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Decentralization and corruption: evidence across countries

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Abstract

The relationship between decentralization of government activities and the extent of rent extraction by private parties is an important element in the recent debate on institutional design. The theoretical literature makes ambiguous predictions about this relationship, and it has remained little studied by empiricists. In this paper, we systematically examine this issue empirically, by looking at the cross-country relationship between fiscal decentralization and corruption, as measured by a number of different indices. Our estimates suggest that fiscal decentralization in government expenditure is strongly and significantly associated with lower corruption; these results persist when decentralization is instrumented for by the origin of a country's legal system. © 2002 Elsevier Science B.V. All rights reserved.

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1. Introduction

In recent years, there has been considerable debate on the merits of government decentralization. Those in favor of devolving powers of revenue collection and expenditure to local authorities have been guided to a large extent by the rationale, first expressed by Tiebout (1956), that decentralization leads to greater variety in

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the provision of public goods, which are tailored to better suit local populations. On the other side, Prud'homme (1995) and Tanzi (1996) have argued that there exist many imperfections in the local provision of services that may prevent the realization of benefits from decentralization. For example, local bureaucrats may be poorly trained and thus inefficient in delivering public goods and services.

More recently, however, Besley and Coate (1999) have shown that, with the exception of heterogeneity of preferences, there is relatively little theoretical support for claims of differential provision of services. Hence, they assert, decentralization must be justified by political economy explanations. One such possibility, which has received much attention, is that accountability and behavior of bureaucrats may differ between centralized and decentralized systems.

Recent theoretical models make opposing predictions on the relationship between decentralization and corruption: models that emphasize interjurisdictional competition or direct monitoring of bureaucrats generally favor decentralization, while those that focus on coordination of rent-seeking or bureaucratic competence often take a negative view of decentralization. Furthermore, the *type* of decentralization often matters in these models: in particular, whether revenue generation and expenditure, or just expenditure, is decentralized, will influence the extent of bureaucratic corruption. Thus, while there is a general belief that decentralization and government corruption are closely linked, theories differ in their predictions of what the net relationship between them should be.

It would therefore be useful to assess the empirical link between decentralization and corruption, an exercise that has yet to be undertaken in any systematic way. A couple of previous papers examine related issues, but we believe in a somewhat partial manner. The only previous work that, to our knowledge, looks directly at the issue of fiscal decentralization is by Huther and Shah (1998), who note a negative correlation between corruption and decentralization. However, they look only at the unconditional correlation between fiscal decentralization and corruption. There are many factors that would obviously be highly correlated with both variables: in particular, income is highly correlated with quality of governance, however measured, and is also strongly correlated with decentralization (it is well known that development is generally accompanied by decentralization). Hence, problems of omitted variable bias are extreme in such an analysis. A second related paper, by Treisman (2000), finds that federalist countries have *higher* rates of corruption. Treisman's measure of decentralization is a simple dummy variable, reflecting whether a country has a federal structure, which may not accurately reflect the true extent of decentralization of powers and resources in a given country. We discuss this issue further in the data section.

In this paper, we provide a more systematic examination of the cross-country relationship between decentralization and corruption. We find that fiscal decentralization in government expenditure is consistently associated with lower measured corruption across countries. This result is highly statistically significant, is not strongly affected by outlier countries, and is robust to a wide range of spe-

cifications, including all of those that have been used in the recent cross-country literature on corruption. Moreover, we find the origin of a country's legal system to be a good instrument for the extent of government decentralization, and our results suggest that the effect of decentralization on corruption persists when decentralization is instrumented for in this way. Our work supports the idea that the continuing trend toward greater decentralization may be justified based on the greater accountability of government bureaucrats that this government structure may engender.

The rest of this paper is organized as follows: Section 2 reviews the theories relating decentralization to corruption, and examines their predictions of this relationship. Section 3 describes the variables used in our analyses. In Section 4, we provide regression results on the relationship between corruption and decentralization, using cross-country data. Section 5 concludes the paper.

2. Theories of decentralization

A variety of models have been developed to examine the political economy of decentralization, leading to very different implications for the relationship between decentralization and corruption. Broadly speaking, these models emphasize several basic factors: (a) interjurisdictional competition; (b) monitoring and direct accountability; (c) dispersion of decision-making powers; (d) competence and bureaucratic 'quality'.

The first of these, initially developed by Brennan and Buchanan (1980), emphasizes competition between local governments to attract residents. Analogous to the effect of competition in product markets, political competition reduces the ability of bureaucrats to extract rents in exchange for services. Jin et al. (1999) further highlight the fact that competition among localities will more generally discourage governments from establishing interventionist and distortionary policies that might drive away valuable factors of production to less interventionist jurisdictions. Interjurisdictional competition, therefore, predicts lower levels of corruption in decentralized economies. These ideas have attracted considerable attention in the policy world, and Wei (2000) has even suggested that countries set up corruption-free zones to force other localities to improve their own bureaucracies.

A broad class of models that look at agency issues and the political economy of accountability also have implications for the decentralization–corruption relationship. In a recent paper, Persson and Tabellini (2000) consider the impact of decentralization where bureaucrats are agents trying to minimize effort and maximize the probability of re-election. Agents in a centralized bureaucracy are responsible for a multitude of tasks that affect many localities; by contrast, under decentralization, each politician is responsible for a specific task that is particular to a single jurisdiction. The intuition is that, under decentralization, politicians are

held directly accountable for their actions. Instead, under centralization, all that matters is aggregate performance, which attenuates the link between effort and rewards. Thus, under decentralization, more direct accountability should improve politicians' performance. A similar line of reasoning underlies many accounts of the success of decentralization in practice, in that it brings decision-making closer to those that are affected. For example, Wade (1997) suggests that India's overcentralized top-down structure was largely responsible for corruption in the irrigation bureaucracy. However, even among this class of models, it is not unambiguously true that decentralization reduces corruption: if decentralization creates multiple tiers of government, it could weaken accountability, since voters would have greater difficulty attributing blame for failures and credit for successes.[1]

On the other side of the debate, there are those who emphasize that decentralized regimes are less likely to attract high quality bureaucrats, since the rewards to local politicians will be small relative to bureaucrats at the central level (Tanzi, 1996; Brueckner, 1999). A related point is made by Persson and Tabellini (2000), who note that since the national office is more prestigious and powerful, monitoring may be more intense than at the local level; similarly, effort by centralized bureaucrats may be greater because the awards are larger.

One additional argument against decentralization is implied by the work by Shleifer and Vishny (1993), in their discussion of corruption and double marginalization. The idea is that, if decentralization leads to greater dispersion of government decision-making powers, lack of coordination among bureaucrats in extracting bribes may lead to 'excess' rent extraction, in much the same manner that successive monopolies result in a total price markup above the monopoly level.[2]

It should also be noted that among these theories, several refinements also yield predictions about the *types* of decentralization that should encourage or discourage bureaucratic rent seeking. In particular, a number of recent papers discuss the importance of whether expenditure decentralization is accompanied by the devolution of revenue generation to local governments (Careaga and Weingast, 2000; Rodden, 2000). The interjurisdictional competition literature emphasizes the

[1] We are grateful to a referee for pointing this out to us.

[2] While the preceding models have reasonably clear predictions with respect to the relationship between corruption and decentralization, other models yield ambiguous predictions. For example, Bardhan and Mookherjee (2000a,b) argue that a centralized bureaucracy creates incentives to divert resources to the non-poor, owing to their willingness to pay bribes. This effect is traded off against the vulnerability of local governments to capture by the local wealthy, who seek to appropriate the lion's share of local supply. In general, they find that the predicted relationship between decentralization and the extent of rent extraction by private parties is ambiguous.

importance of tying local revenue generation to local expenditures, since vertical fiscal transfers may allow local officials to ignore the financial consequences of mismanagement. Similarly, implicit in the accountability literature is a predicted link between vertical imbalance and corruption: these transfers attenuate the link between effort and performance that Persson and Tabellini emphasize.

3. Data description

The data for our test are drawn from a wide range of sources. Appendix A provides a detailed description of the variables and their sources.

As our principal measure of corruption, we use the *International Country Risk Guide*'s corruption index (*CORRUPT*); this is the measure that has been most commonly used in previous work in the economics literature. This variable is meant to capture the likelihood that government officials will demand special payments, and the extent to which illegal payments are expected throughout lower levels of government as subjectively ranked by panels of international experts (see Knack and Keefer, 1995). In addition to allowing for consistency with previous studies, *CORRUPT* has the advantage of having the broadest coverage of countries, which maximizes our sample size, yielding a total of 59 countries. For simplicity and ease of exposition, we have rescaled this and all other corruption indices to take on values between zero (least corrupt) and one (most corrupt). Original values for *CORRUPT* as well as the other corruption indices are listed in Appendix A, Table A1.

We measure decentralization (*DECENTR*) as the subnational share of total government spending. The numerator is the total expenditure of subnational (state and local) governments, while the denominator is total spending by all levels (state, local, and central) of government. The underlying data are drawn from the International Monetary Fund's *Government Finance Statistics* (GFS), for the years 1980–95.

The share of local and state spending (revenues) over total spending (revenues) has been widely used as a proxy for the extent of decentralization (Pryor, 1968; Oates, 1972; Panizza, 1999). Oates (1972) suggests that, although imperfect, *DECENTR* should be a good measure of fiscal decentralization since 'the extent of a public authority's activities in taxation and in the expenditure of public funds is surely a component of fundamental importance in determining its influence on the allocation of resources' (Oates, 1972, p. 197). Moreover, fiscal decentralization, particularly to the extent that devolution of revenue raising and expenditure power corrects vertical fiscal imbalances across levels of government, is often quoted as an important ingredient for accountability and, ultimately, good governance.

Obviously, there are many angles to decentralization and the fiscal aspect is only one of them. Below, we provide a more extensive discussion on the distinction

between fiscal decentralization, and political decentralization as embodied by a federal constitution. Moreover, even within the realm of fiscal decentralization, further subtleties will not be captured by our measure. For example, an important limitation of measuring decentralization in this way is that the correspondence between budgetary items and actual decision-making might be imperfect. So, expenditure could be mandated from above while still appearing in the budgets of local governments. In this case, *DECENTR* would indicate a degree of decentralization that does not match with autonomy on expenditure allocation. To our knowledge, a set of homogeneous and informative indicators of the extent of decision-making decentralization allowing comparative analysis at the cross-country level is still unavailable. Given this constraint, we believe *DECENTR* to be the best proxy available.

In order to minimize possible omitted variable bias on the coefficient of our measure of decentralization, we include in the basic regression a number of controls that are standard in the cross-country empirical literature on corruption.

In addition to controlling for the level of economic development, we include in the regression an index of civil liberties to capture the extent to which a free press and free political associations might act as a check on a corrupt public sector. The index of civil liberties, first developed by Gastil, takes on values ranging from 1 (most freedom) to 7 (least freedom).

Country size is also an important source of potential spurious correlation. If large countries exploit economies of scale in the provision of public services (Ades and Wacziarg, 1997), and therefore have a low ratio of public service outlets per capita, individuals might revert to bribes 'to get ahead of the queue'.[3] We therefore include in the regression a measure of the size of government as proxied by total government expenditure as a fraction of GDP, as well as the (log of the) country's population. Moreover, including country size could also control for the fact that larger countries might adopt more decentralized fiscal systems to better cater to the diverse preferences of their citizens while, at the same time, economies of scale might arise in the fight against corruption.

A number of other variables have been shown to be important explanatory variables in corruption regressions. We run specifications including the share of imports on GDP to proxy for openness to trade (*OPEN*) as suggested by Ades and di Tella (1997) and Gatti (1999), ethnic fractionalization (*ETHNIC*) as pointed out by Mauro (1995) and Shleifer and Vishny (1993), and a measure of enforceability

[3]For example, Banerjee (1997) develops a model where a benevolent government produces public services (beds in hospitals, educational opportunities) that are scarce — the number of citizens demanding these services exceeds the number of available slots — and people value the services differently. In this context, the model shows that corruption is more likely to arise when the public goods are in particularly short supply.

of contracts (*CONTRACT*) to proxy for respect of property rights, as suggested by the literature starting with La Porta et al. (1998). We also include specifications with regional and colonial dummies. Finally, we test whether the inclusion of the dummy indicating the presence of federal constitution (*FEDERAL*) significantly changes our results (see Treisman, 2000).

While many of our variables have annual observations, there is relatively little within-country variation. Hence, in our analyses, we use average values of all of our variables for 1980–95 (the period during which we have observations on corruption).[4] Table A1 in Appendix A lists the countries for which underlying data on local, state, and central government expenditure were available from GFS and reports values for *DECENTR*. Table 1 reports basic statistics for the relevant variables.

Table 1
Summary statistics, cross-country data[a]

	Average	Observations	Std. Deviation	Minimum	Maximum
Corruption, ICRG index	0.67	59	0.22	0.21	1
Corruption, World Competitiveness Report	0.41	28	0.20	0.14	0.76
Corruption, German exporter index	0.35	42	0.34	0	1
Corruption, Transparency International (historical index, average for the periods 80–85 and 88–92)	0.6	35	0.24	0.03	0.87
Corruption, Global Competitiveness Survey	0.69	46	0.19	0.29	1
Corruption, Business International	0.76	40	0.24	0.15	1
Decentralization index (share of local and/or state expenditure on total government expenditure)	0.21	68	0.16	0.02	0.76
(ln) of real GDP in 1985 prices	8.44	59	0.95	5.74	9.74
Population (million)	40	54	109	0	767
Fractionalization	36	51	28	1	89
Openness	65	54	38	15	200
Civil Liberties	3.11	64	1.63	1.00	6.39
Government Share	0.16	64	0.05	0.07	0.31
Contract enforceability	2.58	35	0.68	0.97	3.58

[a] All values are averages over 1980–95 for the sub-sample where the decentralization index is available; in the case of population, these are geometric averages. All corruption indices are rescaled to take values between 0 and 1 with 0 = least corruption.

[4] For our data on fiscal decentralization, there were many missing observations; a country is included in our analyses as long as data were available for at least one year during the period 1980–95.

4. Empirical results

4.1. OLS estimation

Our basic specification is:

$$CORRUPT_i = \alpha + \beta_1^* DECENTR_i + \beta_2 * \ln(GDP_i) + \beta_3^* CIVIL_i + \beta_4 * \ln(POP_i) + \beta_5^* GOVSHARE_i + \epsilon_i$$

Table 2 reports coefficients from OLS estimation on data from a cross section of 55 countries. Significance of the estimates is based on White-corrected standard errors.

Our measure of decentralization enters the regression with a negative and strongly significant sign, indicating that countries with more decentralized expenditure have better corruption ratings. The size of the coefficient implies that a

Table 2
OLS cross country estimates. Dependent variable: corruption, ICRG index[a]

	OLS (1)	(2)	(3)	(4)	(5)	(6)	(7)
Decentralization index (local and state share of total expenditure)	−0.42 (−2.97)	−0.47 (−2.54)	−0.39 (−2.08)	−0.46 (−2.53)	−0.24 (−1.97)	−0.33 (−2.05)	−0.39 (−2.61)
Log of GDP	−0.08 (−2.38)	−0.14 (−3.70)	−0.08 (−1.91)	−0.05 (−1.38)	−0.15 (−2.79)	−0.088 (−1.46)	−0.06 (−2.11)
Civil liberties	0.02 (1.47)	0.003 (0.11)	0.02 (0.92)	0.04 (1.48)	−0.031 (−1.08)	0.029 (0.80)	0.02 (1.3)
Log of population	0.011 (0.85)	0.016 (1.11)	0.013 (0.83)	−0.004 (−0.23)	0.02 (1.38)	0.014 (1.12)	0.002 (0.19)
Government size	−1.07 (−3.33)	−1.07 (−2.98)	−1.35 (3.85)	−1.16 (−3.65)	−0.60 (−1.62)	−0.54 (−0.84)	−1.04 (−2.55)
Federal dummy		0.03 (0.65)					
Ethnic fractionalization (*1000)			0.2 (0.25)				
Openness (*1000)				−0.001 (−1.59)			
Contracts enforcement					−0.11 (−2.03)		
Regional dummies						Yes ($P=0.18$)	
Colonial dummies control							Yes ($P=0.00$)
N	55	49	49	52	34	52	55
R^2	0.69	0.74	0.72	0.71	0.84	0.76	0.77

[a] t-statistics are in parentheses. Standard errors are corrected for heteroschedasticity. When groups of dummies are included as controls, P-values for the joint significance of such dummies are reported. All corruption indices are rescaled to take values between 0 and 1 with 0=least corruption.

one standard deviation increase in decentralization will be associated with an improvement in the country's corruption rating of around 30% percent of a standard deviation. Results reported in columns 2 to 7 highlight that the inclusion of the many controls modifies the slope of the relationship only marginally and does not affect its significance.[5]

The results of the regression that includes a dummy for federalism are particularly interesting. We find that *FEDERAL* is neither significant when added to our basic specification with *CORRUPT* as our dependent variable, nor is it significant when any of the other corruption indices is used.[6] Many factors might account for the difference between our results and those of Treisman. First of all, we are testing whether *FEDERAL* provides any additional explanatory power after we include *DECENTR* in the regression and not whether *FEDERAL*, per se, is significant.[7] Moreover, our sample does not overlap perfectly with that of Treisman. Fiscal data availability from GFS imposes important restrictions on our sample so that *DECENTR*, the ICRG index, and our basic explanatory variables are jointly available only for 55 countries. In particular, we do not have data for some countries that might be important in determining the association between federalism and high corruption (Nigeria, Pakistan, and Russia). Finally, our basic specifications differ, and we find that the significance of *FEDERAL* is highly sensitive to the inclusion of the log of population. More importantly, though, the inclusion of *FEDERAL* leaves the estimate and significance of the coefficients on *DECENTR* basically unmodified.

Beyond basic data and econometric issues, *FEDERAL* and *DECENTR* reflect two conceptually distinct notions. *FEDERAL* indicates the presence of a federalist constitution, i.e. of a 'guaranteed division of power between central and regional governments' (Lijphart, 1984, p. 170). *DECENTR* measures — with the caveats we have already discussed — the extent of fiscal decentralization in expenditure. Lijphart (1984) notes that '. . . there can be both centralized and decentralized federations and, similarly, centralized and decentralized unitary states,' although he also points out that, in his sample of 22 OECD countries, 'federalism and decentralization tend to go together' (p. 176). We observe similar patterns in our data: the share of local and state spending is higher on average for federal countries (0.36) than for non-federal countries (0.16), and there is a moderately

[5]We also developed a symmetric measure of decentralization of revenues (averaging 0.16 for a total of 68 countries) which turned out to be highly correlated with the subnational expenditure share (correlation 0.93). We ran our various specifications with this alternative measure of fiscal decentralization, yielding very similar results to those obtained with DECENTR.

[6]We only report results where *CORRUPT* (ICRG index) is the dependent variable. Results of the estimation of the basic model for all the available corruption indices are available upon request.

[7]Note, though, that we were unable to replicate Treisman's results in a specification similar to the basic specification in Table 1 of Treisman (2000) ($CORRUPTION = \alpha + \beta * FEDERAL + \delta * GDP + \gamma * DEMOCRACY + \epsilon$, which excludes *DECENTR*) using corruption indices other than the Transparency International index of recent years (1997, 1998).

high correlation between *FEDERAL* and *DECENTR* (0.60). So, while fiscal decentralization is correlated with the presence of a federal constitution, the overlap is far from perfect. A few important cases illustrate the pitfalls of directly equating the two: Malaysia, by virtue of its British colonial heritage, has a federal constitution. It is, however, a highly centralized bureaucracy, as indicated by its low level of *DECENTR* (0.19). A similar argument may be made for Mexico, while a converse argument holds, for example, for Finland (see Table A1).

More interestingly, the fact that *FEDERAL* is never significant in our basic specification while the significance of *DECENTR* is basically left intact could suggest that even when controlling for the possibility of overgrazing in federal constitutions, bringing spending (or revenue collection) to the regional or local level encourages citizens to keep government officials in check and therefore decreases corruption. This would lend support to the hypothesis that when the management of public resource is 'closer to the people', citizens have a greater stake in keeping the work of government officials in check.

Although we believe this evidence to be suggestive of a strong negative link between decentralization and corruption, we cannot exclude the possibility that our results are sample-specific. More light could be shed on this issue both by collecting fiscal data at the local and state level for a wider sample of countries as well as by working on micro/disaggregated data.

4.2. Robustness checks

To address the issue of the robustness of our results over time, we repeated the basic regression for the sub-periods 1980–84, 1985–89 and 1990–95. The sub-period regressions support the evidence found in the main regression over the period 1980–95. Another substantive concern is that including in the regression countries that have decentralized significantly over the period 1980–95 might be misleading. To deal with this possibility, we ran the basic regression without those countries where the share of local and state expenditure in the period 1990–95 was more than 25% higher than in 1980–85 (Argentina, Israel, Mexico, Panama, Spain). Decentralization was significantly associated with corruption in this restricted sample as well.

In order to further test the robustness of our results, we employ a number of other corruption indices that are commonly used in the economics literature. These include the so-called German Exporter corruption index (GCI), developed by Peter Neumann (1994), the *World Competitiveness Report*'s corruption index (WCR), a historical corruption index developed by Transparency International (TI), the Business International corruption index (BI), and the Global Competitiveness Survey index (GCS). Appendix A describes these variables in detail, Table A1 lists their original values by country, and Table 3 reports the correlations for all the rescaled indices.

Except for the GCS and GCI, all indices are based on polls of experts and

Table 3
Correlations among corruption indices[a]

	ICRG index	World Competitiveness Report	German exporter index	Transparency International	Business International	Global Competitiveness Survey
ICRG index	1					
World Competitiveness Report	0.82	1				
German exporter index	0.88	0.88	1			
Transparency International	0.95	0.89	0.92	1		
Business International	0.86	0.83	0.89	0.95	1	
Global Competitiveness Survey	0.91	0.93	0.91	0.95	0.88	1

[a] All the indices are available for a subset of 36 countries. All corruption indices are rescaled to take values between 0 and 1 with 0 = least corruption.

represent the assessments of country, sector, and regional analysts on governance in a specific country. These analyses are specifically designed to allow for cross-country comparability and are therefore particularly suited to our approach. Nonetheless, Kaufman et al. (1999) point out that ratings by polls of experts are potentially prone to some specific biases. In particular, countries with favorable economic performance are more likely to receive favorable governance ratings. Moreover, the ideological agenda of the rating organization might affect the indices systematically. The first consideration is of relatively little concern in our analysis, as we investigate the effect of decentralization on corruption while controlling for economic performance. With regard to the second concern, both Mauro (1995) and Kaufman et al. (1999) take the fact that the various rating firms are able to sell their assessments for substantial fees as evidence that the polls produce valuable (and hopefully unbiased) information.

The GCS index is instead based on a survey of top executives of a large number of firms in the country in question. By construction, such a survey is bound to reflect the opinion of individuals who know the country context very closely. However, the interpretation of what is meant by 'improper practices' may differ from country to country and therefore limit somewhat the degree of cross-country comparability. The GCI index is similarly based on a survey of business executives, but in this case, since the survey respondents were all German exporters, the GCI has the additional advantage of providing assessments of corruption that all come from individuals with a common frame of reference.

We repeated our basic regression with these various indices as dependent variables. This yielded coefficients on *DECENTR* that were all negative, and with values ranging from -0.22 to -0.46. Furthermore, apart from the case of the GCI, these coefficients are significant at the 10 percent level or greater. Table 4 reports the estimated coefficients and *t*-statistics. In none of these regressions does

Table 4
OLS cross country estimates. Robustness checks[a]

	ICRG index (1)	WCR (2)	GCI (3)	TI (4)	GCS (5)	BI[b] (6)
Decentralization index (local and state share of total expenditure)	−0.42 (−2.97)	−0.46 (−2.42)	−0.22 (−0.70)	−0.34 (2.08)	−0.29 (1.75)	−0.35 (−1.91)
Log of GDP	−0.08 (−2.38)	−0.10 (−2.65)	−0.22 (−3.19)	−0.19 (−2.52)	−0.07 (−1.75)	−0.36 (1.22)
Civil liberties	0.02 (1.47)	−0.02 (−1.04)	−0.031 (−0.75)	0.002 (0.06)	0.01 (0.57)	0.03 (1.13)
Log of population	0.011 (0.85)	0.04 (2.043	0.046 (1.47)	0.02 (1.06)	0.03 (2.32)	0.04 (1.7)
Government size	−1.07 (−3.33)	−1.17 (−2.25)	−1.67 (−2.17)	−1.23 (−2.11)	−0.55 (−1.13)	−0.95 (1.65)
N	55	28	41	33	44	32
R^2	0.69	0.65	0.60	0.79	0.63	0.63

[a] *t*-statistics are in parentheses. Standard errors are corrected for heteroschedasticity. All corruption indices are rescaled to take values between 0 and 1 with 0 = least corruption.

[b] Since the BI index was only available for the period 1980–85, we used as regressors variable averages for the period 1980–84.

analysis of the residuals suggest that outliers might be driving the results and therefore warrant particular attention.[8]

4.3. Two-stage estimation

It may be argued that our estimates suffer from endogeneity bias. For example, corrupt officials of the central government might be reluctant to allow fiscal decentralization, as this would attenuate their ability to extract rents. A more subtle argument for the existence of endogeneity is the following: corruption might affect the composition of public spending, particularly as different spending programs may have different potentials for rent extraction. If this is the case, corrupt central government officials may lobby to keep administration of activities with high rent extraction potential (say defense programs) at the center, while decentralizing activities with low rent extraction potential (say education spending).

[8] When the more sophisticated methodology developed by Hadi (1992) to identify outliers in multivariate regressions is used, no outlier country is identified for the regressions with ICRG and GCI as dependent variables. One outlier country (India) is identified in the regressions with WCR, TI, and BI. When these regressions are repeated excluding India, the t-statistic associated with the estimated coefficients on DECENTR drops to 1.62 for WCR and to 1.2 for TIA and goes up to 1.9 with BI. Finally, seven outliers are identified in the GCS regression. DECENTR ceases to be significant in this regression when the outliers are removed.

Moreover, it is plausible that *DECENTR* is subject to mismeasurement problems, which would result in an attenuation bias in the OLS coefficient.

To correct for these potential problems, we instrument for the decentralization index with the dummy variables indicating the legal origin of a country introduced by La Porta et al. (1998). These are five indicator variables that classify the legal origin of the Company Law or Commercial Code of each country. The data are described in greater detail in Appendix A. There is good reason to expect the origin of a country's legal system to perform well as an instrument for decentralization in a regression involving corruption. Legal scholars have noted the 'affinity' of a Civil (as opposed to Common) legal code for government centralization, since the Civil law system emphasizes the need to conform to the constraints of statutes laid down by (federal) legislators (see Glos, 1978).[9] Consistent with this, we find in our data, for example, that the proportion of public expenditures accounted for by state/local governments is much lower in French origin (Civil system) countries than in British origin (Common system) countries (0.12 vs. 0.21).

The second condition for our instrument to be valid is that legal origin primarily affects corruption through its influence on centralization. This is consistent with the reasoning described in recent work (concurrent with our own) by Rajan and Zingales (1999), who argue that legal origin affects financial development primarily through its effect on government centralization. It seems natural to argue that corruption has a direct effect on financial development, given the importance of legal protection in stimulating financial market development. Hence, if legal origin were to have a direct impact on corruption, there would be an alternative conduit through which legal origin would impact financial development, contrary to the claims of Rajan and Zingales. While Rajan and Zingales are referring to legal decentralization, as opposed to the fiscal decentralization we are examining here, both relate to the devolution of decision-making powers to local/regional governments, and both stem to some degree from legal origin and the resulting allocation of residual decision-making rights. However, work by La Porta et al. (1998) would seem to bring this reasoning into question, as the authors claim that legal origin influences capital market development directly through its relationship to the extent of investor rights. Since investor rights and rule of law are closely related to corruption, this implicitly suggests an alternative link between legal origin and our measure of corruption. Thus, from a conceptual point of view, the validity of the instruments remains something of an open question.

We should note, however, that this set of dummies performs remarkably well from a statistical perspective. As shown by the *F*-test statistic on the joint

[9]Obviously, there are many subtleties to this argument; in the interests of space, we defer to the listed citation for details. Furthermore, there is some variation within the types of Civil code that is relevant for our argument. In particular, the German legal heritage has a greater propensity for decentralization than the French system. Once again, we obtain results in our data that are consistent with this prediction.

significance in the first stage regression, legal origin dummies are good predictors of the degree of decentralization. Moreover, according to the over-identifying restriction test (reported in Table 5) we cannot reject the hypothesis of no correlation between the instruments and the error in the regression of interest.

The estimates from the two-step procedure confirm our findings from OLS estimation: a higher degree of decentralization is significantly associated with lower measured corruption for the ICRG and the WCR indices, and, at a lower degree of confidence, for the TI and GCS indices. The association disappears in the two-stage procedure when the dependent variable is the BI index (Table 5).

Based on the preceding arguments, one would expect endogeneity to generate an upward bias on the *DECENTR* coefficient when estimated with OLS. On the other hand, the likely mismeasurement in *DECENTR* would instead result in attenuation bias, thereby making it difficult to sign the overall bias. Although the two-stage procedure produces larger coefficient estimates, the Hausman test cannot reject that the difference between the OLS and the IV estimates is not systematic. This would suggest that although there might be a priori good reasons to expect a potential endogeneity and/or mismeasurement problem, the resulting bias in the OLS coefficient is not significant.

Table 5
Two-stage least squares cross-country estimates[a]

	ICRG index (1)	WCR (2)	GCI (3)	TI (4)	GCS (5)	BI[b] (6)
Decentralization index (local and state share of total expenditure)	−0.74 (−3.08)	−0.70 (−2.19)	−0.28 (−0.56)	−0.36 (−1.35)	−0.46 (−1.58)	0.009 (0.02)
Log of GDP	−0.06 (−1.80)	−0.10 (−2.85)	−0.22 (−3.14)	−0.19 (2.5)	−0.07 (−1.45)	−0.40 (−1.23)
Civil liberties	0.02 (1.05)	−0.03 (−1.25)	−0.03 (−0.07)	0.002 (0.04)	0.01 (0.43)	0.05 (1.37)
Log of population	0.02 (1.73)	0.06 (2.22)	0.04 (1.32)	0.02 (1.29)	0.04 (2.33)	0.02 (1.02)
Government size	−0.85 (−2.4)	−0.89 (−1.85)	−1.64 (−1.97)	−1.22 (−2.07)	−0.47 (0.92)	−1.19 (−1.62)
N	55	28	41	33	44	32
F-test statistic for joint significance of instruments in first stage regressions (*P*-value)	11.05	6.50	12.93	11.12	11.65	9.85
Over-identifying restrictions test, *P*-value	0.57	0.68	0.69	0.13	0.22	0.18

[a] Dummies for legal origin of the country are used as instruments for the degree of decentralization of public expenditure. All corruption indices are rescaled to take values between 0 and 1 with 0 = least corruption.

[b] Since the BI index was only available for the period 1980–85, we used as regressors variable averages for the period 1980–84.

As the theories described in Section 2 suggest, the effectiveness of decentralization in reducing corruption may vary significantly depending on the manner in which decentralization takes place. While the preceding results are indicative of an overall strong negative effect of decentralization on corruption, they do not address this issue of how the *type* of decentralization might affect corruption. We attempted to examine issues of fiscal vertical imbalance described in Section 2 by looking at the relationship between cross-country corruption measures and federal transfers as proxied by (local expenditures − locally generated revenues)/(local expenditures) and, alternatively, by (local expenditures − locally generated revenues)/(local revenues). We do not find any correlation. However, it is quite likely that, given the mismeasurement in both the expenditure and revenue data, the difference between the two series is essentially noise. Because of this, we are unable to identify whether the lack of correlation between this new variable and corruption accurately reflects a lack of association or is simply due to data measurement issues. For the time being, we leave the question of how the *type* of decentralization affects corruption for future research.

5. Conclusions

In this paper, we have made an initial assessment of the relationship between decentralization and corruption. We find a very strong and consistent negative association between the two variables across a sample of countries, thereby providing some support for theories of decentralization that emphasize its benefits. This association is robust to controlling for a wide range of potential sources of omitted variable bias as well as endogeneity bias.

Although data availability limits the conclusiveness of our results, the evidence in the paper raises a number of interesting issues for further investigation, including whether particular *types* of decentralization are more effective in combatting corruption, and whether there are specific government services where decentralized provision has a particularly strong impact on rent-extraction.

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Table A1
Average of *DECENTR* and years for which fiscal data on local, state and central government expenditure were available in GFS in the period 1980–95[a]

Country	ICRG	GCOR	WCO	GCS	TI	BI	*DECENTR*
Albania	3.91	–	–	–	–	–	0.20
Argentina	3.60	6		3.29	5.42	7.67	0.38
Australia	5.10	0	25.18	6.34	8.30	10	0.41
Austria	5.14	0	37.76	6.32	7.24	8	0.30
Belgium	5.28	0	40.02	5.32	7.84	9.75	0.12
Burkina Faso	3.64	8	–	4	–	–	0.03
Bulgaria	3.92	–	–	–	–	–	0.19
Bahrain	3.42	–	–	–	–	–	0.03
Bolivia	1.68	8	–	–	1.1	–	0–18
Brazil	3.78	8	75.88	3.59	4.09	5.75	0.34
Canada	6	0	20.63	6.44	8.69	10	0.57
Switzerland	6	0	22.24	6.39	8.70	10	0.51
Chile	3.18	2	23	5.74	6.02	9.25	0.08
Colombia	3	8	–	3–13	2.99	4.5	0.29
Costa Rica	5	4	–	3.71	–	–	0.03
Czechoslovakia	4.33	–	–	–	–	–	0.24
Germany	5.36	0	26.39	6.39	8.13	9.5	0.41
Denmark	6	0	14.52	6.71	8.44	9.25	0.44
Dominican Republic	3	4	–	–	–	6.5	0.03
Spain	4.43	6	61.52	5.49	5.94	7	0.24
Ethiopia	2.59	4	–	3.66	–	–	0.02
Finland	6	0	18.22	6.73	8.51	9.5	0.39
France	5.43	0	43.43	5.82	7.93	10	0.19
U.K.	5.46	0	20.12	6.53	8.13	9.25	0.25
Gambia	3	–	–	–	–	–	0.03
Greece	4.36	6	62.93	3.88	4.62	6.25	0.04
Guatemala	2	–	–	2.57	–	–	0.04
Hungary	4.5	–	–	4.12	3.42	–	0.21
Indonesia	1.28	10	73.36	2.06	0.38	1.5	0.11
India	2.75	8	70.81	2.79	3.28	5.25	0.46
Ireland	5.11	0	27.43	6.08	7.98	9.75	0.24
Iran	2.96	2	–	–	–	3.25	0.04
Iceland	6	–	–	5.83	.	–	0.23
Israel	5	2	–	4.43	7.35	9.25	0.11
Italy	3.68	6	76.81	4.03	4.58	7.5	0.22
Sri Lanka	3	–	–	–	–	7	0.03
Luxembourg	6	–	40.02	6.67	–	–	0.15
Mexico	2.86	6	62.44	3.77	2.05	3.25	0.20
Mongolia	4.05	–	–	–	–	–	0.37
Malaysia	4.43	4	50.14	4.33	5.69	6	0.19
Nicaragua	4.57	–	–	2.49	–	8.75	0.07
Netherlands	6	0	20.82	6.28	8.72	10	0.25
Norway	6	0	25.20	7	8.55	10	0.33
Panama	2.11	–	–	–	–	5	0.02
Peru	2.83	6	–	4.31	–	7.25	0.18
Poland	4.42	–	–	4.05	4.42	–	0.23

Table A1. Continued

Portugal	4.43	0	50.14	5.16	4.98	6.75	0.10
Paraguay	1.28	8	–	–	–	–	0.04
Romania	2.96	–	–	–	–	–	0.13
Sweden	6	0	22.23	6.43	8.36	9.25	0.36
Thailand	3.11	10	69.38	3.58	2.13	1.5	0.08
Trinidad & Tobago	2.57	–	–	–	–	–	0.04
Tunisia	2.96	4	–	5.62	–	–	0.05
Uruguay	3	4	–	–	–	8	0.09
USA	5.18	0	32.35	6.26	8.08	10	0.44
Yugoslavia	3	–	–	–	–	–	0.76
South Africa	5.35	0	50.55	5.01	7.17	8	0.24
Zambia	2.28	8	–	4.40	–	–	0.04
Zimbabwe	3.25	6	–	3.92	–	8.75	0.19

[a] Note: ICRG index: 6=least corruption; GCOR: 0=least corruption; WCO: 0=least corruption; GCS: 7=least corruption; TI: 10=least corruption; BI: 10=least corruption. *DECENTR* is defined as the share of local and state government expenditure over total (central+state+local) government expenditure. Data are reported for the countries for which GFS data were available.

Appendix A. Data description

CORRUPT Corruption index, originally ranging from 0 to 6, with 6 indicating lower corruption. Lower scores indicate that high government officials are likely to demand special payments and that illegal payments are generally expected throughout lower levels of government in the form of bribes connected with import and export licenses, exchange controls, tax assessment, policy protection, or loans. Rescaled from 0 to 1 with 0= least corruption. Source: International Country Risk Guide, years 1982–90.

DECENTRALIZATION Total expenditure of subnational (state and local) governments over total spending by all levels (state, local, and central) of government. Source: *Government Finance Statistics* (GFS), International Monetary Fund, for the years 1980–95.

FRACTIONALIZATION Ethnolinguistic fractionalization index (measures the probability that two randomly selected persons from a given country will not belong to the same ethnolinguistic group). Source: Mauro (1995), initially from the Atlas Narodov Mira (Department of Geodesy and Cartography of the State Geological Committee of the USSR, Moscow, 1964) and Taylor and Hudson (World Handbook of Political and Social Indicators, 1972).

Ln (*GDP*)	Natural logarithm of real GDP per capita in constant dollars, chain Index, expressed in international prices, base 1985. Source: Summers–Heston, years 1960–1990.
CIVIL LIBERTIES	Gastil index of civil liberties. Values from 1 to 7 (1 = most freedom) are attributed to countries taking into consideration such issues as freedom of press, of political association, and of trade unions association. The index is available for the years 1972–95. Source: Banks (1995).
SCHOOLING	Average years of schooling in the adult population, available for 1960–1990. Source: Barro and Lee (1993).
POPULATION	Source: World Development Indicators, World Bank.
GOVERNMENT SIZE	Total government expenditure divided by GDP. Source: Barro (1991), 1980–85.
OPENNESS	hare of imports on GDP. Source: World Development Indicators, World Bank.
CONTRACT	Measures the relative degree to which contractual agreements are honored. Scored 0–4, with higher scores for greater enforceability. Source: Business Environment Risk Intelligence (BERI) and Knack and Keefer (1995).
LEGAL ORIGIN	Origin of a country's legal system. These dummies classify the legal origin of the Company Law or of Commercial Code of each country. The identified origins are five: (1) English Common Law; (2) French Commercial Code; (3) German Commercial Code; (4) Scandinavian Commercial Code; (5) Socialist/Communist laws. Source: La Porta et al. (1998), extended from 'Foreign Laws: Current Sources of Basic Legislation in Jurisdictions of the World' and 'CIA World Factbook.'
COLONIAL DUMMIES	Indicators of colonial affiliation. Sources: CIA World Factbook.

Alternative Measures of Corruption

GCI	Total proportion of deals involving kickbacks, according to German exporters. On average, 10 individuals were interviewed per country. The index originally ranges from 0 to 10, with 0 indicating lower corruption. Rescaled from 0 to 1 with 0 = least corruption. Source: Neumann (1994); obtained from Rafael di Tella.

WCR	Corruption index from the *World Competitiveness Report*. The index measures the extent to which improper practices (such as bribing and corruption) prevail in the public sector. Average for early 1990s; originally ranging from 0 to 100, with 0 indicating least corruption. Rescaled from 0 to 1 with 0=least corruption. Source: EMF Foundation; obtained from Rafael di Tella.
GCS	*Global Competitiveness Survey* corruption index. This survey asked top managers of about 3000 firms to rank from 1 to 7 their perception of presence of irregular, additional payments connected with import and export permits, business licenses, exchange controls, tax assessments, police protection or loan applications in their countries. Average for 1997 and 1998. Originally, 7 indicates least corruption; rescaled from 0 to 1, with 0=least corruption. Source: World Economic Forum (WEF), http://www.weform.org.
BI	*Business International* (now incorporated into EIU) corruption index. This index reflects BI's analysts' perspective on 'the degree to which business transaction involve corruption or questionable payments' in a given country; originally ranging from 0 to 10 with 10 indicating least corruption. Rescaled from 0 to 1, with 0=least corruption. The index is available for 68 countries. In the paper we used data for the years 1980–85. For a detailed description of the index see Mauro (1995).
TI	*Transparency International* historical corruption index. Historical data on the degree to which business transactions involve corruption are reported by the Center of Corruption Research at the University of Groningen jointly with Transparency International and can be downloaded at http://www.gwdg.de/~uwvw/icr.htm. Data are available for the sub-periods 1980–1985 and 1988–1992 and are calculated as averages of corruption rankings from Business International, Political Risk Services, World Competitiveness Report, and Political & Economic Risk Consultancy. Originally the index ranges from 0 to 10 with 10 indicating least corruption. Rescaled from 0 to 1 with 0=least corruption.

References

Ades, A., di Tella, R., 1997. National champions and corruption: some unpleasant interventionist arithmetic. The Economic Journal July (107), 1023–1042.

Ades, A., Wacziarg, R., 1997. Openness, country size and government. Journal of Public Economics 369 (69), 305–321.

Banerjee, A., 1997. A theory of misgovernance. Quarterly Journal of Economics 112, 1289–1332.

Banks, A., 1995. Cross-National Time-Series Data Archive. State University of New York at Binghamton.

Bardhan, P., Mookherjee, D., 2000. Corruption and decentralization of infrastructure delivery in developing countries. Mimeo, Department of Economics, Boston University.

Bardhan, P., Mookherjee, D., 2000. Decentralizing anti-poverty program delivery in developing countries. Mimeo, Department of Economics, Boston University.

Barro, R., 1991. Economic growth in a cross section of countries. Quarterly Journal of Economics 106, 407–443.

Barro, R., Lee, J.-W., 1993. International comparisons of educational attainment. Journal of Monetary Economics 32, 363–394.

Besley, T., Coate, S., 1999. Centralized versus decentralized provision of local public goods: a political economy analysis. NBER Working Paper no. 7084.

Brennan, G., Buchanan, J.M., 1980. The Power to Tax. Cambridge University Press, New York.

Brueckner, J., 1999. Fiscal decentralization in LDCs: the effects of local corruption and tax evasion. Mimeo, Department of Economics, University of Illinois at Urbana-Champaign.

Careaga, M., Weingast, B.R., 2000. The fiscal pact with the devil: a positive approach to fiscal federalism, revenue sharing, and good governance. Working Paper, Hoover Institution, Stanford University.

Gatti, R., 1999. Explaining corruption: are open countries less corrupt? Mimeo, World Bank.

Glos, G., 1978. Comparative Law. Fred B. Rothman & Co.

Hadi, A., 1992. Identifying multiple outliers in multivariate data. Journal of the Royal Statistical Society. Series B. (Methodological) 54 (3), 761–771.

Huther, J., Shah, A., 1998. Applying a simple measure of good governance to the debate on fiscal decentralization. World Bank Policy Research Working Paper, no. 1894.

Jin, H., Qian, Y., Weingast, B.R., 1999. Regional decentralization and fiscal incentives: federalism, Chinese style. Working Paper, Hoover Institution, Stanford University.

Kaufman, D., Kraay, A., Zoido-Lobaton, P., 1999. Governance matters. World Bank Policy Research Working Paper, no. 2196.

Knack, S., Keefer, P., 1995. Institutions and economic performance: cross-country tests using alternative institutional measures. Economics and Politics 3, 207–227.

La Porta, R., Lopez-de-Silanes, F., Shleifer, A., Vishny, R., 1998. The quality of government. Journal of Law, Economics, and Organization 15, 222–279.

Lijphart, A., 1984. Democracies. Yale University Press, New Haven and London.

Mauro, P., 1995. Corruption and growth. Quarterly Journal of Economics 110, 681–712.

Neumann, P., 1994. Bose: Fast alle Bestechen. Impulse 24, 12–16.

Persson, T., Tabellini, G., 2000. Constitutional determinants of government spending. Mimeo.

Prud'homme, R., 1995. The dangers of decentralization. The World Bank Observer 10, 2.

Pryor, F., 1968. Public Expenditure in Communist and Capitalist Nations. George Allen and Unwin.

Oates, W., 1972. Fiscal Federalism. Harcourt Brace Jovanovich, Inc.

Rajan, R., Zingales, L., 1999. The politics of financial development. Mimeo, University of Chicago.

Rodden, J., 2000. The dilemma of fiscal federalism: hard and soft budget constraints around the world. Mimeo, MIT.

Shleifer, A., Vishny, R., 1993. Corruption. Quarterly Journal of Economics 108, 599–617.

Tanzi, V., 1996. Fiscal federalism and efficiency: a review of some efficiency and macroeconomic

aspects. In: Bruno, M., Pleskovic, B. (Eds.), Annual World Bank Conference on Development Economics 1995. World Bank, Washington, D.C.

Tiebout, C., 1956. A pure theory of local expenditures. Journal of Political Economy 64, 416–424.

Treisman, D., 2000. The causes of corruption: a cross-national study. Journal of Public Economics, forthcoming.

Wade, R., 1997. How infrastructure agencies motivate staff: canal irrigation in India and the Republic of Korea. In: Ashoka Mody, (Ed.), Infrastructure Strategies in East Asia. World Bank.

Wei, S.-J., 2000. Special governance zones: a winnable entry strategy for an anti-corruption reform. Mimeo.