW^H + (1-P_H)\,W^L\right) + (1-p)\left(P_LW^I + (1-P_L)W^L\right)\right] + \\ &\quad (2 + p(1-P_H)\,(1-\pi))\,p(1-P_H)\pi\left(W^O - W^L\right) \end{aligned}$$

3.3 Static welfare comparison

Consider any period of time. It is clear that centralization has pros and cons from the regional perspective. On the one hand, states in the Center and the Region might not be perfectly correlated, centralization may impose an inefficient level of public good because the center may determine $G = \theta_H$ in situations where the state of nature in the region is L. This situation occurs with probability $(1-p)P_L$. But on the other hand, centralization reduces the corruption opportunities in each period. To see this, notice that corruption takes place under decentralization with probability $p(1-\pi)$. Under centralization, corruption rents arise with probability $p(1-P_H)(1-\pi)$, which is obviously lower than $p(1-\pi)$.

To see the influence of the correlation more clearly, notice that a perfect correlation between $\hat{\theta}_j$ and θ_j implies $P_H = 1$ and $P_L = 0$. In this case, the probabilities of a state with either corruption or inefficient provision of the public good under centralization are zero. Thus, our model exhibits the well-known advantage attributed to decentralization: the relative benefit of centralization increases with the level of correlation between the states of nature in the center and in the region.

The benefits of decentralization logically increase with the quality of the local political class. To show this, we can express $W^{DE} - W^{CE}$ as

$$W^{DE} - W^{CE} = \pi p\left(2 + p\left(1-\pi\right)\right)\left(W^H - W^L\right) - \quad (5)$$
$$\left(2 + p(1-P_H)\left(1-\pi\right)\right)p(1-P_H)\pi\left(W^O - W^L\right) +$$
$$2W^L - 2p\left(P_H W^H + \left(1-P_H\right)W^L\right)$$
$$+2\left(1-p\right)\left(P_L W^I + (1-P_L)W^L\right), \quad (6)$$

and differentiate 5 with respect to π we obtain the following result:

Proposition 1 *The relative benefit of centralization decreases with the quality of the regional political class.*

Proof See appendix A.1 ■

This result emphasizes that the advantages of decentralization are relatively more sensitive to increments in the proportion of E-types that those associated with centralization. This is because centralization offers fewer per-period corruption opportunities and therefore its welfare dependence on the quality of politicians is milder than in the case of decentralization. As a corollary, the preferences over fiscal autonomy (decentralization) increase in the quality of the political class. The absence of data makes this prediction hard to test. However, subsection 3.4 reports evidence related with this result as we show that the sentiments in favor of the European Union are inversely correlated with the trust in the local (national) political system.

3.4 Confidence on political parties and decentralization

Our analysis suggests that the support for decentralization is correlated with the quality of politicians. We are not aware of the existence of the necessary data to directly test this prediction. However, we can exploit the Eurobarometer and the World Values Survey (WVS) to explore this implication in the context of the European Union. Arguably, the ratio of people stating that EU membership is a "bad thing" ($EU - Discontent$, where j is a country member of the EU) can be considered as a proxy for the preferences over decentralization. This variable has a mean value of 16 % and ranges from 6% (Spain in 1998) to 41% (Sweden in 1996).

We can also take the trust of people on political parties at the national level (as measured by the WVS) as an indication of how people perceive the quality of domestic political class ($Trust - Politicians$) or their national government

($Trust - Government$). In order to see the relationship between decentralization and trust on the political class and income, measured as the log of the GDP ($lnGDP_j$), we estimate the following equation:

$$EU - Discontent_{jt} = \alpha_1 lnGDP_{jt} + \alpha_2 \text{Political Trust}_{jt} + \gamma_t + \varepsilon_{jt},$$

where Political Trust$_{j,t}$ is either Trust-Politicians$_{j,t}$ or Trust-Government$_{j,t}$, j=Bulgaria, Cyprus, Finland, Frace, Germany, Italy, Netherlands, Poland, Romania, Slovenia, Spain, Sweden and United Kingdom, and γ_t are year fixed effects with t=1996, 1998 and 2006.[17] Consistent with our previous analysis, we expect and find that $\alpha_2 > 0$.

Table 1 displays the results. As expected, the proportion of people who think that the EU is a bad thing is positively correlated with the trust in the political class and the discontent with the EU.[18]

Table 1: Decentralization and Political Class in the EU

	(1)	(2)	(3)	(4)
Trust-Politicians$_{j,t}$	0.626***	0.580**		
	(0.194)	(0.244)		
Trust-Government$_{j,t}$			0.527***	0.475***
			(0.140)	(0.147)
ln GDP$_{j,t}$	0.0192**	0.0193**	0.0264***	0.0262***
	(0.00679)	(0.00716)	(0.00662)	(0.00658)
Unemployment$_{j,t}$		-0.00151		-0.00356
		(0.00438)		(0.00336)
Observations	24	24	24	24
R-squared	0.655	0.660	0.712	0.747

Standard errors in parentheses.
*** p<0.01, ** p<0.05, * p<0.1

[17] The WVS survey does not provide information for the other EU member countries.

[18] Admittedly, this evidence consistent with our model is very suggestive but, clearly, these results have to be taken with caution as data availability does not allow us to establish anything more than these correlations.

4 The Effect of Political Competition

We turn now to the question of whether the effect of centralization on corruption is mediated by the level of political competition. In order to do this, we introduce political competition and selection. Let n be the number of politicians competing for office. In the absence of prior information about the incumbent, all candidates have the same probability of being elected, $1/n$.

Following our previous analysis, each period in office the R-type can extract corruption rents with probability $p(1-P_H)$ under centralization. As discussed above, decentralization offers more corruption opportunities for a given incumbent. These take place with probability p. However, from the R-type's perspective, centralization has the advantage of generating situations where the public good provision reveals no information about the incumbent's type hence providing the possibility of re-election. The probability of re-election for an R-type is $(pP_H + (1-p)P_L\frac{1}{n}p(1-P_H)$. Overall, whether an R-type prefers centralization or decentralization depends on the level of political competition. To make this point explicitly, we compare the expected values for a R-type under both fiscal schemes. The expected values of the R-types if in office are

$$V_{CE}^{R}(n) = p\left(1-P_H\right)CR + \left(pP_H + (1-p)\,P_L\right)\frac{1}{n}p\left(1-P_H\right)CR,$$

under centralization and

$$V_{DE}^{R}(n) = pCR$$

under decentralization. Comparing $V_{CE}^{R}(n)$ and $V_{DE}^{R}(n)$, it follows that the expected corruption rents are greater under centralization for $n < \widetilde{n}^{R}$, where

$$\widetilde{n}^{R} \equiv \left(pP_H + (1-p)\,P_L\right)\frac{(1-P_H)}{P_H}$$

This establishes the main result of this paper:

Proposition 2 *The expected corruption rents are larger under centralization for sufficiently low levels of political competition. That is, for* $n < \widetilde{n}^{R}$.

The intensity of political competition affects the preferences of politicians over centralization and decentralization. When competition is low, the prospects of re-election under centralization makes this system preferable for a potentially corrupt politician. Notice that the condition on the number of candidates in competition is easily relaxed by assuming some level of incumbent's advantage. In this case, it is more likely to find that the incumbent prefers centralization.

Despite the fact that centralization reduces the expected corruption rents in a given period, it also makes it harder to detect a corrupt incumbent. For this reason, the R-types would prefer centralization in regions where the incumbent faces a sufficiently small number of challengers. Thus, the dependence between decentralization and corruption varies with the degree of political competition.

Proposition (2) establishes the conditions for R-types to prefer centralization. We can show now whether there are situations where centralization is also preferred by the E-types. Recall that Δ denotes the ego-rents from office. Under centralization, the E-type is re-elected with certainty with probability $p(1-P_L)$. Re-election in also possible with probability $\frac{1}{n}$ in the states of nature where no information about the incumbents has been revealed. Again, this happens with probability $(pP_H + (1-p)P_L\frac{1}{n}p(1-P_H)$. Under decentralization re-election takes place with probability p. Thus, the payoffs in office of the E-type under centralization and decentralization are

$$\begin{aligned} V_{CE}^{E}(n) &= \Delta + p\left(1-P_H\right)\Delta + \left(pP_H + (1-p)\,P_L\right)\frac{1}{n}\Delta \\ V_{DE}^{E}(n) &= (1+p)\Delta \end{aligned}$$

Hence, an E-type in office prefers centralization if

$$n < \frac{\left(pP_H + (1-p)\,P_L\right)}{\left(1-P_H\right)p} = \widetilde{n}^{E}$$

Thus, we obtain that E-types also tend to prefer centralization for low levels of political competition. Combining this result with proposition (2) implies the following proposition:

Proposition 3 *Let*

$$\widetilde{n}^{R} \equiv \left(pP_H + (1-p)\,P_L\right)\frac{\left(1-P_H\right)}{P_H},\ \widetilde{n}^{E} \equiv \frac{\left(pP_H + (1-p)\,P_L\right)}{\left(1-P_H\right)p}$$

The regional political consensus is in favor of centralization irrespective of voters's preferences emerges for $n < \min\{n^R, n^E\}$.

This result is important to understand the possibility of unrepresented discontent in situations where voters would prefer a decentralized regime. A sufficiently small number of candidates generates an opposite consensus in the political class. A small number of candidates facilitates as well collusion between political candidates, which would guarantee that no candidate offers a move toward decentralization.

It may seem surprising that no candidate includes decentralization in the platform if this is what voters actually prefer. To see why this might happen, notice that the candidates' types are unknown, and hence proposal can potentially reveal the candidates's type. To sustain a pooling equilibrium where no candidate proposes decentralization, all that is required is that a proposal for decentralization is believed with sufficiently high probability to come from an R-type. Under this assumption, any candidate proposing decentralization would not be elected (because of the welfare under decentralization with the certainty of an R-type is lower than the ex-ante welfare associated with centralization. Notice that these out of equilibrium (and hence arbitrary) beliefs would satisfy the intuitive criterion developed by Cho and Kreps (1987).

4.1 Evidence

The are many examples of the divorce between citizens and politicians over decentralization expressed in Proposition 3. Catalonia may be interpreted as a example, since the preference for independence and the feeling of Catalan-only identity (as opposed to both Catalan and Spanish, or only Spanish identities) is much higher among Catalan parliamentarians and local politicians than in the general population, as documented by Miley (2006) (see table 1, ch. 3 and table 19, ch. 5). The history of Latin American constitutions also provides many examples of such divorce. In Argentina, the end of a long history of conflicts, involving bloody civil wars in the Nineteenth Century, led to constitutions that were *de iure* federal but provided the central government with the control over provincial budgets. So, the Argentine government has been centralized *de facto*. Popular support for decentralization was behind the 1994 constitutional reform being unanimously signed by the representatives of the main political parties. The new constitution once again was federal in spirit but granted the national government the possibility for a *de facto* unitarian scheme of governance (Negretto, 1999, 2004). None of the mainstream political parties proposes to devolve more power to the sub-national governments, despite a salient federalist rhetoric consistent with the widespread popular support to decentralization.

We also discuss evidence consistent with Proposition 2. This proposition establishes that, all else equal, centralization should be associated with lower corruption activity. Evidence provided by Treisman (2000); Fan, Lin, and Treisman (2009), among others, supports this claim. Yet, our model shows that the reverse is true for low levels of political competition. This is an important testable implication of the model. A simple way to bring this prediction to data is to look at a measure of corruption at the country level and

regress it on variables capturing the level of political competition, the level decentralization and their interaction, in addition to other potential correlates of corruption. To implement this test, we use data for 110 countries covering a period between 1996 and 2007. Following Aidt (2011), we have divided the sample in three cross-sections: 1996-99, 2000-03 and 2004-07. More specifically, we estimate different specifications of the following panel data model:

$$\begin{aligned} CORRUPTION_{it} &= \beta_0 \text{ Political Competition}_{it} + \beta_1 \text{Decentralization}_{it} + \\ &\quad \beta_2(\text{Political Competition} \times Decentralization)_{it} + \\ &\quad x'_{jt}\alpha + \mu_i + \gamma_t + \varepsilon_{it}, \end{aligned}$$

where i is a country index and $t = 1, 2, 3$ indicates the three cross-sections. We use the ICRG index as our preferred measure of perceived corruption. This index is based on evaluations experts, rather than survey data. Alternatively, we also use the indices published by Transparency International (TI index) and the World Bank (WB index). These three measures are scaled such as low values are associated with low levels of corruption.[19] Defining decentralization is a hard task as well.[20] One way to think about decentralization is according to the extent to which sub-national levels of government make decision about taxation and regulation. We follow Fan, Lin, and Treisman (2009) and many others and consider a country as decentralized (or Federal) according to Elazar (1995). To capture the level of political competition, we use the World Bank Voice and Accountability Indicators. This index captures the perceptions about how the country's citizens are involved in selecting their government and includes as well perceptions on freedom of expression, freedom of association, and a free media (Kaufmann, Kraay, and Mastruzzi, 2010). Alternatively, we can also proxy political competition with the Freedom House Index of Political Freedom (political freedom).[21] As discussed below, the results are robust to any of alternative measures of corruption and political competition. Finally, x' is a vector of controls including initial level of corruption, initial per capita GDP, (Gini) inequality, and regional (μ_i) and year fixed effects (γ_t).[22]

According to our model, we expect $\beta_0 < 0$, $\beta_1 > 0$ and $\beta_2 < 0$. As reported in Table 2, this is the case in all the estimated specifications including the

[19] See Aidt (2011) for a more detailed discussion.

[20] See, for example, Rodden (2004) and Fan, Lin, and Treisman (2009).

[21] Freedom House rating is based on the judgment of an expert panel that evaluates the degree of political pluralism and participation, and the functioning of the government.

[22] We consider the following regions: Africa, Central Europe, Noth-America, South-America, Asia and Scandinavia.

three relevant variables. The result in column 1 is reminiscent of Treisman (2002): decentralization is associated with higher levels of perceived corruption. In columns 2 to 5, we notice that the predictions of our model are robust to different specifications. These results provide evidence about how the link between corruption and the level of decentralization is mediated by the intensity of political competition. This finding is novel in the empirical literature, to the best of our knowledge, and provides a way to rationalize the previous conflicting results discussed above.

5 Concluding discussion

We conclude by sketching implications of some relevant variations of our model.

Full Centralization. We have analyzed an intermediate form of centralization. Full centralization would require a central bureaucracy in charge of delivering the public good to the region. In this case, the regional authority would find no corruption opportunities associated with the provision of public good. This situation would induce the R-type to be in favor of decentralization. For the E-type this is less obvious. On the one hand, the absence of control over the public good reduces the opportunities to signal honesty or efficiency. Moreover, when the delivery of public good is exclusively a central government activity, citizens would be less concerned about the regional government's type. For this reason, an E-type politician would prefer a move toward centralization. On the other hand, inasmuch the term in office is opaque about the incumbent's type, the probability of reelection only depends on the level of political competition. That is, when political competition is low the incumbent enjoys from a positive probability of being re-elected in all the states of nature. This effect can make the E-type prefer full centralization to decentralization. In any case, a clear effect of full centralization is that it breaks potential political consensus over centralization unless the political class is composed of sufficiently few E-types. Full centralization may also have a positive effect on the composition of the political class since the development of the private sector would have a greater impact on R-types than on E-types, which would reduce in turn the proportion of R-types running for office.

As for the citizens, the advantages of full centralization would depend on whether the central bureaucrat is more or less corrupt than (or as efficient as) local politicians. There is no clear reason why embezzlement and capture would not be possible under full centralization. As discussed above, whether the local government dominates the central bureaucracy from the regional

Table 2: Corruption, Decentralization, and Political Competition.

	(1)	(2)	(3)	(4)	(5)
Corruption Measure:	ICRC	ICRC	ICRC	TI	WB
$\text{Decentralization}_j$	0.302**	0.897***	0.727***	1.214***	0.453***
	(0.126)	(0.282)	(0.245)	(0.430)	(0.141)
$\text{Political Competition (Voice)}_{it}$		-3.337***		-4.196***	-2.423***
		(0.222)		(0.445)	(0.176)
$\text{Political Competition (Voice)}_{it} \times \text{Decentralization}_j$		-1.304***		-1.140*	-0.478**
		(0.386)		(0.610)	(0.193)
$\text{Political Competition (FH)}_{it}$			-2.095***		
			(0.330)		
$\text{Political Competition (FH)}_{it} \times \text{Decentralization}_j$			-0.848**		
			(0.379)		
Controls	Y	N	Y	Y	Y
Observations	286	355	286	280	287
R-squared	0.692	0.521	0.750	0.811	0.875
Number of countries	72	90	72	70	72

Linear regression with panel-corrected standard errors in parentheses.
*** p<0.01, ** p<0.05, * p<0.1

perspective will depend on a series of factors like accountability, political competition, the importance of regional elites and so on.

Grants and Regional Redistribution. Assume 2 regions, a net receiver, region R, and a net contributor to public goods, region C. The central authority taxes more the citizens of R than what is returned in the form of funds for public goods. Therefore, the discontent over centralization is more widespread in C than in R. This discontent is clearly illustrated by the fact that regions with stronger national sentiments tend to be relatively wealthier. Notice that the preferences of the political class over centralization do not depend on the level of public good or taxation. Hence it is possible that an increase in regional redistribution would lead to greater unrepresented discontent in region C. Finally, being a net receiver can also influence the quality of the political class in both regions in opposite directions. To see this, notice that the increase of funding to R from the center would increase the value of corruption rents. Suppose now that the inflow of resources changes the ranking of ego and corruption rents.

Dynamic effects of decentralization An important feature of our model is that decentralization (endogenously) provides more information about the incumbent and, therefore, it facilitates the selection of politicians. As a logical consequence, both turnover rates of politicians and political competition are likely to be higher under decentralization. The potential dynamic effect of decentralization on political competition is, to the best of our knowledge, unexplored but of obvious relevance, even more because of the feedback we find of political competition on the capacity of decentralization to reduce corruption and improve the quality of government. We identify this as a logical continuation of this paper.

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A Appendices

A.1 Proof of proposition 1

Proof We need to show that $\frac{\partial(W^{DE}-W^{CE})}{\partial\pi} > 0$. After differentiating, we obtain

$$\frac{\partial\left(W^{DE}-W^{CE}\right)}{\partial\pi} = p\left(2+p\left(1-2\pi\right)\right)\left(W^{H}-W^{L}\right)- p(1-P_H)\left(2+p(1-P_H)\left(1-2\pi\right)\right)\left(W^{O}-W^{L}\right).$$

Noticing that $(W^H - W^L) > (W^O - W^L)$, it is immediate to show that this is positive for $\pi < \frac{1}{2}$.

Consider the case of $\pi > \frac{1}{2}$. As $\frac{\partial\left(W^{DE}-W^{CE}\right)}{\partial\pi^2} < 0$, we can evaluate $\frac{\partial\left(W^{DE}-W^{CE}\right)}{\partial\pi}$ at $\pi = 1$ and verify if $\frac{\partial\left(W^{DE}-W^{CE}\right)}{\partial\pi}$ is still positive. That is,

$$\left.\frac{\partial\left(W^{DE}-W^{CE}\right)}{\partial\pi}\right|_{\pi=1} = p(2-p)(W^H-W^L)-(2-p(1-p_H))p(1-P_H)(W^O-W^L)$$

A sufficient condition for this expression to be positive is $p(2-p) > (2-p(1-p_H))p(1-p_H)$. Notice that p and $p(1-p_H)$ are values of a more general function $y = p'(2-p')$ which is a parabola increasing in p' for $p' < 1$. Given that $p > p(1-p_H)$, it follows that $\left.\frac{\partial\left(W^{DE}-W^{CE}\right)}{\partial\pi}\right|_{\pi=1} > 0$. ■