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One Size Fits All?

Decentralization, Corruption, and the Monitoring of Bureaucrats

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Abstract:

The majority of theoretical and empirical studies on the relationship between decentralization and corruption argues that the devolution of power might be a feasible instrument to keep corruption at bay. We argue that this result crucially depends on the possibility to monitor bureaucrat's behavior. The bene fits of interjurisdictional competition only occur if there is a supervisory body such as a free press, which is often lacking in less-developed countries. Using cross-country data, we analyze the relationship between decentralization and corruption taking diff erent degrees of the freedom of the press into account. Our main fi nding is that decentralization counteracts corruption in countries with high degrees of press freedom, whereas countries with low monitoring possibilities su er from decentralization. Our policy implication is, therefore, that a free press is a necessary pre-condition for successful decentralization programs.

1 Introduction

It is a consensus that corruption is one of the most serious problems in developing countries, in the scientific as well as in the public discussion. The question of how to tackle corruption in developing countries is not yet answered convincingly. One repeatedly proposed solution is to implement bureaucratic or inter-regional competition through fiscal decentralization [see Fisman and Gatti (2002a) or Arikan (2004)]. Competition might strengthen the accountability of bureaucrats and, thus, reduce the ability of public officials to extract rents. Referring to these arguments, the poverty reduction programs of international institutions contain decentralization as a substantive instrument. For example, 12 percent of World Bank projects completed between 1993 and 1997 involved decentralizing responsibilities to lower levels of government [Litvack et al. (1998)]. More recently, in 2006 more than 19 percent, or 4.5 billion dollars, of the World Bank budget was spent on decentralization projects [Development Committee (2006)]. Nevertheless, there is some doubt concerning the effectiveness of this development strategy. Developing nations usually have a weak institutional background. Therefore, to assess whether or not decentralization is recommendable for a certain policy purpose, it is necessary to analyze the effects of decentralization considering the whole country-specific institutional framework. Although most empirical studies found lower corruption in decentralized countries, we argue that the positive effects of decentralization do not prevail if comprehensive public monitoring and constitutional legality do not exist. The main questions of our paper are the following: Can we identify a complementary relationship between decentralization and the possibilty of monitoring of bureaucrats and its influence on corruption? Is decentralization in either case the right medicine against the corruption disease? Or in short, does one size fits all?

For this purpose we estimate a cross-section of 64 countries using alternative decentralization and corruption measures. We show that the established positive effect of decentralization disappears for most specifications in our broader data set. We thereafter estimate a structural break model, controlling for a complementary relationship between decentralization and the possibility of public monitoring of bureaucrats – measured by the index of freedom of the press. Our main finding is that decentralization counteracts corruption in countries with a high degree of freedom of the press, while countries with a low degree of freedom of the press suffer from decentralization. Our results imply that decentralization projects in developing countries should

be accompanied by other institutions acting as supervisory body strengthening the accountability of bureaucrats, such as a free press.

The paper is organized as follows. Section 2 briefly reviews the related theoretical and empirical literature and discusses the extent to which the results are applicable for developing countries. Section 3 describes our data and empirical methodology. Section 4 presents the estimation results and robustness checks. Section 5 concludes.

2   Related literature

2.1   Some theoretical considerations

The predictions of theoretical models concerning the impact of decentralization on corruption are ambiguous. Models favoring decentralization are based on the implicit assumption that a working information infrastructure exists within a country. For example, in yardstick competition models it is necessary that people could compare policy outcomes in their home jurisdiction with neighboring regions, requiring free information flows. Similarly, models based on a tax-competition framework need free information flows as well as mobile capital and labor. The mechanism driving corruption down in such models is (political) competition. Shleifer and Vishny (1993) argue that *"Countries with more political competition have stronger public pressure against corruption – through laws, democratic elections, and even the independent press – and so are more likely to use government organizations that contain rather than maximize corruption proceeds."*[Shleifer and Vishny (1993), p. 610]. Models expecting a negative impact of decentralization on corruption emphasize the danger of close connections between local interest groups and local decision makers.

In their seminal paper, Shleifer and Vishny (1993) discuss corruption in a double marginalization framework. They argue that different monopolistic bureaucrats set their bribery demands independently in order to maximize their own benefit without taking the negative externalities on other bureaucrats into account. In this case, vertical decentralization leads to greater dispersion of government decision-making powers, and the lack of coordination among bureaucrats results in excessive rent extraction.[1] However, Shleifer and Vishny (1993) also emphasize that horizontal

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[1] A timely application of the Shleifer and Vishny (1993) model is provided by Bennett and

decentralization leads to decreasing corruption through strengthening the competition between bureaucrats.

Another argument against decentralization is provided by Prud'homme (1995). He argues that there are more opportunities for corruption at the local level because local politicians and bureaucrats are likely to be more subject to the pressing demands of local interest groups. Moreover, local decision makers have usually more discretionary powers than national officials, increasing the negative effect of decentralization. He also discusses the role of an independent press in the context of decentralization and corruption, arguing that *"In some countries, at least, national bureaucracies have a tradition of honesty that is often absent at the local level. The pressure of media, inasmuch as it exists, would also be a greater disincentive at the national than at the local level"* [Prud'homme (1995, p. 211)]. In the same vein, Tanzi (1995) argues on the basis of local interest groups. He states that corruption may be more common at the local level compared to the national level, in particular in developing countries. Local officials live closer to the citizens and this contiguity leads to a higher impact of local interest groups and a higher level of corruption in decentralized countries.

An ambiguous effect of decentralization on corruption appears if the quality of bureaucrats is considered. Persson and Tabellini (2000) assume that working in a central government provides more prestige and power to the agents in contrast to a local government. Thus, monitoring may be more intense on the central level, and efforts by centralized bureaucrats may be greater, reducing corruption. Central bureaucrats are responsible for various tasks and localities simultaneously, whereas under decentralization, agents are often responsible for a single task in a single jurisdiction. In the first case, only the aggregate performance of politicians matters for reappointment. The indirect accountability weakens the incentives to perform well, since there is a smaller link between effort and rewards. In contrast, in a decentralized government, decision makers are held accountable for all of their actions. Therefore, decentralization may increase fiscal performance and decrease corruption. The equilibrium impact of decentralization on corruption remains unclear.

More recent studies rely on competition between jurisdictions. Applying a tax-

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Estrin (2006). The authors analyze the relationship between centralized or decentralized infrastructure provision and corruption in developing economies. The impact of decentralization on corruption was ambiguous depending on the efficiency of the tax system, the venality of bureaucrats, and other issues.

competition framework, Arikan (2004) shows that an increasing degree of competition for mobile capital between jurisdictions leads to less corrupt bureaucrats. Dincer et al. (2006) analyze a yardstick-competition model based on Besley and Case (1995). Voters compare the policy outcomes in their home jurisdiction with their neighbor regions and thus implement interregional competition. Under certain circumstances, this yardstick competition may lead to lower levels of corruption. [2] As mentioned at the beginning of this section, it is noteworthy to examine the application of these theoretical models to developing countries.

Studies on decentralization and corruption considering specific institutional problems of developing countries are rare. A criticism of the applicability of the classical Tiebout (1956) approach to developing countries brings up Bardhan (2002), arguing: *"(...) the information and accounting systems and mechanisms of monitoring of public bureaucrats are much weaker in low-income countries. (...) Thus, the differential efficacy of such mechanisms under centralization and decentralization becomes important"* [Bardhan (2002), p. 188]. Moreover, he argues that mechanisms of political accountability are especially weak in developing countries, and *"(...) any discussion of delivery of public services has to grapple with issues of capture of governments at different tiers by elite groups more seriously than is the custom in the traditional decentralization literature."* [3] Therefore, in developing countries, there is no a priori verdict in favor of decentralization. The existence of appropriate political institutions seems to influence the impact of decentralization on corruption.

All in all, an important issue is that in almost all theoretical models which favor decentralization, the free flow of information plays an important role. If the monitoring of bureaucrats works, decentralization might indeed decrease corruption through political competition. However, in most developing countries the existing information infrastructure is controlled by corrupt or autocratic officials. Assumptions of models favoring centralization seem to be more appropriate for developing countries. Therefore, our hypothesis is that decentralization is a suitable instrument for controlling corruption in countries with an appropriate information infrastruc-

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[2] Careaga and Weingast (2000) and Rodden (2000) contribute to the literature on decentralization and corruption by distinguishing between different kinds of decentralization. It turns out to be important whether the expenditures of sub-national governments are financed by own revenue sources or not, because central government transfers give local decision makers the incentive to ignore the budgetary consequences of their mismanagement.

[3] See Bardhan and Mookherjee (2006b) and Bardhan and Mookherjee (2006a) for details.

ture, while countries without these necessary information flows may suffer due to decentralization.

2.2 Previous empirical studies

In substance, the majority of empirical studies have found corruption to be lower in decentralized countries. These studies, however, do not consider the weak institutional structure of developing countries, such as the low degree of press freedom, which hampers the public monitoring of bureaucrats. In the following, we survey the most important empirical studies and discuss possible extensions in respect to our main research question.

An initial empirical investigation is provided by Huther and Shah (1998), who found a negative correlation between the degree of expenditure decentralization and the level of corruption. Corruption is measured by a governance index for 80 developed and developing countries. They report a significant Pearson correlation coefficient, but due to the fact that no control variables are considered, omitted variables might bias the results. Furthermore, from correlation it is not necessarily possible to draw conclusions about the causal relationship.

Treisman (2000) analyzes the causes of corruption and takes the federal structure into account. He finds a negative relationship between a dummy variable reflecting whether a country has a federal or unitary constitution and the absence of corruption. [4] In contrast to the aim of our paper such a federal dummy does not necessarily reflect 'de facto' decentralization. The existence of a federal constitution itself does not necessarily reflect that sub-national governments have appreciable authority or autonomy in decision making. The study of Treisman (2000) is, thus, not comparable to the results of other papers measuring decentralization through financial accounts or the like. [5]

A positive impact of fiscal decentralization on the absence of corruption is found by Fisman and Gatti (2002a). To make their results comparable to the study by Treisman (2000), they also consider a federal dummy, finding no significant rela-

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[4] Note that almost all studies, like ours, use corruption measures which have high values for a low level of corruption, thereby measuring the 'absence of corruption'. See section 3.2 for details.

[5] See section 3.1 for details on the measurement of decentralization.

tionship. Furthermore, Fisman and Gatti (2002a) use the two-stage-least-squares methodology to handle the endogeneity problem, considering a dummy variable for the legal origin of the country as instrument. In two out of six specifications, the results remain significant, indicating that decentralization has a positive impact on the absence of corruption. Our major concern with this study – and the motivation for ours – is that the authors do not consider subsamples for less developed countries, taking into account that the influence of decentralization on corruption may be reversed in different institutional frameworks as suggested by Prud'homme (1995), Litvack et al. (1998), Bardhan (2002), and others.

Fisman and Gatti (2002b) study the relationship between corruption in U.S. states and dependency on central government transfers. They found corruption is positively associated with larger federal transfers. In contrast to most other studies working with country level data, corruption is measured by the number of convictions for abuse of public office. Due to this major difference, these results are not directly comparable to other empirical studies. However, a very important result of this study is that different types of decentralization do not always have the same impact on corruption, supporting theoretical predictions of Careaga and Weingast (2000) and Rodden (2000).

A comparable study to Fisman and Gatti (2002a) is Arikan (2004), who analyzes the impact of several decentralization measures on Transparency International's Corruption Perceptions Index in a cross-country data set. She also found corruption lower in decentralized countries. However, considering endogeneity, the weak significant relationship turned to insignificance in almost all estimation specifications. Similar to earlier studies, she neglected the different institutional conditions of countries.

In contrast to most other previous studies, Lederman et al. (2005) analyze the impact of different political institutions on corruption based on a panel data set of several developed and developing countries. To obtain feasible corruption data for time series analysis, they use the International Country Risk Guide's (ICRG) corruption index, which is available for all years since 1984. Besides several other institutional variables, they consider central government transfers to other levels of national government as a percentage of GDP as a decentralization measure. They find that decentralization measured this way decreases corruption.

Dincer et al. (2006) analyze U.S. state level corruption and dependency on the degree of expenditure decentralization in a panel data set. They find some evidence

for corruption being smaller in more decentralized states as well as strong evidence for the effects of yardstick competition. However, the results do not remain significant when trying to handle the problems arising from endogeneity. As the authors analyze homogeneous, highly developed U.S. state level data, the results cannot be generalized for developing countries as is the aim of our study. Nevertheless, the results are very interesting to investigate the transmission channel through which decentralization effects corruption. The studies discussed in our literature survey are summarized in Table 1.

While the relationship between decentralization and corruption is ambiguous in the theoretical literature, the majority of empirical studies found corruption to be lower in decentralized countries. Although parts of the theoretical literature emphasize that the impact of decentralization on corruption depends on monitoring possibilities, mobility, and other factors, none of these studies has controlled whether the relationship varies over different institutional settings. In particular, the weak institutional design of developing countries has not been part of these investigations. The aim of our paper is to investigate whether the possibility of public monitoring of bureaucrats – reflected by freedom of the press – has an impact on the influence of decentralization on corruption as discussed by Shleifer and Vishny (1993), Prud'homme (1995), Bardhan (2002) among others. For this purpose we estimate a structural break model considering complementary effects of decentralization and freedom of the press.

Table 1
Previous empirical studies

Author(s)	Data[a),b),c)]	Methodology	Results[d)]
Huther Shah (1998)	a) 80 countries b) 'good governance' measure c) expenditure decentralization	Pearson correlation	positive
Treisman (2000)	a) up to 64 countries b) CPI index, Business international, and Global competitiveness survey c) federal dummy	cross country WLS and OLS	negative
Fisman Gatti (2002a)	a) up to 55 countries b) CPI index, ICRG index, World competitiveness report, German exporter index, Business international, and Global competitiveness survey c) expenditure decentralization	cross country OLS and TSLS	positive
Fisman Gatti (2002b)	a) 50 U.S. states b) convictions for abuse of public office c) share of federal transfers	cross country OLS	positive
Arikan (2004)	a) 40 countries b) CPI index c) number of local jurisdictions, share of non-government employment, expenditure decentralization	cross country OLS and TSLS	positive
Lederman et al. (2005)	a) 102 countries b) ICRG index c) central transfers	panel pooled OLS, ordered probit	positive
Dincer et al. (2006)	a) 48 U.S. states b) convictions for abuse of public office c) expenditure decentralization	panel pooled OLS, RE and TSLS	positive

a) sample and sample size, b) corruption measures, c) decentralization measures, d) positive results mean that corruption is smaller in decentralized countries.

3   The data

3.1   Decentralization measures

The proper definition of applicable decentralization measures is a challenging task. Several measurement concepts have been elaborated in the literature.[6] One possibility for the measurement of decentralization is to design indicators for the organization of governments with respect to laws and institutions from a political economy perspective. In particular, the indices of Treisman (2002) have often been used in the recent literature, and thus, we adopt them for our analysis. Among others, Treisman has created two decentralization measures: a federal dummy ($FEDERAL$)

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[6] Excellent overviews of the problems of measuring fiscal decentralization are provided by Treisman (2002) and Stegarescu (2005).

capturing whether a federal constitution exists (1) or not (0) and a measure for the number of vertical government tiers (*TIERS*).[7] As these measures are constructed from formal national law, we classify them as 'de jure' decentralization measures. Thus, these measures do not necessarily reflect sub-national government authority or autonomous power in decision making. For this purpose we use 'de facto' decentralization measures, factoring in the financial resources of sub-national governments as compared to the central government. To measure 'de facto' decentralization, we construct measures using the *IMF's Government Finance Statistics* (GFS), which provides data on central, state, and local government revenues and expenditures for several developed and developing countries since the early 1970s. Decentralization indices are calculated by relating the sum of state and local expenditures (revenues) to the consolidated total government expenditures (revenues). We use *EXPDEC* as an abbreviation for the degree of expenditure decentralization and *REVDEC* for the degree of revenue decentralization.

Oates (1972) discusses the general limitations of such 'classical' decentralization measures. He basically argues that these measures do not always represent the actual degree of decentralization because it is also important to consider the autonomy of sub-national governments in expenditure or revenue decisions. Otherwise, if subnational autonomy is not taken into account, the 'classical' decentralization measures would indicate a high level of decentralization, although a wide range of sub-national expenditures and revenue decisions is determined by the federal government. For this reason, the OECD has developed an internationally comparable framework to assess the degree of control sub-central governments have over their revenues [see OECD (1999)]. Several authors, e.g. Rodden (2003) and Stegarescu (2005), have applied this framework to create new decentralization measures reflecting autonomy of subnational jurisdictions. However, as the data source suggests, these decentralization measures are available only for OECD countries and therefore not applicable for a wide range of countries.[8]

Following Arikan (2004), we consider a fifth alternative decentralization measure, which can be derived from the employment statistics compiled by the *International Labor Organization* (ILO). These statistics contain data on public (and private) em-

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[7] As both variables are not presented in Treisman (2002), we picked them up from other papers using them and presenting the raw data in tables, such as Treisman (2000) and Kessing et al. (2007).

[8] See Stegarescu (2005) for details on measuring autonomy of sub-national jurisdictions.

ployment, distinguishing between the national and sub-national government levels for numerous countries. In the same manner as we proceeded with the other 'de facto' decentralization measures, we can calculate the share of sub-national government employment (*EMPLDEC*), which is the ratio of sub-national government employment to total government employment. Table A1 in the appendix reports the correlations for all decentralization measures. Except for *TIERS*, all measures are positively correlated.

3.2 Corruption measures

Besides measures of decentralization, we also need adequate measures of corruption. We make use of three different commonly applied measures of corruption. The first measure is the corruption index provided by the PRS Group in the *International Country Risk Guide* (*ICRG*). This measure reflects the likelihood that government officials will demand special payments and the extent to which illegal payments are expected throughout lower levels of government. The *ICRG* index is based on a survey of international experts and has been available since the early 1980s [see Knack and Keefer (1995)]. A second corruption index is provided by the *World Bank* and is commonly known as the Kaufman index (*WBC*). This indicator is available beginning in 1996. The third corruption measure, the corruption perception index (*CPI*), is provided by *Transparency International.* In contrast to the other indices, the *CPI* is a meta index, which is calculated from the results of several other studies on corruption. The index is available beginning in 1980, but due to the composition of the index, not comparable between years. [9]

All of these measures reflect the absence of corruption: This means that a high value indicates low corruption. The *ICRG* index is defined between 0 and 6, the *WBC* index between -2.5 and +2.5, and the *CPI* index between 0 and 10. For reasons of better comparability of our different estimation results, we have rescaled all three measures so that they have values between zero (most corrupt) and one (least corrupt).

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[9] A discussion of time-series properties of the index is provided by Lambsdorff (2005). Panel data analysis is possible with a special data set starting in 1995.

The aim of our study is to investigate whether the monitoring possibilities of bureaucrats determine the impact of decentralization on corruption. A first commonly used proxy for the observability of bureaucratic behavior is the index for freedom of the press (e.g. Brunetti and Weder (2003)). A free and independent press is able to reveal and report misuses of public office for private gain. It complements the competition and accountability effects of decentralization. Persons concerned with corruption can reveal the bureaucrat's behavior to a journalist and the media reports will raise the costs for the bureaucrat as the probability of being detected and punished is increased. Conversely, if the press is under the control of an autocratic administration, the abuse of authority is virtually less risky for bureaucrats. In this case, decentralization does not work. For our estimation approach, we revert to the index for freedom of the press provided by *Freedom House*. The data is available from 1980 to the present and currently covers 194 countries. Country narratives examine the legal environment for the media, political pressures that influence reporting, economic factors that affect access to information, and repressive actions against journalists. These four categories are rated for the print media as well as the broadcast media. The overall index ranges from 0 (total freedom of the press) to 100 (highest violation of press freedom). Note that we have rescaled the index in such a way that high values indicate a high degree of freedom of the press and low values the opposite.

3.4 Other explanatory variables

As the level of corruption in a country is not solely determined by decentralization, our estimations include several control variables following previous cross-country studies, e.g., the study of Fisman and Gatti (2002*a*) and Arikan (2004).

Our baseline regression includes as control variables: the log of population size *(POP)*, the log of gross domestic product per capita in dollars at constant prices of the year 2000 (*GDPPC*), the sum of exports and imports as a share of GDP as a measure for the degree of openness (*GLOBAL*), the diversity index of ethnic fractionalization (*ETHNO*), the share of government expenditures in GDP as a measure for government size (*GOVSIZE*), and the index for the freedom of the press (*PRESS*). Most of the data is provided by the World Bank in the *World Develop-*

ment Indicators 2006 (WDI). One exception is the ethnic fractionalization, which is provided by *www.ethnologue.com.* [10] Table 2 provides summary statistics of the variables.

Table 2
Summary statistics, cross country data

Variable	Obs.	Mean	Std. Dev.	Min	Max
ICRG (0...1)	64	.54	.20	.18	1.0
CPI (0...1)	64	.50	.24	.19	.97
WBC (0...1)	64	.57	.22	.28	.99
POP (Mio.)	64	60.80	180.00	1.20	1,150.00
GDPPC ($)	64	7,866	8.857	95.52	31.521
GOVSIZE	64	.16	.05	.06	.32
GLOBAL	64	.73	.35	.19	1.57
ETHNO	64	.40	.27	.02	.93
PRESS	64	64.9	20.7	18.1	92.7
FEDERAL	55	.27	.45	0	1
TIERS	61	3.59	.80	2	6
EMPLDEC	51	.44	.22	.08	.93
EXPDEC	64	.22	.14	.02	.57
REVDEC	64	.17	.13	.01	.53

4   Empirical analysis

4.1   Benchmark regressions

As a benchmark case, we first estimate the impact of decentralization on corruption in a cross-country data set without testing for a complementary relationship between decentralization and the possibilities to monitor bureaucrat's behaviour. This estimation approach enables us to compare our results with previous research studies on the basis of a broader data set covering up to 64 countries. The basic estimation equation has the form

$$CORRUPT_i = \alpha + \beta \cdot CONTROL_i + \gamma \cdot DECENTR_i + \epsilon_i \qquad (1)$$

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[10] See Table A2 in the appendix for data sources and definitions.

where $CORRUPT$ as independent variable reflects the level of corruption in country i, $CONTROL$ is a vector of control variables mentioned above, and $DECENTR$ represents our different decentralization measures. To reduce causality problems, the timing of independent variables is chosen such that they are long averages for the period 1980-1995, prior to the corruption measures for 1996-2000. We are mainly interested in the sign and significance of γ, which might be positive, supporting the findings of Fisman and Gatti (2002a), Arikan (2004), etc. or negative as in Treisman (2000). Note that the corruption measures reflect the absence of corruption, and thus a positive sign means a high degree of decentralization is associated with low corruption. We present estimation results for all three alternative corruption measures as dependent variables and all mentioned decentralization measures, respectively.

Table 3 contains the cross-sectional results. White's test for heteroskedasticity in the residuals rejects the null of no heteroskedasticity; thus, all standard errors of coefficients are calculated using White (1980) correction. The coefficients of our 'de jure' decentralization measures ($FEDERAL$ and $TIERS$) are insignificant in all specifications. A similar picture occurs for the employment decentralization measure. The 'de facto' decentralization measures ($EXPDEC$ and $REVDEC$) have no significant impact on corruption with the ICRG index as the corruption measure (specification 4 and 5) as well as with the WBC corruption measure. With the CPI index as the corruption measure, we obtain a positive and weakly significant coefficient for $EXPDEC$ (specification 9). $REVDEC$ barely misses conventional significance levels.

Our control variables show the expected signs and support the findings of earlier studies. The size of a country in terms of population (POP), the ethnic fractionalization ($ETHNO$), and the economic openness ($GLOBAL$) have no significant impact on corruption. Moreover, richer countries ($GDPPC$) and countries with a larger government ($GOVSIZE$) show less corruption. Last but not least, countries with a high degree of press freedom show less corruption ($PRESS$), which is in line with Brunetti and Weder (2003). Thus, we can conclude from our benchmark analysis that the strong positive impact of decentralization on the absence of corruption found in almost all earlier studies is very sensitive to the underlying measurement concepts of both decentralization and corruption, as well as to the sample of countries. Our broader data set shows that no such strong relationship exists. In the next section, we present evidence that the relationship between corruption and decentralization crucially depends on the possibilities of monitoring of bureaucrats.

Table 3: Cross-country estimations using OLS, decentralization: averages 1980-1995, corruption: averages 1996-2006

	Dependent variable: ICRG					Dependent variable: CPI					Dependent variable: WBC				
	decentralization measures					decentralization measures					decentralization measures				
	— de jure —			— de facto —		— de jure —			— de facto —		— de jure —			— de facto —	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)
Const.	-.1235	-.1762	-.2552	-.0745	-.0870	-.8914***	-.7793***	-.5421*	-.6157**	-.6566**	-.9289***	-.7401***	-.5922**	-.6454***	-.6746***
	(-.36)	(-.68)	(-.73)	(-.28)	(-.31)	(-2.78)	(-3.04)	(-1.71)	(-2.49)	(-2.53)	(-3.67)	(-3.27)	(-2.26)	(-3.04)	(-3.04)
POP	-.0044	-.0076	-.0041	-.0062	-.0056	.0062	-.0045	-.0122	-.0018	.0002	.0185	.0065	.0010	.0102	.0117
	(-.28)	(-.49)	(-.23)	(-.46)	(-.41)	(.39)	(-.30)	(-.69)	(-.14)	(.01)	(1.42)	(.49)	(.07)	(.92)	(1.03)
GDPPC	.0543**	.0619***	.0701***	.0506***	.0511***	.1277***	.1189***	.1207***	.1005***	.1020***	.1107***	.0994***	.1044***	.0854***	.0864***
	(2.34)	(3.07)	(3.11)	(2.90)	(2.96)	(5.29)	(4.82)	(4.80)	(5.21)	(5.25)	(5.64)	(4.55)	(4.90)	(4.99)	(4.99)
GOVSIZE	.7513*	.6504*	.4873	.6511*	.6530*	.7341**	.6824*	.7758*	.6867**	.7051**	.4978*	.5389*	.5140	.5807**	.5958**
	(1.88)	(1.70)	(1.09)	(1.90)	(1.90)	(2.19)	(1.87)	(1.79)	(2.19)	(2.22)	(1.76)	(1.70)	(1.42)	(2.11)	(2.12)
ETHNO	-.0552	-.0514	-.0441	-.0416	-.0419	.0033	-.0169	.0337	.0097	.0083	-.0081	-.0154	.0138	-.0004	-.0016
	(-.89)	(-.83)	(-.71)	(-0.80)	(-0.81)	(.06)	(-.26)	(.48)	(.17)	(.15)	(-.17)	(-.29)	(.24)	(-.01)	(-.03)
GLOBAL	-.0408	-.0604	.0103	-.0585	-.0589	-.0077	-.0293	-.0211	-.0283	-.0288	.0175	-.0109	.0061	-.0089	-.0090
	(-.55)	(-.87)	(0.15)	(-.89)	(-.90)	(-.13)	(-.45)	(-.33)	(-.45)	(-.48)	(.33)	(-.19)	(.12)	(-.17)	(-.17)
PRESS	.0034**	.0033**	.0035**	.0035***	.0036***	.0019	.0023**	.0015	.0027**	.0027***	.0032***	.0035***	.0029**	.0038***	.0039***
	(2.24)	(2.50)	(2.61)	(2.88)	(2.92)	(1.53)	(2.08)	(1.08)	(2.64)	(2.76)	(2.96)	(3.50)	(2.42)	(4.23)	(4.32)
FEDERAL	.0106					-.0135					-.0197				
	(.23)					(-.27)					(-.49)				
TIERS		.0219					.0380					.0283			
		(.82)					(1.56)					(1.42)			
EMPLDEC			-.0026					.0880					.0690		
			(-.02)					(.78)					(.72)		
EXPDEC				.1254					.2086*					.1137	
				(1.03)					(1.82)					(1.15)	
REVDEC					.1341					.1921					.0943
					(1.00)					(1.55)					(.87)
Obs.	55	61	51	64	64	55	61	51	64	64	55	61	51	64	64
Adj. R2	.62	.65	.70	.65	.65	.77	.77	.78	.78	.78	.82	.82	.83	.82	.82

t-statistics are reported in parenthesis. Significance levels are reported as follows: * for a 90%-significance-level, ** for 95% and *** for more than 99%.

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4.2   Cross-sectional analysis considering monitoring possibilities

The hypothesis we test now is that the relationship between decentralization and corruption depends on the possibilities of monitoring of bureaucrats. Almost all theoretical work, as e.g. the yardstick competition model by Dincer et al. (2006) or the tax competition model by Arikan (2004), assumes free information flows between the agents. Therefore, we now consider the freedom of the press as an indicator for the monitoring possibilities of bureaucrats and reinvestigate the relationship between decentralization and corruption. However, before specifying an econometric model to test our hypothesis, we first examine our data.

Fig. 1 shows a scatterplot of our whole data set with our decentralization measure on the abscissa and the ICRG index on the ordinate. The monitoring possibilities are considered such that we classified our countries into three groups: the upper third of countries with the highest degree of the freedom of the press measure is marked by quadrangles, countries in the middle third are marked by dots, and those in the lowest third of press freedom are asterisked. The figure also includes three trendlines, each of which reflects the relationship between decentralization and corruption in the three different groups of countries.

The scatterplot suggests that the relationship between decentralization and corruption indeed depends on the monitoring possibilities reflected by the freedom of the press. Countries with good monitoring possibilities show a positive impact of decentralization on the absence of corruption (upper trendline in Fig. 1), countries with middle monitoring possibilities come up with just a weak relationship (continuous line), and in countries with weak monitoring possibilities, decentralization is strongly negatively associated with the absence of corruption (dotted line). Inspection of the raw data suggests that there are no important outliers.
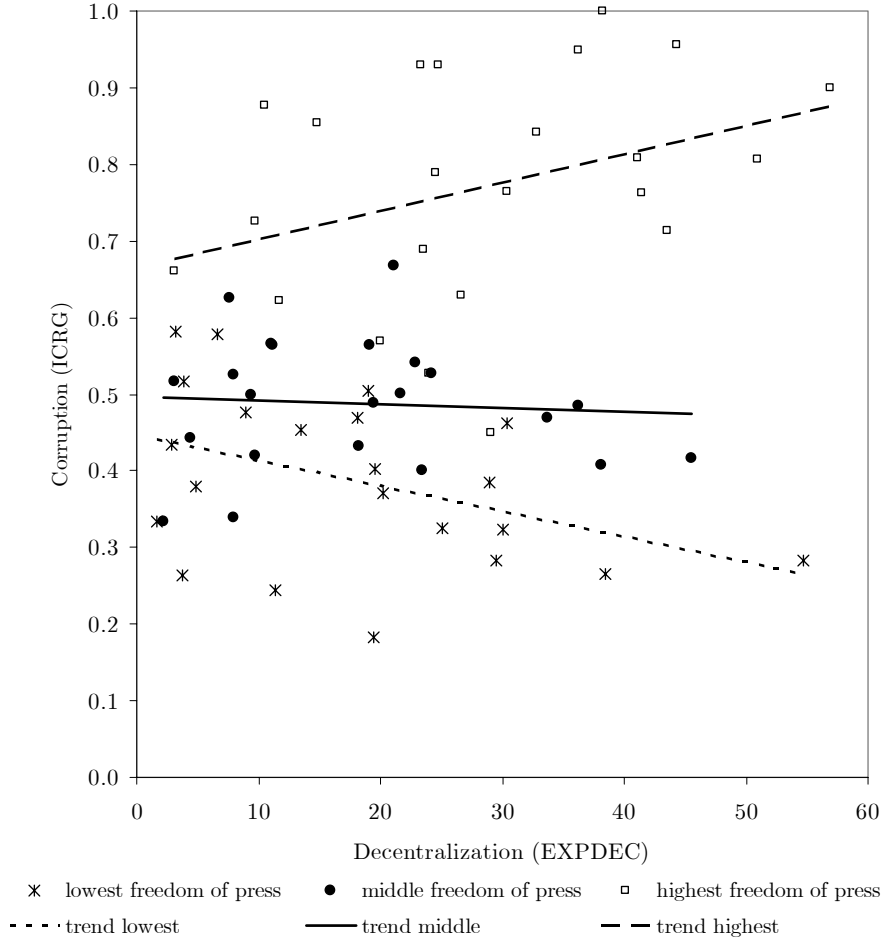
Fig. 1. Decentralization, corruption and freedom of press. Note: decentralization is measured by the degree of expenditure decentralization ($EXPDEC$), corruption is measured by the ICRG index, and freedom of press are q-quantile dummy variables for $q = 3$.

Doubtlessly, the inspection of scatterplots is only a first step in answering our research question. Therefore, we set up an econometric model to test our hypothesis empirically. For this purpose, we built dummy variables for q-quantiles of the freedom of the press measure ($FP1q$,...,$FPqq$) and interact them with our decentralization measure in a structural break model.

The estimation equation now takes the form

$$CORRUPT_i = \alpha + \beta \cdot CONTROL_i + \gamma \cdot DECENTR_i$$
$$+ \sum_{k=1}^{q-1} \delta_k \cdot (DECENTR_i \cdot FPkq_i) + \sum_{k=1}^{q-1} \theta_k \cdot FPkq_i + \epsilon_i. \qquad (2)$$

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The interaction terms of decentralization and the q-quantile dummies show us whether the relationship between decentralization and corruption depends on the monitoring possibilities of bureaucrats. In other words: The interaction terms indicate whether decentralization and monitoring possibilities have a complementary effect on corruption or not. The $FPkq$-dummy for the countries with the highest q-quantile of the freedom of the press measure is not considered in the estimations, and, thus, is used as a reference group. γ captures the overall impact of decentralization on corruption, while δ_k captures the partial effect of the k interaction terms. We obtain the total effect of decentralization on corruption in the countries by adding the coefficient of an interaction term to the coefficient of the general effect.

Due to space limitations, we subsequently present estimation results only for the ICRG index as the corruption measure and $EXPDEC$ as the decentralization measure in the body of our paper.[11] Table 4 presents estimation results for three different models. Specifications (1) and (2) replicate our benchmark regressions for better comparability of our results. In specifications (3) and (4), we estimate our model setting $q = 2$, which is similar to using just one dummy ($FP12$) for the 50% of countries with the lowest degree of freedom of the press. Finally, we set $q = 3$, distinguishing between high, middle, and low degrees of freedom of the press, which is a direct test of Fig. 1. Thus, we have $FP13$ as a terzile dummy for those countries with the lowest degree of freedom of the press, $FP23$ as a dummy for those countries with a middle degree of freedom of the press, and $FP33$ as a dummy for the countries with the highest degree of freedom of the press. Note that $FP33$ does not enter the regressions, as we use it as a reference group. Furthermore, we drop the $PRESS$ variable in our specifications when considering interaction terms because the impact of the freedom of the press is now covered by our $FPkq$-dummies. We apply the OLS estimation technique as well as TSLS to handle the problems arising from possible endogeneity bias. We follow Wasylenko (1987), Porta et al. (1999), and Arikan (2004) by using the logarithm of each country's area in square kilometers as an instrument for decentralization. Moreover, we further use the lag structure as in our benchmark regressions. Significance of our estimates is based on White-corrected standard errors. In our estimations, all absolute values (POP, $GDPPC$, and $AREA$) are in logarithms.

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[11] See Appendix Table A5 and Table A6 for robustness tests using alternative decentralization-, corruption-, and monitoring-measures.

Table 4
Cross-section estimations considering freedom of the press

	OLS	TSLS	OLS	TSLS	OLS	TSLS
			Dependent variable: ICRG			
			q = 2		q = 3	
	(1)	(2)	(3)	(4)	(5)	(6)
Const.	-.0745	-.1874	.0900	-.0371	.1617	-.1228
	(-.28)	(-.54)	(.34)	(-.10)	(.53)	(-.28)
POP	-.0062	-.0001	.0006	.0062	.0010	.0172
	(-.28)	(-.01)	(.05)	(.28)	(.08)	(.73)
GDPPC	.0506***	.0546***	.0457***	.0526***	.0437***	.0430**
	(2.90)	(3.04)	(3.23)	(3.34)	(2.71)	(2.46)
GOVSIZE	.6512*	.7276*	.5951*	.6835*	.5990*	.6600*
	(1.90)	(1.76)	(1.95)	(1.83)	(1.92)	(1.90)
ETHNO	-.0416	-.0470	-.1001**	-.1030**	-.1014**	-.1436**
	(-.80)	(-.87)	(-2.06)	(-2.05)	(-2.17)	(-2.30)
GLOBAL	-.0585	-.0577	-.0365	-.0381	-.0407	.0006
	(-.89)	(-.87)	(-.64)	(-.67)	(-.62)	(.01)
PRESS	.0035***	.0035***				
	(2.88)	(2.93)				
EXPDEC	.1254	-.0156	.4493***	.2765	.3327**	.3303
	(1.03)	(-.05)	(3.58)	(.98)	(2.17)	(.88)
EXPDEC*FP12			-.6667***	-.6277***		
			(-5.11)	(-.39)		
EXPDEC*FP13					-.7600***	-1.2798**
					(-2.98)	(-2.02)
EXPDEC*FP23					-.3272	-.4557
					(-1.23)	(-1.03)
FP13					-.0299	.0671
					(-.36)	(.43)
FP23					-.0662	-.0410
					(-.97)	(-.35)
Obs.	64	64	64	64	64	64
Adj. R2	.65	.65	.70	.69	.72	.68

Note: t-statistics are reported in parenthesis. Significance levels are reported as follows: * for a 90%-significance-level, ** for 95% and *** for more than 99%.

The benchmark results of specifications (1) and (2) show that decentralization ($EXPDEC$) has no significant direct impact on corruption, contrasting the results of former studies such as Fisman and Gatti (2002a), Arikan (2004), or Dincer et al. (2006). However, this is not the whole truth. Specifications (3) and (4) show that decentralization has a positive overall impact on corruption, but exerts a negative impact in those countries with a low degree of freedom of the press or in other words: with weak possibilities to monitor bureaucrats. On the basis of the coefficient of $EXPDEC$ (0.4493) and the coefficient of the interaction term $EXPDEC^*FP12$ (-0.6667), the aggregate effect of decentralization on corruption in those countries with the 50% lowest degree of freedom of the press is 0.4493-0.6667=-0.2174, thus negative. The strong negative impact also holds for IV-estimations using the logarithm of country's area in square kilometers. The last two specifications of Table 4 show estimations similar to the scatterplot of Fig. 1. The effect of decentralization

on the absence of corruption is in general positive, while it is strongly negative in countries with the lowest degree of freedom of the press ($EXPDEC^*FP13$). As the scatterplot indicated we are not able to identify significant differences between countries with a middle degree of freedom of the press. Countries with a high degree of freedom of the press serve as reference group: the coefficient for those countries can be calculated from the other coefficients and remains positive.

Table A5 in the appendix shows the major results for robustness tests, using alternative corruption indices ($ICRG$, CPI and WBC) as well as a different decentralization measures ($REVDEC$ – specifications (19) to (36)). The econometric specifications are similar to those of Table 4, but we do not report coefficients of our control variables due to space limitations. For each possible combination of those variables we first present regression results without interaction terms, then results separating countries as above or below the mean degree of the freedom of the press measure ($q = 2$), and finally, we use terzile dummies ($q = 3$). Our results are robust for all estimations using $q = 2$. For terzile dummies ($q = 3$), we do not receive significant results in all specifications, although the coefficients show the correct sign.

As a second robustness test we use an alternative measure for the possibility of monitoring of bureaucrats. For this purpose we refer to the measure of civil liberties also provided by *Freedom House*. Countries with governments who grant no or just a few civil liberties will have also weak possibilities of people to monitor the behavior of bureaucrats, or if so, people will not have the power to sanction corrupt activities. The results of regressions using interaction terms of the civil liberty measure and decentralization measures are reported in Table A6 in the appendix. The underlying estimations are similar to the estimations reported in Table 4. Again, we find a negative impact of decentralization on corruption in those countries where the monitoring possibilities are lacking supporting our results above.

Altogether, an examination of the data as well as our regression results shows that the impact of decentralization on corruption depends on the possibilities of monitoring of bureaucrats. As long as monitoring works, decentralization is indeed an effective instrument to keep corruption at bay. Otherwise, if those basic control institutions do not work, decentralization is harmful. This result contrasts the findings of most earlier empirical studies in the field, but is in line with theoretical considerations, especially the work of Bardhan and Mookherjee (2006b) and Bardhan and Mookherjee (2006a).

5 Conclusion

Fiscal decentralization plays a major role in World Bank's anti-corruption and development strategy. Based on earlier studies that found corruption to be lower in decentralized countries, decentralization is assumed to be an appropriate instrument to tackle the corruption disease in developing countries. We argue that the possibilities to monitor bureaucrat's behavior are an important determinant of the relationship between decentralization and corruption. To test this hypothesis empirically, we have analyzed the impact of decentralization on corruption, taking into account freedom of the press. We have first applied a broader data set using different decentralization and corruption measures and reestimated previous studies, finding that the positive impact of decentralization disappears in almost all specifications. In a second step, we have estimated a structural break model, taking into account monitoring possibilities of bureaucrats. We find that in countries with good monitoring possibilities, as measured by freedom of the press, decentralization has a positive impact on the absence of corruption. Otherwise, if monitoring does not work, decentralization has a negative effect. This association is robust for a wide range of potential sources of omitted variable bias as well as endogeneity bias. We also show that these results are non-sensitive to the underlying measurement concepts of decentralization, corruption, and monitoring possibilities. Our findings are in contrast with existing empirical studies such as Fisman and Gatti (2002a), Arikan (2004) and Dincer et al. (2006), but in line with the theoretical literature, which assumes free information flows between agents involved.

The policy implications of our study are obvious: decentralization is a feasible instrument to reduce corruption if the monitoring possibilities of bureaucrats work. Otherwise, if those institutions do not work sufficiently, decentralization can contribute to high corruption levels. Institutions linking foreign aid to decentralization initiatives should, therefore, carefully consider whether the institutional background of the target countries in terms of monitoring possibilities is adequate.

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A Appendix

Table A1
Pairwise correlation coefficients of different decentralization measures

	"de jure"		"de facto"		
	FEDERAL	TIERS	EMPLDEC	EXPDEC	REVDEC
FEDERAL	1.0000				
TIERS	.0203	1.0000			
EMPLDEC	.4115***	-.0235	1.0000		
EXPDEC	.5795***	-.0232	.6722***	1.0000	
REVDEC	.5949***	.0309	.6102***	.9385***	1.0000

Note: ***, **, and * indicate significance at 1%, 5%, and 10% levels, respectively.

Table A2
Data sources and definitions

Variable	Definition	Source
POP	Population in Mill.	WDI
GDPPC	Gross Domestic Product per capiata in 2000 dollar	WDI
GOVSIZE	Government consumption expenditures as share of GDP	WDI
ETHNO	Degree of ethnolinguistic fragtionalization	Ethnologue
GLOBAL	Imports plus exports as share of GDP	WDI
PRESS	Index of freedom of press (inverted)	Freedom House
CIVLIB	Index of civil liberties (inverted)	Freedom House
ICRG	International Country Risk Guide corruption measure (0 = highest corruption; 6 = absence of corruption)	PRS Group
CPI	Corruption Perception Index (0 = highest corruption; 10 = absence of corruption)	Transparency International
WBC	World Bank corruption measure (-2.5 = highest corruption; 2.5 = absence of corruption)	World Bank
FEDERAL	"Dummy variable for federal constitutions: 0 = unitary country; 1 = federal country"	Treisman (2002)
TIERS	Index for number and democratization of vertical government tiers	Treisman (2002)
EMPLDEC	Share of subnational government employment in total government employment	ILO
EXPDEC	Share of subnational government expentitures in total government expenditures	IMF GFS
REVDEC	Share of subnational government revenues in total government revenues	IMF GFS

Table A3

Country statistics

Country	POP	GDPPC	GOVSIZE	ETHNO	GLOBAL	PRESS	CIVLIB
Albania	3.08	1.03	11.16	0.26	0.48	43.23	2.92
Argentina	32.70	7.04	9.73	0.21	0.19	64.00	5.44
Australia	17.30	17.05	18.71	0.13	0.37	88.54	7.00
Austria	7.79	19.82	19.48	0.54	0.81	82.85	7.00
Azerbaijan	7.29	0.74	16.40	0.37	0.97	27.62	3.00
Belarus	10.00	1.22	20.28	0.40	1.21	20.00	2.67
Belgium	10.00	18.67	21.98	0.73	1.41	90.77	6.76
Bolivia	6.98	0.94	12.96	0.68	0.48	75.85	4.88
Brazil	151.00	3.26	15.35	0.03	0.19	66.69	4.92
Bulgaria	8.55	1.57	16.45	0.22	0.91	64.15	3.80
Canada	28.20	19.59	21.47	0.55	0.63	84.31	7.00
Chile	13.40	3.60	11.50	0.03	0.57	73.62	5.20
China	1150.00	0.51	12.94	0.49	0.35	18.08	1.64
Colombia	36.20	1.85	14.00	0.03	0.34	42.31	4.36
Costa Rica	3.15	3.46	14.64	0.05	0.79	82.92	6.56
Croatia	4.60	3.89	25.21	0.87	1.03	49.92	4.73
Czech Republic	10.30	5.16	22.16	0.07	1.13	78.85	6.15
Denmark	5.21	25.37	26.26	0.05	0.70	90.62	7.00
Dominican Republic	7.25	1.81	6.42	0.31	0.71	67.00	5.32
Estonia	1.47	3.64	19.96	0.48	1.51	79.69	6.00
Ethiopia	52.60	0.10	15.60	0.84	0.32	35.62	2.28
Finland	5.02	19.25	21.50	0.14	0.60	87.08	6.68
France	56.90	19.12	23.31	0.27	0.46	77.38	6.16
Germany	80.10	19.47	20.26	0.19	0.53	85.46	6.25
Hungary	10.40	4.09	10.64	0.16	0.90	72.69	5.16
India	875.00	0.34	11.54	0.93	0.20	58.77	4.72
Indonesia	182.00	0.59	8.86	0.85	0.55	39.54	3.08
Iran, Islamic Rep.	54.50	1.36	14.24	0.80	0.33	22.15	1.96
Ireland	3.61	15.84	17.47	0.22	1.28	82.62	6.92
Israel	5.11	15.23	31.79	0.67	0.85	71.15	5.56
Italy	57.00	16.10	18.78	0.59	0.45	70.85	6.44
Kazakhstan	15.70	1.27	12.70	0.70	0.90	31.92	3.13
Kenya	24.30	0.36	17.53	0.90	0.59	36.92	2.92
Latvia	2.54	3.29	14.29	0.60	1.05	78.46	5.87
Lithuania	3.57	3.26	20.46	0.34	1.04	79.23	5.80
Malaysia	19.00	2.87	13.60	0.76	1.57	34.15	3.40
Mexico	85.40	5.23	10.09	0.14	0.42	51.85	4.52
Moldova	4.25	0.57	17.30	0.59	1.22	42.38	3.87
Mongolia	2.13	0.48	25.55	0.33	1.20	66.00	3.72
Netherlands	15.10	19.06	24.14	0.39	1.10	86.08	7.00
New Zealand	3.53	16.11	18.75	0.10	0.59	91.62	7.00
Nicaragua	4.09	0.84	22.83	0.08	0.62	57.54	4.08
Norway	4.30	31.52	20.76	0.66	0.73	92.69	7.00
Panama	2.47	3.50	15.69	0.32	1.55	67.31	4.96
Paraguay	4.33	1.50	7.26	0.35	0.62	48.08	4.24
Peru	22.30	2.01	9.83	0.38	0.33	49.85	4.48
Philippines	63.80	0.94	10.29	0.85	0.73	62.92	4.68
Poland	37.80	3.68	18.35	0.06	0.52	77.62	5.12
Portugal	10.00	8.16	16.91	0.02	0.67	84.00	6.60
Romania	22.60	1.87	10.81	0.17	0.61	55.15	3.80
Russian Federation	145.00	1.94	17.85	0.28	0.57	40.69	3.60
Slovak Republic	5.28	3.53	21.62	0.31	1.15	66.92	5.54
Slovenia	1.98	8.53	20.55	0.17	1.18	74.54	6.20
South Africa	36.60	3.06	18.46	0.87	0.50	72.77	4.24
Spain	39.10	11.22	16.76	0.44	0.44	81.23	6.28
Sri Lanka	16.70	0.66	9.49	0.31	0.74	44.77	3.84
Sweden	8.62	22.90	27.97	0.17	0.68	90.38	7.00
Switzerland	6.81	31.52	11.10	0.55	0.72	90.85	7.00
Thailand	55.60	1.53	11.12	0.75	0.80	62.46	4.52
Trinidad and Tobago	1.22	5.77	14.55	0.70	0.84	72.92	6.12
United Kingdom	57.70	20.10	20.22	0.14	0.53	80.00	6.52
United States	257.00	28.72	16.23	0.35	0.21	85.85	7.00
Uruguay	3.14	5.20	12.96	0.09	0.41	72.38	5.88
Zimbabwe	10.40	0.58	18.99	0.53	0.56	29.23	2.88

Table A4

Country statistics – continued

Country	ICRG	CPI	WBC	FEDERAL	TIERS	EMPLDEC	EXPDEC	REVDEC
Albania	2.22	2.47	-0.67		3	0.12	0.20	0.02
Argentina	2.45	2.97	-0.43	1	3	0.76	0.38	0.32
Australia	4.85	8.67	2.00	1	3	0.63	0.41	0.28
Austria	4.59	7.94	1.97	1	4	0.42	0.30	0.27
Azerbaijan	1.95	1.94	-1.09		3		0.25	0.21
Belarus	2.77	3.55	-0.75	0	4	0.22	0.30	0.28
Belgium	3.73	6.58	1.41	1	4	0.57	0.12	0.06
Bolivia	2.59	2.49	-0.76	0	4	0.11	0.18	0.18
Brazil	2.82	3.76	-0.07	1	4	0.86	0.34	0.25
Bulgaria	2.93	3.73	-0.26	0	4	0.24	0.19	0.16
Canada	5.40	8.88	2.15	1	4	0.64	0.57	0.53
Chile	3.75	7.12	1.36	0	4	0.34	0.08	0.06
China	1.70	3.24	-0.40	0	5	0.93	0.55	0.51
Colombia	2.31	3.28	-0.45	0	3	0.82	0.29	0.19
Costa Rica	3.96	4.91	0.73	0	4	0.09	0.03	0.03
Croatia	2.86	3.51	-0.08		3		0.09	0.09
Czech Republic	3.42	4.46	0.40	0	3	0.32	0.20	0.16
Denmark	5.74	9.64	2.36	1	3	0.65	0.44	0.31
Dominican Republic	3.10	3.10	-0.48	0	3	0.08	0.03	0.01
Estonia	3.77	5.88	0.63	0	3	0.34	0.27	0.21
Ethiopia	2.00	2.68	-0.58		5		0.02	0.02
Finland	6.00	9.65	2.47	0	3	0.78	0.38	0.31
France	3.38	6.87	1.46	0	4	0.44	0.19	0.12
Germany	4.58	7.89	1.92	1	4	0.87	0.41	0.35
Hungary	4.01	5.04	0.64	0	3	0.48	0.21	0.12
India	2.50	2.83	-0.34	1	5	0.49	0.46	0.33
Indonesia	1.47	2.10	-0.94	0	5	0.28	0.11	0.03
Iran, Islamic Rep.	3.10	2.88	-0.59	0	4		0.04	0.05
Ireland	3.16	7.64	1.73	0	3		0.24	0.08
Israel	3.38	6.97	1.08	0	3		0.11	0.07
Italy	3.01	4.82	0.68	0	4	0.39	0.22	0.07
Kazakhstan	1.94	2.51	-1.00		4	0.26	0.30	0.28
Kenya	2.28	2.10	-1.03	0	6	0.18	0.05	0.06
Latvia	2.40	3.70	0.03	0	3	0.57	0.23	0.19
Lithuania	2.70	4.55	0.19		3	0.37	0.29	0.22
Malaysia	3.03	5.07	0.39	1	3	0.32	0.19	0.16
Mexico	2.42	3.39	-0.34	1	3	0.29	0.20	0.20
Moldova	1.70	2.65	-0.75		3	0.53	0.29	0.27
Mongolia	2.91	3.28	-0.23				0.36	0.27
Netherlands	5.58	8.85	2.20	0	3	0.25	0.25	0.08
New Zealand	5.26	9.46	2.36	0	3	0.49	0.11	0.09
Nicaragua	3.47	2.69	-0.56	0	4		0.07	0.08
Norway	5.05	8.84	2.10	0	3	0.38	0.33	0.22
Panama	2.00	3.40	-0.31	0	4		0.02	0.02
Paraguay	1.58	1.91	-1.08	0	3		0.04	0.03
Peru	2.82	3.94	-0.28	0	4		0.18	0.07
Philippines	2.52	2.82	-0.49	0	4	0.27	0.10	0.07
Poland	3.25	4.17	0.35	0	3	0.61	0.23	0.15
Portugal	4.36	6.52	1.31	0		0.32	0.10	0.07
Romania	2.72	2.98	-0.33	0	3		0.13	0.09
Russian Federation	1.59	2.47	-0.84	1	4	0.34	0.38	0.40
Slovak Republic	3.15	3.91	0.27	0	4	0.40	0.08	0.08
Slovenia	3.40	5.89	0.96		2	0.16	0.11	0.09
South Africa	3.16	4.87	0.47	0		0.44	0.24	0.14
Spain	4.13	6.53	1.38	1	4	0.60	0.24	0.15
Sri Lanka	3.49	3.38	-0.23	0	4	0.18	0.03	0.04
Sweden	5.69	9.27	2.30	0	3	0.56	0.36	0.33
Switzerland	4.84	8.80	2.23	1	3	0.54	0.51	0.46
Thailand	2.03	3.32	-0.32	0	5	0.41	0.08	0.05
Trinidad and Tobago	2.66	4.33	0.10	0	2		0.04	0.03
United Kingdom	4.73	8.56	2.07	0	4	0.64	0.25	0.13
United States	4.28	7.57	1.76	1	4	0.73	0.44	0.40
Uruguay	3.00	5.23	0.64	0	2	0.34	0.09	0.10
Zimbabwe	1.10	2.94	-0.90	0	5	0.28	0.19	0.17

Table A5: Robustness check: alternative measures for corruption and decentralization

Decentralization measure: EXPDEC

	Dependent variable: ICRG						Dependent variable: CPI						Dependent variable: WBC					
			q = 2		q = 3				q=2		q = 3				q = 2		q = 3	
	OLS	TSLS	OLS	TSLS	OLS	TSLS	OLS	TSLS	OLS	TSLS	OLS	TSLS	OLS	TSLS	OLS	TSLS	OLS	TSLS
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)
Controls	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
EXPDEC	.1254	-.0156	.4493 ***	.2765	.3327**	.3303	.2086 *	.1841	.5125 ***	.5781**	.3436*	.3668	.1137	-.0461	.4113 ***	.3615	.1943	.1412
	(1.03)	(-.05)	(3.58)	(.98)	(2.17)	(.88)	(1.82)	(.63)	(4.20)	(2.23)	(1.97)	(1.21)	(1.15)	(-.17)	(3.90)	(1.37)	(1.46)	(.48)
EXPDEC *FP12			-.6667 ***	-.6277 ***					-.6254 ***	-.7893 ***					-.6126 ***	-.8455 ***		
			(-5.11)	(-.39)					(-3.69)	(-3.32)					(-4.26)	(-4.20)		
EXPDEC *FP13					-.7600 ***	-1.2798**					-.3734	-.4971					-.3618	-.7551
					(-2.98)	(-2.02)					(-1.38)	(-.81)					(-1.49)	(-1.24)
EXPDEC *FP23					-.3272	-.4557					-.5620 *	-.5044					-.1352	-.3386
					(-1.23)	(-1.03)					(-1.82)	(-1.27)					(-1.25)	(-.91)
Adj. R^2	.65	.65	.70	.69	.72	.68	.78	.78	.82	.82	.82	.82	.82	.81	.84	.82	.85	.82

Decentralization measure: REVDEC

	Dependent variable: ICRG						Dependent variable: CPI						Dependent variable: WBC					
			q = 2		q = 3				q=2		q = 3				q = 2		q = 3	
	OLS	TSLS	OLS	TSLS	OLS	TSLS	OLS	TSLS	OLS	TSLS	OLS	TSLS	OLS	TSLS	OLS	TSLS	OLS	TSLS
	(19)	(20)	(21)	(22)	(23)	(24)	(25)	(26)	(27)	(28)	(29)	(30)	(31)	(32)	(33)	(34)	(35)	(36)
Controls	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
REVDEC	.1340	-.0141	.4747 ***	.3900	.3121 *	.3423	.1921	.1665	.4934 ***	.6999 **	.2568	.3600	.0943	-.0417	.3968 ***	.5154 **	.1465	.1624
	(1.00)	(-.05)	(3.38)	(1.57)	(1.86)	(.98)	(1.55)	(.62)	(3.60)	(2.37)	(1.65)	(1.13)	(.87)	(-.18)	(3.46)	(2.01)	(1.18)	(.61)
REVDEC *FP12			-.7907 ***	-.8333 ***					-.6943 ***	-1.0526 ***					-.7114 ***	-1.1222 ***		
			(-4.81)	(-3.35)					(-3.24)	(-3.28)					(-3.93)	(-4.19)		
REVDEC *FP13					-.7180 ***	-1.0928 *					-.3061	-.4546					-.3392	-.6296
					(-2.79)	(-1.95)					(-1.16)	(-.83)					(-1.41)	(-1.30)
REVDEC *FP23					-.3503	-.4599					-.5547	-.5162					-.3933	-.3857
					(-1.06)	(-.95)					(-1.51)	(-1.06)					(-1.16)	(-.91)
Adj. R^2	.65	.65	.69	.69	.71	.70	.78	.78	.81	.79	.82	.81	.82	.81	.83	.81	.85	.84

Note: t-statistics are reported in parenthesis. Significance levels are reported as follows: * for a 90%-significance, ** for a 95%-significance, and *** for 99%-significance.

Table A6: Robustness check: alternative measure for the possibility monitoring bureaucrats

Decentralization measure: EXPDEC

	Dependent variable: ICRG						Dependent variable: CPI						Dependent variable: WBC					
			$q=2$		$q=3$				$q=2$		$q=3$				$q=2$		$q=3$	
	OLS	TSLS	OLS	TSLS	OLS	TSLS	OLS	TSLS	OLS	TSLS	OLS	TSLS	OLS	TSLS	OLS	TSLS	OLS	TSLS
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)
Controls	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
EXPDEC	.1254	-.0156	.3431**	.1212	.5293***	.3837	.2086*	.1841	.4077**	.4489	.5068***	.4103	.1137	-.0461	.3132**	.2468	.3569**	.1998
	(1.03)	(-.05)	(2.09)	(.33)	(3.22)	(1.29)	(1.82)	(.63)	(2.40)	(1.32)	(2.88)	(1.66)	(1.15)	(-.17)	(2.07)	(.76)	(2.65)	(.93)
EXPDEC*CL12			-.4631**	-.3570					-.4235*	-.5723*					-.4244**	-.6574**		
			(-2.41)	(-1.30)					(-1.90)	(-1.73)					(-2.05)	(-2.23)		
EXPDEC*CL13					-.8387***	-.7314					-.4889*	-.2269					-.4090*	-.2538
					(-3.37)	(-1.36)					(-1.79)	(-.44)					(-1.73)	(-.54)
EXPDEC*CL23					-.4338	-.2943					-.5215*	-.3897					-.3680	-.3565
					(-1.66)	(-.62)					(-1.70)	(-.92)					(-1.43)	(-.96)
Adj. R^2	.65	.65	.64	.62	.71	.70	.78	.78	.78	.78	.82	.81	.82	.81	.80	.78	.84	.84

Decentralization measure: REVDEC

	Dependent variable: ICRG						Dependent variable: CPI						Dependent variable: WBC					
			$q=2$		$q=3$				$q=2$		$q=3$				$q=2$		$q=3$	
	OLS	TSLS	OLS	TSLS	OLS	TSLS	OLS	TSLS	OLS	TSLS	OLS	TSLS	OLS	TSLS	OLS	TSLS	OLS	TSLS
	(19)	(20)	(21)	(22)	(23)	(24)	(25)	(26)	(27)	(28)	(29)	(30)	(31)	(32)	(33)	(34)	(35)	(36)
Controls	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
REVDEC	.1340	-.0141	.3661**	.1828	.5320***	.3657	.1921	.1665	.3838**	.5139	.4553**	.3657	.0943	-.0417	.2954*	.3572	.4553**	.3889
	(1.00)	(-.05)	(2.14)	(.55)	(3.14)	(1.19)	(1.55)	(.62)	(2.23)	(1.45)	(2.65)	(1.19)	(.87)	(-.18)	(1.96)	(1.15)	(2.65)	(1.38)
REVDEC*CL12			-.5977***	-.4735					-.4914*	-.7439*					-.5291**	-.8706**		
			(-2.83)	(-1.33)					(-1.95)	(-1.72)					(-2.31)	(-2.30)		
REVDEC*CL13					-.8620***	-.7087					-.4542	-.7087					-.4542	-.2616
					(-3.49)	(-1.38)					(-1.63)	(-1.38)					(-1.63)	(-.53)
REVDEC*CL23					-.5523*	-.2554					-.6135*	-.2554					-.6135*	-.3468
					(-1.87)	(-.46)					(-1.80)	(-.46)					(-1.80)	(-.65)
Adj. R^2	.65	.65	.64	.64	.71	.70	.78	.78	.78	.77	.81	.70	.82	.81	.80	.78	.81	.81

Note: t-statistics are reported in parenthesis. Significance levels are reported as follows: * for a 90%-significance, ** for a 95%-significance, and *** for 99%-significance.

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