

One Size Fits All? Decentralization, Corruption, and the Monitoring of Bureaucrats

CHRISTIAN LESSMANN

Dresden University of Technology, Dresden, Germany

and

GUNTHER MARKWARDT*

Dresden University of Technology and CESifo, Dresden, Germany

Summary. — The majority of theoretical and empirical studies on the relationship between decentralization and corruption argue that the devolution of power might be a feasible instrument for use in keeping corruption at bay. We argue that this result crucially depends on the effectiveness of monitoring bureaucrats' behavior. The benefits of decentralization only occur if there is a supervisory body such as a free press, which is often lacking in a substantial number of countries. Using cross-country data, we analyze the relationship between decentralization and corruption, taking different degrees of the freedom of the press into account. Our main finding is that decentralization counteracts corruption in countries with high degrees of freedom of the press, whereas countries without effective monitoring suffer from decentralization. Our policy implication is that a free press is a necessary pre-condition for successful decentralization programs.

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1. INTRODUCTION

It is agreed in scientific circles and in public debate that corruption is one of the most serious obstacles to economic development. The question of how to tackle corruption, particularly in developing countries, has not yet been answered convincingly. One repeatedly proposed solution is to implement bureaucratic or inter-regional competition through decentralization (e.g., Fisman & Gatti, 2002a or Arikan, 2004). Competition might strengthen the accountability of bureaucrats and thus reduce the ability of public officials to extract rents. Based partly on these arguments, the poverty reduction programs of international institutions use decentralization as a substantive instrument. For example, 12% of World Bank projects completed during 1993–97 involved decentralizing responsibilities to lower levels of government (Litvack, Ahmad, & Bird, 1998). More recently, in 2006, more than 19% of the World Bank budget (or 4.5 billion dollars) was spent on decentralization projects (Development Committee, 2006). Nevertheless, some doubts exist regarding the effectiveness of this development strategy.

To assess whether or not decentralization is recommendable for a certain policy purpose, it is necessary to analyze the effects of decentralization in the context of an entire country-specific institutional framework. Although most empirical studies identified lower rates of corruption in decentralized countries, we argue that the positive effects of decentralization do not prevail if comprehensive public monitoring does not exist. Russia provides helpful anecdotal evidence in support of this hypothesis. Russia has faced a fast-moving decentralization process since the early 1990s, when it was transformed from a centrally planned economy into a decentralized market economy. During the process of devolution, local leaders have been empowered and sub-national governments have been

captured by initial rent holders (Blanchard & Shleifer, 2000). This has led to very high levels of corruption, which are still a significant problem facing the Russian economy and society today. At the same time, other former iron-curtain countries, such as Hungary, have faced a similar development but largely avoided the corruption trap. A major difference between Russia and other transition economies is the ability to monitor bureaucrats' behavior for example, through a free and independent press. This difference may be critical for the effect of decentralization on corruption.

The main questions of our paper are the following. Can we identify a complementary relationship between decentralization and the effectiveness of monitoring bureaucrats and its influence on corruption? Is decentralization in either case an effective weapon against corruption? Or, in short, does one size fits all?

For this purpose, we examine 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 dataset. We thereafter estimate a structural break model, controlling for a

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complementary relationship between decentralization and the effectiveness of publicly monitoring bureaucrats, as 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 a supervisory body that strengthens accountability of bureaucrats with the free press as one such possible institution.

This 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 to 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

(a) *Some theoretical considerations*

The predictions of theoretical models concerning the impact of decentralization on corruption are ambiguous. The majority of models favoring decentralization are based on the implicit assumption that a working information infrastructure exists within a country. For example, yardstick competition models assume that people can compare policy outcomes within their home jurisdiction with those of neighbouring regions, which requires free information flows. Similarly, models based on a tax-competition framework need free information flows, as well as mobile capital and/or labour. The mechanism driving corruption down in such models is (political) competition. Shleifer and Vishny (1993, p. 610) 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.” There are also models that imply a negative impact of decentralization on corruption. These models 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 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. However, Shleifer and Vishny (1993) also emphasize that horizontal decentralization leads to decreasing corruption by strengthening the competition between bureaucrats.

Prud’homme (1995) provides an argument against decentralization. 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 power than do national officials, which increases the negative effect of decentralization. The author also discusses the role of an independent press in the context of decentralization and corruption, arguing, “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 (1996) argues on the basis of local interest groups. He states that corruption may be more common at the local level than at the national level, particularly in developing countries. Local officials live closer to the citizens, and this contiguity allows local interest groups to have a greater impact and facilitates a higher level of corruption in decentralized countries.

An ambiguous effect of decentralization on corruption appears if the quality of bureaucrats is considered. Tabellini (2000) assumes that working in a central government provides more prestige and power to the agents involved than does working in a local government. Thus, monitoring may be more intense on the central level, and efforts by centralized bureaucrats may be greater, reducing corruption.

However, Tabellini (2000) suggests that this effect may be mitigated by differences in central and local bureaucrats’ responsibilities. 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 with regard to reappointment. This type of indirect accountability weakens incentives to perform well, since there is a less direct link between effort and rewards. A similar problem may also occur under decentralization, since the devolution of powers sometimes involves a shift in the roles of decision-making authorities, making them not elected politicians but non-elected bureaucrats (see, Whitford, 2002). In contrast, in decentralized countries, elected 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. By applying a tax competition framework, Arikian (2004) shows that an increasing degree of competition for mobile capital between jurisdictions creates less corrupt bureaucrats. In the yardstick competition model by Dincer, Ellis, and Waddell (2006), voters compare the policy outcomes in their home jurisdiction with those in their neighbour regions and thus implement interregional competition. Under certain circumstances, this yardstick competition may lead to lower levels of corruption. As mentioned at the beginning of this section, it is helpful to examine the application of these theoretical models to countries without a working information infrastructure such as a free press.

There are also a few formal theoretical studies on decentralization and corruption that consider the specific institutional problems of developing countries. Criticism of the applicability of the classical Tiebout (1956) approach to developing countries emerges in the work of Bardhan (2002, p. 188); Bardhan argues: “(...) 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.” 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.” With the capture of local governments, in the sense of the elites’ receiving a greater weight in the local government’s welfare function, there is a tendency for the local government to provide excessive service to local elites at the expense of the

non-elite (Bardhan & Mookherjee, 2006). Therefore, in developing countries, there is no *a priori* verdict in favor of decentralization. The existence of appropriate monitoring abilities might influence the impact of decentralization on corruption.

All in all, an important issue is that in almost all theoretical models that 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. 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 about corruption can reveal a bureaucrat's behavior to a journalist, and the media reports will raise the costs of corrupt behavior for the bureaucrat, as the probability of this corrupt behavior's being detected and punished is increased. Conversely, if the press is under the control of an autocratic administration, the abuse of authority is less risky for bureaucrats. In such a case, decentralization will not work. A second issue is the possible collusion between local officials and journalists. This problem, however, can only occur in countries where corruption is systematic. As long there is free entry into journalism and into publishing (which is one important feature of freedom of the press), it will be difficult to form a stable cartel that encompasses all journalists. Journalists will always have an incentive to uncover corruption in an environment with independent journalists and high reputational profits associated with uncovering corrupt arrangements.

There are several other instruments that can strengthen bureaucratic and political accountability besides a free and independent press. The advantage of a free press over instruments of direct monitoring such as audits¹ or meritocratic recruitment is that the press functions more like a fire alarm system than like a police patrol. McCubbins and Schwartz (1984) argue that bureaucrats are not restrained by constant and direct monitoring but instead are held back by the fear that someone can always make a call to a newspaper. Therefore, we focus on freedom of the press as a monitoring instrument because this measure is also a feasible approximation of a working information infrastructure. Our hypothesis is that decentralization is a suitable instrument for controlling corruption in countries with an appropriate information infrastructure, while countries without these necessary information flows may suffer from decentralization.

(b) Previous empirical studies on corruption and decentralization

The majority of empirical studies have found levels of corruption to be lower in decentralized countries. These studies, however, do not consider the weak institutional structure of developing countries, including the low degree of freedom of the press, which can hamper the public monitoring of bureaucrats. In the following section, we survey the most important relevant empirical studies and discuss possible extensions related to our main research question.

An initial empirical investigation is provided by Huther and Shah (1998), who find a negative correlation between the degree of expenditure decentralization and the level of corruption. Corruption is measured using a governance index for 80 developed and developing countries. They report a significant Pearson correlation coefficient, but because no control variables are considered, omitted variables might have biased the results. Furthermore, based on correlation alone, it is not necessarily possible to draw conclusions about causal relationships.

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. Such a federal dummy does not necessarily reflect "*de facto*" decentralization as is intended in our paper. The existence of a federal constitution itself does not necessarily reflect whether sub-national governments have appreciable authority or autonomy in decision-making. Thus, the results of the study by Treisman (2000) are not comparable to the results of other papers measuring decentralization through financial accounts or the like.

A positive impact of fiscal decentralization on the absence of corruption is found by Fisman and Gatti (2002a). However, with regard to our theoretical discussion in Section 2(a) concerning the effects of decentralization in less developed countries, the results of this study remain inconclusive. The authors do not consider different institutional frameworks under which decentralization has different effects on corruption, as suggested by Prud'homme (1995), Litvack *et al.* (1998), Bardhan (2002) and others. Nevertheless, we use this influential study as a benchmark for ours.

Fisman and Gatti (2002b) study the relationship between corruption in US states and dependency on central government transfers. They find corruption is positively associated with larger federal transfers. Moreover, their results imply that different types of decentralizations do not always have the same impact on corruption.

Arikan (2004) analyzes the impact of several decentralization measures on Transparency International's Corruption Perceptions Index in a cross-country dataset. She also finds levels of corruption to be lower in decentralized countries. However, regarding endogeneity, it should be said almost all estimation specifications were insignificant.

Lederman, Loayza, and Soares (2005) analyze the impact of different political institutions, including decentralization, on corruption based on a panel dataset for several developed and developing countries. Using the International Country Risk Guide's (ICRG) corruption index, they find that central government transfers to other levels of national government decrease corruption.

Dincer *et al.* (2006) analyze US state-level corruption and dependence on the degree of expenditure decentralization in a panel dataset. They find some evidence for corruption's being lesser in more decentralized states, as well as obtaining strong evidence for the effects of yardstick competition. However, the results do not remain significant when the problems arising from endogeneity are addressed.

Enikolopov and Zhuravskaya (2007) analyze the impact of political institutions and decentralization on corruption. In line with the theoretical considerations of Tabellini (2000), they find that a strong national party system is an effective instrument for aligning the political incentives of local politicians with national objectives, which is itself found to be a pre-condition for a positive impact of decentralization on corruption.

Freille, Haque, and Kneller (2007a) analyze the impact of different fiscal and constitutional decentralization measures on corruption using a cross-section dataset for 177 countries. Their results suggest that both fiscal decentralization and constitutional centralization are simultaneously associated with lower corruption. In contrast to the most other studies, this one makes use of a wide range of different decentralization indicators, for example, fiscal, constitutional, political, and structural decentralization measures. However, like the other studies discussed in our literature survey, this study does not

consider possible complementary effects of decentralization and the effectiveness of monitoring bureaucrats.

The most recent study is by [Fan, Lin, and Treisman \(2009\)](#), who applied a new dataset on corruption based on firm-level survey data. They find a negative impact of decentralization (in terms of vertical government tiers) on corruption, in line with [Shleifer and Vishny \(1993\)](#). Measures of political decentralization have no significant impact on corruption, while corruption turns out to be smaller in countries with large sub-national government budgets. The authors conclude that uncoordinated rent-seeking increases with the complexity of government structures. All studies discussed are summarized in [Table 1](#).

(c) *Previous empirical studies on corruption and freedom of press*

The decision to participate in corrupt practices (like the decision to perpetrate any other crime) mainly depends on three factors. The benefit factor is the size of payoff that can be accrued through corruption. The costs of corruption de-

pend on the size of the punishment that may be meted out if one is caught. The third combining factor is the probability of detection (see [Becker, 1968](#)). A free and independent press is an important part of the detection process and therefore lowers the expected utility of corruption. The majority of empirical studies have found that a free press is associated with lower corruption. In the following, we survey the most important studies in this regard.

An initial empirical investigation is provided by [Stapenhurst \(2000\)](#), who finds a negative and significant Pearson correlation coefficient for the relationship between freedom of the press and the level of corruption.

[Ahrend \(2002\)](#) analyzes the relationship between corruption, free press, and human capital in a panel dataset. He finds evidence for corruption's being lesser in countries with a higher degree of freedom of the press. Ahrend emphasizes that a free press acts as a channel through which education decreases corruption.

[Brunetti and Weder \(2003\)](#) use data for a large number of countries to test the hypothesis that a free press is associated with lower levels of corruption. They use the ICRG index

Table 1. *Previous empirical studies on corruption and decentralization*

Author(s)	Data ^{a,b,c}	Methodology	Results ^d
Huther and Shah (1998)	(a) 80 countries (b) Good governance measure (c) Expenditure decentralization	Cross-section Pearson correlation	Positive
Treisman (2000)	(a) Up to 64 countries (b) CPI index, Business international and Global competitiveness (c) Federal dummy	Cross-section WLS and OLS	Negative
Fisman and 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-section OLS and TSLS	Positive
Fisman and Gatti (2002b)	(a) 50 US states (b) Convictions for abuse of public office (c) Share of federal transfers	Cross-section OLS	Positive
Arikan (2004)	(a) Up to 40 countries (b) CPI index (c) Number of local jurisdictions, share of non-government employment, expenditure decentralization	Cross-section OLS and TSLS	Positive
Lederman <i>et al.</i> (2005)	(a) Up to 102 countries (b) ICRG index (c) Central transfers	Panel Pooled OLS, PROBIT	positive
Dincer <i>et al.</i> (2006)	(a) 48 US states (b) Convictions for abuse of public office (c) Expenditure decentralization	Panel Pooled OLS, RE and TSLS	Positive
Enikolopov and Zhuravskaya (2007)	(a) 75 countries (b) CPI index, WBC (c) Revenue decentralization, expenditure decentralization, sub-national elections	Cross-section, panel OLS, TSLS	Positive
Freille <i>et al.</i> (2007a)	(a) Up to 177 countries (b) CPI index, ICRG index, World competitiveness report (c) Different decentralization measures	Cross-section OLS and rolling regression	Positive
Fan <i>et al.</i> (2009)	(a) Up to 67 countries (b) World Business Environment Survey (c) Several decentralization measures	Cross firm cross contry PROBIT	Positive or negative

^a Sample and sample size.

^b Corruption measures.

^c Decentralization measures.

^d Positive result means that corruption is smaller in decentralized countries or regions.

and the press freedom measure provided by Freedom House, finding strong empirical evidence for a negative relation between freedom of the press and corruption.

Unlike in other previous studies, Chowdhury (2004) analyzes the impact of freedom of the press jointly with that of the level of democracy on corruption. Following Persson and Tabellini (2000), he proposes the following theoretical channel connecting the two variables: first, the ability to monitor bureaucrats using a free press transmits information about corruption cases to voters; and second, the voters in a democracy punish corrupt politicians by ousting them from public office (see Chowdhury, 2004, p. 93). He concludes that both freedom of the press and democracy are significant controls on corruption.

Lederman *et al.* (2005) analyze the relationship between several political institutions and corruption. They only find weak evidence of an impact of freedom of the press on the level of corruption. The coefficient of press freedom becomes insignificant when the authors include the control variable of economic development in the regression.

The most recent study comes from Freille, Haque, and Knelser (2007b). The authors test the relationship between a free press and corruption by performing an extreme bound analysis. They find evidence that both political and economic influence on the media is strongly and robustly related to corruption, while detrimental laws and regulations influencing the media are not. However, the focus of our study, insofar as it concerns the possible complementary influence of decentralization and a free press on corruption, has not appeared in the literature as of yet. The studies discussed above are summarized in Table 2.

While the relationship between decentralization and corruption is ambiguous in the theoretical literature, the majority of empirical studies have found corruption to be less extensive in decentralized countries. Although portions of the theoretical literature emphasize that the impact of decentralization on corruption depends on how effectively bureaucrats are monitored, none of the abovementioned studies has considered this issue explicitly. There is, however, one remarkable exception.

Olken and Barron (2009) provide a careful case study of the interaction of corruption, decentralization, and the media in Indonesia. The authors analyze a unique dataset of illegal payments from Indonesian truck drivers to corrupt officials at street control points. They find that an increase in the degree of centralization, which is reflected by a decrease in the number of checkpoints, decreases the degree of corruption in line with Shleifer and Vishny (1993). Furthermore, the authors also show a strong impact of the press on the degree of corruption. The level of corruption declined immediately after the results of the research project were reported in the media, "(...) suggesting that publicizing corruption may play an important role in reducing it" (Olken & Barron, 2009).

The aim of our paper is to investigate whether public monitoring (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), and Bardhan (2002), among others. For this purpose, we estimate a structural break model considering complementary effects of decentralization and freedom of the press.

3. THE DATA

(a) Decentralization measures

To properly define applicable decentralization measures is a challenging task. Several measurement concepts have been elaborated in the literature. Excellent surveys of the problems of measuring fiscal decentralization are provided by Treisman (2002), Rodden (2004), and Stegarescu (2005). One possible way of measuring 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*) capturing whether a federal constitution exists (1) or not (0) and a measure for the number

Table 2. Previous empirical studies on corruption and freedom of the press

Author(s)	Data ^{a,b,c}	Methodology	Results ^d
Stapenhurst (2000)	(a) 51 countries (b) CPI index (c) Freedom House Index	Cross-section Pearson correlation	Positive
Ahrend (2002)	(a) 109 countries (b) ICRG index (c) Freedom House Index	panel OLS	Positive
Brunetti and Weder (2003)	(a) 125 countries (b) CPI index (c) Freedom House Index	Cross-section, panel OLS, TSLS, PROBIT	positive
Chowdhury (2004)	(a) 97 countries (b) ICRG index (c) Freedom House Index	Cross-section, panel OLS, TSLS, GMM	Positive
Lederman <i>et al.</i> (2005)	(a) 145 countries (b) GCS, ICRG, WDR (c) Freedom House Index	Panel OLS, PROBIT	Insignificant
Freille <i>et al.</i> (2007b)	(a) 51 countries (b) CPI index, ICRG index (c) Freedom House Index	Panel OLS, EBA, GMM	Positive

^a Sample and sample size.

^b Corruption measures.

^c Free press measure.

^d Positive result means that corruption is smaller in countries with a free press.

of vertical government tiers (*TIERS*). 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. There are several examples of countries whose governments are vertically tiered, but whose sub-national governments have few authorities as, for example, in France. Like most other industrial countries, France too has four government tiers, although it has to be classified as a unitary country.

To capture sub-national government authority and autonomy in decision-making, we use “*de facto*” decentralization measures, factoring in the financial resources of sub-national governments compared to those of the central government. To measure “*de facto*” decentralization, we construct measures using the IMF’s Government Finance Statistics (GFS), which provide 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. Coming back to our example of France, we find that less than 20% of government expenditures are spent by sub-national governments, while in Germany, for example (which has the same number of vertical government tiers), more than 40% of expenditures come from states, districts, and municipalities.

Following Arikan (2004), we consider a fifth alternative decentralization measure that can be derived from the employment statistics compiled by the International Labour Organization (ILO). These statistics contain data on public (and private) employment, distinguishing between the national and sub-national government levels for numerous countries. In the same manner as we proceed 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 A.1 in Appendix reports the correlations for all decentralization measures. Since “*de jure*” and “*de facto*” decentralization measures reflect different aspects of the devolution of powers, we expect differences between the two types of measures. The results show that except for *TIERS*, which is not significantly correlated with one of the other decentralization measures, pairwise correlation is positive and significant.

(b) Corruption measures

Besides measures of decentralization, we also need adequate measures of corruption. We make use of three different commonly applied measures of corruption.² 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 the 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 & Keefer, 1995). A second corruption index is provided by the World Bank and is commonly known as the Kaufman index (*WBC*). This indicator was available beginning in 1996. The third corruption measure, the corruption perception index (*CPI*), is provided by Transparency International. The index

was available beginning in 1980, but due to the composition of the index, the data are not comparable from year to year.³

All these measures reflect the absence of corruption, meaning that a high value indicates low corruption. The *ICRG* index is defined using a scale from 0 and 6, the *WBC* index scale ranges between -2.5 and $+2.5$ and the *CPI* index extends from 0 to 10. To better compare our different estimation results, we have rescaled all three measures so that they have values between zero (most corrupt) and one (least corrupt).

(c) Monitoring of bureaucrats—freedom of the press measure

A commonly used proxy for the observability of bureaucratic behavior is the index for freedom of the press (e.g., Brunetti & Weder, 2003). We follow this approach and revert to the index for freedom of the press provided by Freedom House. The data are available for the interval from 1980 to the present and currently covers 194 countries. Country narratives examine the legal environment as relevant 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 and 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. Due to the qualitative opinion-based measurements being represented, there might be some problems with comparability among these data across countries. Therefore, we use the number of radios per 1,000 people and the number of newspapers per 1,000 people as alternative “monitoring” measures to test for the robustness of our results.

A shortcoming of the free press measure may be that in many developing countries, even those that demonstrate a high score for the freedom of the press measures, there are few newspapers, and most of these are concentrated in urban centers. As a result, distant, rural, and poor localities are often left uncovered. National newspapers may send out reporters once in a while, but they rarely have the resources to send beat reporters to every region of the country. It often takes a major crisis in a distant province to attract a journalist’s attention. As a result, most local bureaucrats can function without fear of any true monitoring. In our analysis, this measurement problem is muted by the construction of our dependent variable. The corruption measures are based on investor surveys

Table 3. Summary statistics

Variable	Obs.	Mean	Std. Dev	Min	Max
<i>ICRG</i> (0...1)	64	0.54	0.20	0.18	1.0
<i>CPI</i> (0...1)	64	0.50	0.24	0.19	0.97
<i>WBC</i> (0...1)	64	0.57	0.22	0.28	0.99
<i>POP</i> (Mio.)	64	60.80	180.00	1.20	1150.00
<i>GDPPC</i> (\$)	64	7,866	8,857	95.52	31,521
<i>GOVSIZE</i>	64	0.16	0.05	0.06	0.32
<i>GLOBAL</i>	64	0.73	0.35	0.19	1.57
<i>ETHNO</i>	64	0.40	0.27	0.02	0.93
<i>PRESS</i>	64	64.9	20.7	18.1	92.7
<i>FEDERAL</i>	55	0.27	0.45	0.0	1.0
<i>TIERS</i>	61	4.59	0.80	2.0	6.0
<i>EMPLDEC</i>	51	0.44	0.22	0.08	0.93
<i>EXPDEC</i>	64	0.22	0.14	0.02	0.57
<i>REVDEC</i>	64	0.17	0.13	0.01	0.53

as well, and because most investors are concentrated in urban centers, the bias toward urban centers is the same one that we encounter when evaluating corruption.

(d) *Other explanatory variables*

Because the level of corruption in a country is not solely determined by decentralization and freedom of the press, our estimations include several control variables following previous cross-country studies, such as the studies by Fisman and Gatti (2002a) 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 for the year 2000 (*GDPPC*), the sum of exports and imports as a share of GDP as a measure of the degree of openness (*GLOBAL*), the diversity index of ethnic fractionalization (*ETHNO*) and the share of government expenditures in GDP as a measure of government size (*GOVSIZE*). Most of the data are provided by the World Bank in the World Development Indicators 2006 (WDI). One exception is the data on ethnic fractionalization, which are provided by www.ethnologue.com. Table A.2 in Appendix provides data sources and definitions, and Table 3 provides summary statistics for the variables.⁴

4. EMPIRICAL ANALYSIS

(a) *Benchmark regressions*

To provide a benchmark case, we first estimate the impact of decentralization on corruption in a cross-country dataset without testing for a complementary relationship between decentralization and the effectiveness of monitoring bureaucrats' behavior. This estimation approach enables us to compare our results with those of the previous research studies on the basis of a broader dataset covering up to 64 countries. The basic estimation equation takes the form

$$CORRUPT_i = \alpha + \beta \cdot CONTROL_i + \gamma \cdot DECENTR_i + \varepsilon_i, \quad (1)$$

where *CORRUPT* as a dependent 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 alleviate causality problems, the timing of the independent variables is chosen such that they are long averages for the period 1980–95 prior to the corruption measures for 1996–2000. We are mainly interested in the sign and significance of γ , which might be positive (which would support 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 that a high degree of decentralization is associated with low corruption. We present estimation results for three alternative corruption measures as dependent variables and all mentioned decentralization measures, respectively.

Table 4 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's (1980) correction. The coefficients of our “*de jure*” decentralization measures (*FEDERAL* and *TIERS*) are insignificant for all specifications. A similar result emerges 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 (specifications 4 and 5), and the same is true of 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 reaching conventional significance levels.

Our control variables show the expected signs and support the findings from earlier studies. The size of a country in terms of population (*POP*), its ethnic fractionalization (*ETHNO*) and its degree of economic openness (*GLOBAL*) have no significant impact on corruption. Richer countries (*GDPPC*) show less corruption, and this result captures the effect of better institutions. Moreover, countries with a larger government (*GOVSIZE*) exhibit less corruption. Last but not the least, countries with a high degree of freedom of the press demonstrate less corruption (*PRESS*).

At a first glance, our results are surprising because the most existing empirical studies find a significant positive impact of decentralization on the absence of corruption. Although the signs of our coefficients go in the same direction, they are not significant on conventional confidence levels. We suppose the differences are due to (i) our broader sample of countries, (ii) the use of a lag-structure in the dataset, and (iii) the slightly different control variables. First, the closest related studies, those of Fisman and Gatti (2002) and Arikan (2004), consider 55 and 40 countries, respectively, while we refer to data for 64 countries. Second, we use a lag structure between dependent and independent variables to consider causality issues. The last difference concerns the measurement and timing of control variables. For example, we make use of more recent data on ethnolinguistic fractionalization provided by www.ethnologue.com instead of using the Mauro (1995) dataset employed in comparable studies. The disadvantage of this old ethnolinguistic fractionalization index is that it dates back to 1960. Another difference with regard to control variables is that we generally use long period averages instead of single years or short-period averaged data. All these differences might explain the deviation of our benchmark results from those of the former studies.

Nevertheless, our benchmark results cast doubts on the idea of a simple linear relationship between decentralization and corruption. In the next section, we present evidence that the relationship between corruption and decentralization crucially depends on the effectiveness of efforts to monitor bureaucrats.

(b) *Cross-sectional analysis considering monitoring effectiveness*

The hypothesis we test now is that the relationship between decentralization and corruption depends on the effectiveness of the effort to monitor bureaucrats. As we have discussed in Section 2(a), most theoretical studies concerning the relationship between decentralization and corruption assume free information flows between the agents. For this purpose, we consider freedom of the press as an indicator of monitoring effectiveness and reinvestigate the relationship between decentralization and corruption. As a first step in our analysis, we graphically investigate our data, before specifying an econometric model to use to test our hypothesis. Figure 1 shows a scatter plot of our whole dataset with our “*de facto*” decentralization measure (*EXPDEC*) on the abscissa and the *ICRG* index on the ordinate. The effectiveness of monitoring is considered such that we classified our countries into three groups: the upper third of the countries, whose with the highest degree of freedom of the press, is marked by quadrangles; countries in the middle third are marked by dots; and those in the lowest third in terms of free press are represented with

Table 4. Cross-country estimations using OLS, decentralization: averages 1980–95, corruption: averages 1996–2006

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

t-statistics are reported in parentheses.

* For a 90%-significance-level.

** For a 95%-significance-level.

*** For more than 99%-significance-level.

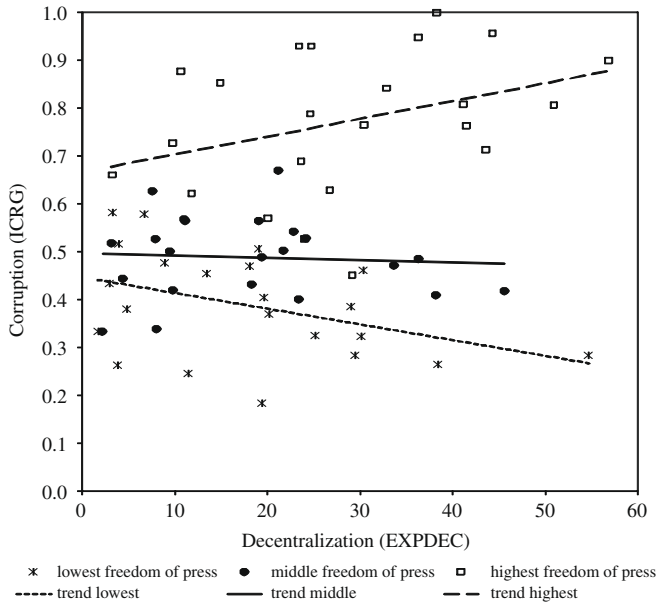


Figure 1. Decentralization, corruption and freedom of press.

stars. The figure also includes three trend lines, each of which reflects the relationship between decentralization and corruption in one of the three different groups of countries.

The scatter plot suggests that the relationship between decentralization and corruption indeed depends on the degree of effectiveness with which bureaucrats are monitored, as reflected by the freedom of the press. Countries with good monitoring show a positive impact of decentralization on the absence of corruption (upper trend line in Figure 1), countries with middle-level monitoring demonstrate a weak relationship (continuous line), and in countries with weak monitoring, decentralization is negatively associated with the absence of corruption (dotted line). An inspection of the raw data suggests that there are no important outliers.

Doubtless, the inspection of the scatter plots is only a first step toward answering our research question. Therefore, we set up an econometric model to test our hypothesis empirically. For this purpose, we build dummy variables for q -quantiles of the freedom of the press measure ($FP1q, \dots, FPqq$) and interact them with our decentralization measure in a structural break model. For $q = 3$, we estimate the trend lines of Figure 1, distinguishing between the upper third, the middle third, and the lower third of the countries with respect to the degree of freedom of the press in each.

The estimation equation now takes the form

$$\begin{aligned} CORRUPT_i = & \alpha + \beta \cdot CONTROL_i + \gamma \cdot DECENR_i \\ & + \sum_{k=1}^{q-1} \delta_k \cdot (DECENR_i \cdot FPkq_i) \\ & + \sum_{k=1}^{q-1} \theta_k \cdot FPkq_i + \varepsilon_i. \end{aligned} \quad (2)$$

The interaction terms of decentralization and the q -quantile dummies show us whether the relationship between decentralization and corruption depends on the opportunity to monitor bureaucrats. In other words, the interaction terms indicate whether decentralization and effective monitoring have a com-

plementary effect on corruption. The $FPkq$ -dummy for the countries with the highest q -quantile for the freedom of the press measure is not considered in the estimations, since it is used as a reference group. γ captures the impact of decentralization on corruption if the FP -dummy is zero, while δ_k captures the partial effect of the k interaction terms. We obtain the total effect of decentralization on corruption in the countries being considered by adding the coefficient of an interaction term to the coefficient of the decentralization term.

Using the dummy variables of the freedom of press measure allows us to interpret the results much more easily than would be possible using the interaction terms of two continuous variables. In the latter case, the marginal effects have to be calculated by differentiating our estimation equation, while the coefficients of the interaction terms using dummy variables are independent from the other coefficients. Moreover, varying q allows us to test for more than one structural break in the data, as suggested by the graphical inspection of those data (Figure 1). Nevertheless, we also report estimation results using a continuous interaction term for decentralization and freedom of the press as a robustness test.

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 Table A.3 in Appendix, we provide robustness tests using alternative decentralization and corruption measures. Table 5 presents estimation results for three different models. In specifications (1) and (2), we estimate our model setting $q = 2$, which is similar to the use of just one dummy ($FP12$) for the 50% of the countries in our sample with the lowest degree of freedom of the press. In the next two specifications, we set $q = 3$, distinguishing between high, middle-level, and low degrees of freedom of the press. Thus, we have $FP13$ as a tertile dummy for those countries with the lowest degree of freedom of the press, $FP23$ as a dummy for those countries with a medium 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 from our specifications when considering interaction terms because the impact of the freedom of the press is now covered by our $FPkq$ -dummies. Specifications (5–8) present the results we obtain using a continuous interaction term of decentralization and the freedom of press measure.

We apply the OLS estimation technique and TSLS to handle the problems arising from possible endogeneity bias. Corrupt officials in the central government might be reluctant to allow or prevent decentralization to protect their ability to extract rents. To control for reverse causation, we use the logarithm of each country's area in square kilometres (*AREA*) as an instrument for decentralization. An optimal instrument should affect countries' degree of decentralization but not affect the degree of corruption. The area of a country should not have any direct impact on the level of corruption, but it is often used as an explanatory variable for the degree of fiscal decentralization (see e.g., Arikan, 2004; Porta, de Silanes, Shleifer, & Vishny, 1999; Wasylenko, 1987). We avoid the problem of a forbidden regression by instrumenting for decentralization and for the interaction terms. In this way, we follow the suggestion made by Wooldridge (2002). A second source of endogeneity bias might have arisen from reverse causation between corruption and freedom of the press.⁵ First, corrupt autocratic governments often regulate the media to protect their corrupt activities. Second, journalists may partake of the revenues from corruption. Both cases should only be relevant if corruption is systematic. In all other cases, causation

Table 5. Cross-section estimations considering the effectiveness of public monitoring

	Dependent variable: ICRG							
	$q = 2$		$q = 3$		Interaction		POLICY2>7	IV PRESS
	OLS (1)	TSLs (2)	OLS (3)	TSLs (4)	OLS (5)	TSLs (6)	OLS (7)	TSLs (8)
<i>Const.</i>	.0679 (.25)	-.0743 (-.19)	.1617 (.53)	-.1228 (-.28)	-.0122 (-.05)	-.1893 (-.55)	.0178 (.05)	.0149 (.06)
<i>POP</i>	.0001 (.01)	.0088 (.39)	.0010 (.08)	.0172 (.73)	.0037 (.28)	.0069 (.31)	.0034 (.22)	-.0031 (-.23)
<i>GDPPC</i>	.0476*** (3.31)	.0493*** (3.23)	.0437*** (2.71)	.0430** (2.46)	.0450*** (3.10)	.0529*** (3.17)	.0014 (.06)	.0626*** (4.26)
<i>GOVSIZE</i>	.6099** (2.05)	.7024* (1.98)	.5990* (1.92)	.6600* (1.90)	.6269** (2.14)	.7393* (1.89)	.7067** (2.57)	.6444** (2.15)
<i>ETHNO</i>	-.1032** (-2.08)	-.1163** (-2.19)	-.1014** (-2.17)	-.1436** (-2.30)	-.0927* (-1.95)	-.0754 (-1.02)	-.1187** (-2.42)	-.0836* (-1.74)
<i>GLOBAL</i>	-.0371 (-.65)	-.0325 (-.55)	-.0407 (-.62)	.0006 (.01)	-.0099 (-.16)	-.0321 (-.38)	-.0956 (-1.41)	-.0304 (-.53)
<i>PRESS</i>					.0005 (0.26)	.0019 (.56)	.0062** (2.18)	-.0003 (-.19)
<i>EXPDEC</i>	.4848*** (3.33)	.3650 (1.03)	.3327** (2.17)	.3303 (.88)	-.7024* (-1.74)	-.4910 (-.50)	-1.5113** (-2.08)	-.5074* (-1.66)
<i>EXPDEC · PRESS</i>					.0128** (2.27)	.0067 (.50)	0.0214** (2.38)	.0098 (2.17)
<i>EXPDEC · FP12</i>	-.7322*** (-3.63)	-.8307** (-2.40)						
<i>FP12</i>	.0258 (.47)	.0402 (.52)						
<i>EXPDEC · FP13</i>			-.7600*** (-2.98)	-1.2798** (-2.02)				
<i>EXPDEC · FP23</i>			-.3272 (-1.23)	-.4557 (-1.03)				
<i>FP13</i>			-.0299 (-.36)	.0671 (.43)				
<i>FP23</i>			-.0662 (-.97)	-.0410 (-.35)				
<i>Shea's partial R² of first-stage regressions</i>								
<i>EXPDEC</i>		.18		.20		.12		.64
<i>EXPDEC · FP12</i>		.27						
<i>EXPDEC · FP13</i>				.14				
<i>EXPDEC · FP23</i>				.32				
<i>EXPDEC · PRESS</i>						.13		.79
Cragg-Donald stat. χ^2		11.36		6.39		8.13		97.5
Obs.	64	64	64	64	64	64	44	64
Adj. R ²	.73	.72	.72	.68	.69	.67	.71	.72

t-statistics are reported in parentheses.

* For a 90%-significance-level.

** For 95%-significance-level.

*** For more than 99%-significance-level.

runs from the freedom of the press to corruption because journalists have no incentive to cooperate in corrupt arrangements. On the empirical level, we address the endogeneity issue in two different ways. The first abovementioned argument is only valid in those countries whose governments could be classified as autocratic regimes. Thus, one strategy for getting rid of this source of endogeneity bias is to exclude those countries with highly repressive regimes from the sample. The second strategy we employ is to instrument for freedom of the press in TSLs regressions. Further on, we use the lag structure as in our benchmark regressions.

Specifications (1) and (2) 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 less success in monitoring bureaucrats. On the basis of the coefficient of *EXPDEC* (0.4848) and the coefficient of the interaction term (*EXPDEC · FP12*) (-0.7322), the aggregate effect of decentralization on corruption in those countries with the 50% lowest degree of freedom of the press is $0.4848 - 0.7322 = -0.2474$ ergo, negative. The strong negative impact also holds for IV-estimations. Specifications (3) and (4) of Table 5 show estimations similar to those in the scatter plot in Figure 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 scatter plot has already indicated, we find no effect of decentralization on corruption in countries with a medium degree of

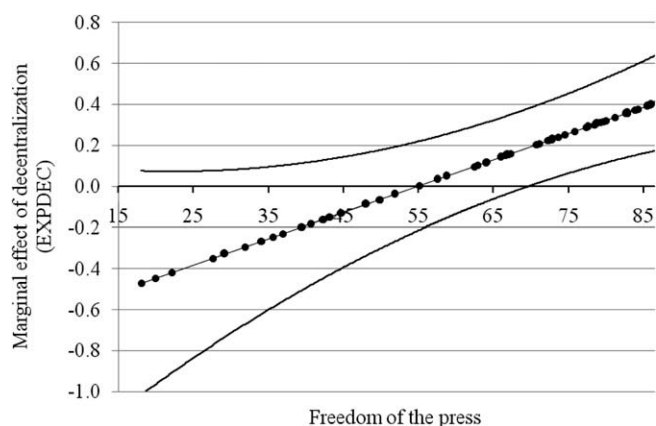


Figure 2. Marginal effect of decentralization on corruption conditional on press freedom.

freedom of the press. Countries with a high degree of freedom of the press serve as a reference group: the coefficient for those countries can be calculated from the other coefficients and remains positive.

Specifications (5) and (6) present the results using continuous interaction terms for decentralization and freedom of the press. It is important to note that the effect of decentralization on corruption is not only captured by the interaction term. In fact, the marginal impact of decentralization on corruption depends both on the interaction term and on decentralization. The cut-off values of freedom of the press that is, the value of freedom of the press for which $\partial(CORRUPT)/\partial(EXPDEC) = 0$ is 54.9, implying that for roughly a third of the countries in the sample, increased decentralization is associated with higher corruption. For countries close to the cut-off value, the effect of decentralization on corruption is small, while the positive impact of decentralization on corruption in countries with a high degree of freedom of the press is fairly high. The marginal effect is statistically different from zero, with more than 90% confidence with a freedom of press value exceeding roughly 70. In other words, the impact of decentralization on corruption is significantly positive for nearly 50% of countries in our sample. Our results imply that decentralization counteracts corruption in countries with a low degree of freedom of the press (see Figure 2). This finding is in line with our results from specifications (3) and (4), which have shown a strong negative impact of decentralization on corruption in one-third of countries with the lowest degree of freedom of the press.

The last two columns in Table 5 present the results that we obtain controlling for reverse causality between freedom of the press and corruption. Specification (7) is an OLS regression for which we exclude all autocratic governments from our sample. For this purpose, we use the *POLITY2* index provided by Marshall and Jaggers (2009), which measures whether a government is autocratic or democratic on a scale from -10 to +10. We exclude all countries with a polity index below 8. This means that we drop 20 countries, including Russia, China, and Iran, for which we know that the government controls at least part of the media. Although we lose many observations using this procedure, our results for the decentralization variable and its interaction with free press still remain robust. In fact, the results we obtain are signifi-

cant on even higher confidence levels. In specification (8), we apply a TSLS regression instrumenting for press freedom. We again refer to the *POLITY2* index as an instrument. We find a positive correlation between democracy (*POLITY2*) and freedom of the press, while corruption occurs in democracies as well as in autocracies. A good example is Italy, which has the highest score for the democracy index (+10) but a relatively weak score for the *ICRG* corruption indices (3). A similar relationship is present for several Eastern European transition economies, which have high levels of democracy but also middle-high levels of corruption. Therefore, *POLITY2* should be a good instrument for examining press freedom, and consequently, it has often been used in the literature (e.g., Brunetti & Weder, 2003). The results we obtain from the TSLS regression again support our earlier findings.

(c) Robustness tests

Tables A.3 and A.4 in Appendix shows the major results of the robustness tests using alternative corruption indices (*CPI* and *WBC*) and a different decentralization measure (*REVDEC*—specifications (19–36) and *EMPLDEC*—specifications (37–54)). The econometric specifications are similar to those of Table 5, but we do not report the coefficients of our control variables due to space limitations. The robustness checks confirm our earlier findings for most specifications.

Another problem with the empirical analysis can emerge from pooling developing and developed countries, although we control for the *GDP per capita*. Our findings should not be driven by the richest or the poorest group of countries. A suitable robustness test consists of separating the low-income countries from the high-income countries in our dataset. For this purpose, we drop the 10 poorest and the 10 richest countries from the dataset sequentially. In another specification, we include an additional OECD dummy that is well suited to distinguishing between developed and developing countries. Our major results are insensitive to these robustness checks. Due to space limitations, we cannot include the detailed results in the paper. The results are available upon request.

Since we are working with political institutions and corruption, an omitted variable bias may emerge because we do not explicitly control for political institutions that might affect property rights. For this purpose, we include Henisz's measure of political constraints (Henisz, 2002) as well as a measure of constraints on the decision-making powers of chief executives (Gurr, 1997). Both variables are never significant in any of our regressions. Importantly, the coefficients of our main variables of interest, the degree of decentralization and the interaction with freedom of the press, remain robust. The results are available upon request.

In an additional robustness test, we use alternative variables indicating monitoring abilities other than freedom of the press. We apply the number of radios per 1,000 people, as well as the number of newspapers per 1,000 people, in estimations similar to those presented in Table 5. All our main findings are robust to this robustness check. The results are available upon request.

Hitherto, we have used averages (1996–2000) of the different corruption indices as dependent variables in our regressions. The dependent variable is therefore a continuous variable, and this allows estimates using OLS and TSLS. However, there could be some doubts regarding the cardinal nature of corruption indices. One could argue that the commonly used corruption perception indices only rank the

countries from most to least corrupt. In this case, the indices are ordinal, and the relation between the numbers is unknown. A (rescaled) CPI-value of 0.25 does not imply that the country has twice the amount of corruption as a country with a value of 0.50 (see [Soreide, 2005](#)). These values just mean that the former country is more corrupt. Under the interpretation of the ordered corruption variable, the OLS and TSLS estimation procedures are not applicable. Instead, with ordinal corruption measures, an ordered probit model should be appropriate. However, when using an ordered probit estimation approach, it is difficult to interpret the magnitude and statistical significance of our interaction terms. As is shown by [Ai and Norton \(2003\)](#), the marginal effects of the interaction terms in non-linear models, which are computed using standard statistical software, are incorrect. In addition, the most corruption indices provide explicit numerical ratings with the understanding that they are linear (see [Brunetti & Weder, 2003](#)). Given the severe difficulties presented by inference based on probit models with interaction terms, we have more confidence in our linear regression results.

Altogether, the examination of the data and our regression results shows that the impact of decentralization on corruption depends on how effective the effort to monitor bureaucrats is. As long as monitoring works, decentralization is indeed an effective instrument in keeping corruption at bay. However, if those basic control institutions do not work, decentralization is harmful. This result contrasts with the findings of earlier empirical studies in the field, but it is in line with theoretical considerations presented by [Prud'homme \(1995\)](#), [Tanzi \(1996\)](#), and [Bardhan \(2002\)](#), for example.

5. CONCLUSION

Decentralization plays a major role in campaigns like the World Bank's anti-corruption and development strategy. Based on earlier studies that found the level of corruption to be lower in decentralized countries, decentralization has been

assumed to be an appropriate instrument for tackling the issue of corruption. In line with the majority of the theoretical literature, we argue that effectiveness in monitoring bureaucrats' behavior is 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 the degree of freedom of the press into account. For this purpose, we applied a broader dataset using different decentralization and corruption measures. Unlike researchers working on previous studies, we are not able to identify a robust impact of decentralization on corruption in general.

In a second step, we have estimated structural break models, considering the effectiveness of monitoring bureaucrats' behavior as measured by freedom of the press. A free and independent press is able to reveal and report misuses of public office for private gain. It complements the accountability effects of decentralization. We find that in countries with effective monitoring, competition-enhancing decentralization has a positive impact on the absence of corruption. Otherwise, if monitoring does not work, the positive effects of decentralization are outweighed by its negative effects, such as double marginalization, with increasing corruption as a result. This association is robust for a wide range of potential sources of omitted variable bias and endogeneity bias. We also show that these results are non-sensitive to the underlying measurement concepts of decentralization and corruption.

The policy implications of our study are obvious: decentralization is a feasible instrument for reducing corruption if the monitoring of bureaucrats works. Otherwise, if those institutions do not work sufficiently well, decentralization can contribute to high levels of corruption. Institutions linking foreign aid to decentralization initiatives should therefore carefully consider whether the institutional background each target country in terms of effective public monitoring is adequate. With regard to our research question of whether decentralization is in every case the technique to use to fight against corruption, the answer is no—one size does not fit all.

NOTES

1. In particular, audits are vulnerable to collusion between bureaucrats and a supervisory body. There is always an incentive to share in the rents from corrupt activities. Besides, collusion between bureaucrats and journalists is less likely due to competition between journalists.

2. The data on corruption are, to a large extent, subjective assessments of the level of corruption in various countries. Such perceptions are commonly a good indicator of the real level of corruption, and good data availability permits regressions with other macroeconomic, political or social data (see [Lambsdorff, 1999](#)). Another approach is to use "objective" corruption measures for example, the number of public officials convicted of the abuse of public office. This variable might serve as an indicator of actual levels of corruption. Often, the number of convictions is related to the real *per capita* total expenditures of the local government, implying that state intervention and public spending give rise to rent-seeking activities and hence to corruption. However, as governments increase their spending, the judiciary branch might also be allocated more funding, which would result in higher conviction rates. In this case, conviction rates would not be an adequate indicator for the actual incidence of corruption but, rather, would reflect the quality of the judiciary.

3. A discussion of time-series properties of the index is provided by [Lambsdorff \(2005\)](#). Panel data analysis is possible with a special dataset including data from starting in 1995.

4. We consider the following 64 countries in our analysis: Albania, Argentina, Australia, Austria, Azerbaijan, Belarus, Belgium, Bolivia, Brazil, Bulgaria, Canada, Chile, China, Colombia, Costa Rica, Croatia, Czech Republic, Denmark, Dominican Republic, Estonia, Ethiopia, Finland, France, Germany, Hungary, India, Indonesia, Iran, Ireland, Israel, Italy, Kazakhstan, Kenya, Latvia, Lithuania, Malaysia, Mexico, Moldova, Mongolia, Netherlands, New Zealand, Nicaragua, Norway, Panama, Paraguay, Peru, Philippines, Poland, Portugal, Romania, Russian Federation, Slovak Republic, Slovenia, South Africa, Spain, Sri Lanka, Sweden, Switzerland, Thailand, Trinidad and Tobago, United Kingdom, United States, Uruguay, and Zimbabwe.

5. Several studies have found that the causal relationship runs from freedom of the press to corruption and not in the other direction. [Ahrend \(2002\)](#) conducts a time series analysis of corruption and free press data. Based on a Granger-causality test following [Hall, Szymanski, and](#)

Zimbalist (2001), he finds that press freedom Granger-causes corruption. Other studies, including those of Brunetti and Weder (2003) and Chowdhury (2004), also employ instrumental variable techniques and

find that a free press determines corruption. Thus, the endogeneity problem might not be as large as it appears from a theoretical point of view.

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APPENDIX

See Tables A.1–A.4.

Table A.1. *Pairwise correlation coefficients of different decentralization measures*

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

* Indicate significance at 10% level;

** Indicate significance at 5% level.

*** Indicate significance at 1% level.

Table A.2. *Data sources and definitions*

Variable	Definition	Source
<i>POP</i>	Population in Mill.	World Bank WDI
<i>GDPPC</i>	Gross Domestic Product <i>per capita</i> in 2000 Dollar	World Bank WDI
<i>GOVSIZE</i>	Government consumption expenditures as share of GDP	World Bank WDI
<i>ETHNO</i>	Degree of ethnolinguistic fractionalization	Ethnologue
<i>GLOBAL</i>	Imports plus exports as share of GDP	World Bank WDI
<i>POLCON</i>	This measure of political constraints estimates the feasibility of policy change (the extent to which a change in the preferences of any one actor may lead to a change in government policy)	Henisz (2002)
<i>XCONST</i>	Executives constraints variable refers to the extent of institutionalized constraints on the decision-making powers of chief executives, whether individuals or collectivities	Gurr (1990)
<i>POLITY2</i>	Political regime Index ranging from -10 (strongly autocratic) to +10 (strongly democratic)	Polity IV Project
<i>PRESS</i>	Index of freedom of the press (inverted)	Freedom House
<i>ICRG</i>	International Country Risk Guide corruption measure (0 = highest corruption; 6 = absence of corruption)	PRS Group
<i>CPI</i>	Corruption Perception Index (0 = highest corruption; 10 = absence of corruption)	Transparency International
<i>WBC</i>	World Bank corruption measure (-2.5 = highest corruption; 2.5 = absence of corruption)	World Bank
<i>FEDERAL</i>	Dummy variable for federal constitutions: 0 = unitary country; 1 = federal country	Treisman (2002)
<i>TIERS</i>	Index for number and democratization of vertical government tiers	Treisman (2002)
<i>EMPLDEC</i>	Share of subnational government employment in total government employment	ILO
<i>EXPDEC</i>	Share of subnational government expenditures in total government expenditures	IMF GFS
<i>REVDEC</i>	Share of subnational government revenues in total government revenues	IMF GFS

Table A.3. Robustness check: alternative measures for corruption and decentralization

	Decentralization measure: <i>EXPDEC</i>																	
	Dependent variable: <i>ICRG</i>						Dependent variable: <i>WBC</i>						Dependent variable: <i>CPI</i>					
	<i>q</i> = 2		<i>q</i> = 3		Interaction		<i>q</i> = 2		<i>q</i> = 3		Interaction		<i>q</i> = 2		<i>q</i> = 3		Interaction	
	OLS (1)	TSLS (2)	OLS (3)	TSLS (4)	OLS (5)	TSLS (6)	OLS (7)	TSLS (8)	OLS (9)	TSLS (10)	OLS (11)	TSLS (12)	OLS (13)	TSLS (14)	OLS (15)	TSLS (16)	OLS (17)	TSLS (18)
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
<i>EXPDEC</i>	0.48*** (3.33)	0.37 (1.03)	0.33** (2.17)	0.33 (0.88)	-0.70* (-1.74)	-0.49 (-0.50)	0.51*** (4.2)	0.58** (2.23)	0.34* (1.97)	0.37 (1.21)	-0.19 (-0.43)	0.48 (0.54)	0.41*** (3.90)	0.36 (1.37)	0.19 (1.46)	0.1412 (0.48)	-0.21 (-0.50)	0.15 (-0.18)
<i>EXPDEC</i> · <i>PRESS</i>					0.01** (2.27)	0.01 (0.50)					0.01 (0.99)	-0.01 (-0.36)					0.01 (-0.50)	0.01 (-0.24)
<i>EXPDEC</i> · <i>FP12</i>	-0.73*** (-3.63)	-0.83** (-2.40)					-0.63*** (-3.69)	-0.79*** (-3.32)					-0.61*** (-4.26)	-0.85*** (-4.20)				
<i>EXPDEC</i> · <i>FP13</i>			-0.76*** (-2.98)	-1.28** (-2.02)					-0.37 (-1.38)	-0.50 (-0.81)					-0.36 (-1.49)	-0.7551 (-1.24)		
<i>EXPDEC</i> · <i>FP23</i>			-0.33 (-1.23)	-0.46 (-1.03)					-0.56* (-1.82)	-0.50 (-1.27)					-0.14 (-1.25)	-0.3386 (-0.91)		
Adj. <i>R</i> ²	0.73 (19)	0.72 (20)	0.72 (21)	0.68 (22)	0.69 (23)	0.67 (24)	0.82 (25)	0.82 (26)	0.82 (27)	0.82 (28)	0.79 (29)	0.77 (30)	-0.84 (31)	0.84 (32)	0.82 (33)	0.85 (34)	0.82 (35)	0.80 (36)
<i>Decentralization measure: REVDEC</i>																		
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
<i>REVDEC</i>	0.47*** (3.38)	0.39 (1.57)	0.31* (1.86)	0.34 (0.98)	-0.62 (-1.52)	-0.4110 (-0.50)	0.49*** (3.60)	0.70** (2.37)	0.26 (-1.65)	0.36 (1.13)	-0.10 (-0.23)	0.37 (0.50)	0.40*** (3.46)	0.52** (2.01)	0.15 (1.18)	0.1624 (0.61)	-0.16 (-0.37)	0.13 (-0.19)
<i>REVDEC</i> · <i>PRESS</i>					0.01** (2.08)	0.01 (0.49)					0.01 (0.74)	-0.01 (-0.29)					0.00 (-0.68)	0.00 (-0.25)
<i>REVDEC</i> · <i>FP12</i>	-0.79*** (-4.81)	-0.83*** (-3.35)					-0.69*** (-3.28)	-1.05*** (-3.28)					-0.71*** (-3.93)	-1.12*** (-4.19)				
<i>REVDEC</i> · <i>FP13</i>			-0.72*** (-2.79)	-1.09* (-1.95)					-0.31 (-1.16)	-0.45 (-0.83)					-0.34 (-1.41)	-0.6296 (-1.30)		
<i>REVDEC</i> · <i>FP23</i>			-0.35 (-1.06)	-0.46 (-0.95)					-0.55 (-1.51)	-0.52 (-1.06)					-0.39 (-1.16)	-0.3857 (-0.91)		
Adj. <i>R</i> ²	0.69	0.69	0.71	0.7	0.68	0.66	0.81	0.79	0.82	0.81	0.78	0.77	0.83	0.81	0.85	0.84	0.82	0.81

Note: *t*-statistics are reported in parentheses.

* For a 90%-significance.

** For a 95%-significance.

*** For 99%-significance.

Table A.4. Robustness check: alternative measures for corruption and decentralization

	Decentralization measure: <i>EMPLDEC</i>																	
	Dependent variable: <i>ICRG</i>						Dependent variable: <i>CPI</i>						Dependent variable: <i>WBC</i>					
	<i>q</i> = 2		<i>q</i> = 3		Interaction		<i>q</i> = 2		<i>q</i> = 3		Interaction		<i>q</i> = 2		<i>q</i> = 3		Interaction	
	OLS (37)	TSLs (38)	OLS (39)	TSLs (40)	OLS (41)	TSLs (42)	OLS (43)	TSLs (44)	OLS (45)	TSLs (46)	OLS (47)	TSLs (48)	OLS (49)	TSLs (50)	OLS (51)	TSLs (52)	OLS (53)	TSLs (54)
<i>Controls</i>	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
<i>EMPLDEC</i>	0.15 (0.87)	−0.08 (−0.07)	0.09 (0.50)	0.02 (0.03)	−0.19 (−0.71)	−0.50 (−0.53)	0.21 (1.50)	0.50 (0.48)	0.17 (1.16)	0.33 (0.42)	0.05 (0.20)	0.05 (0.07)	0.15 (1.32)	−0.54 (−0.42)	0.10 (0.91)	−0.3374 (−0.35)	0.11 (−0.46)	−0.39 (−0.36)
<i>EMPLDEC</i> · <i>PRESS</i>					0.01 (0.78)	0.01 (0.51)					0.01 (0.14)	0.01 (0.23)					0.01 (−0.20)	0.01 (−0.06)
<i>EMPLDEC</i> · <i>FP12</i>	−0.27* (−1.78)	−0.48 (−1.02)					−0.23 (−1.55)	−0.47 (−1.11)					−0.15 (−1.23)	−0.22 (−0.41)				
<i>EMPLDEC</i> · <i>FP13</i>			−0.22 (−1.21)	−1.08 (−0.94)					−0.10 (−0.62)	−0.65 (−0.88)					−0.04 (−0.28)	−0.9076 (−0.62)		
<i>EMPLDEC</i> · <i>FP23</i>			−0.24 (−1.53)	−0.33 (−0.70)					−0.32* (−1.96)	−0.38 (−0.99)					−0.22 (−1.39)	−0.1528 (−0.36)		
Adj. <i>R</i> ²	0.70	0.59	0.71	0.41	0.70	0.66	0.81	0.78	0.81	0.75	0.78	0.77	0.85	0.52	0.84	0.31	0.83	0.67

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