ELSEVIER

Journal of Public Economics 87 (2003) 1801–1824

JOURNAL OF PUBLIC ECONOMICS

www.elsevier.com/locate/econbase

A free press is bad news for corruption

Aymo Brunetti[a], Beatrice Weder[b,*]

[a]*State Secretariat for Economic Affairs, Bern, Basel, Switzerland*
[b]*University of Mainz, Mainz, Germany*

Received 2 June 1999; received in revised form 13 June 2001; accepted 25 June 2001

Abstract

This paper tests the proposition that a free press may be a powerful control on corruption. We find evidence of a significant relationship between more press freedom and less corruption in a large cross-section of countries. This result is robust to specification and sample and the relationship is not sensitive to the choice of a particular measure of corruption or of press freedom. Furthermore we present evidence which suggests that the direction of causation runs from higher press freedom to lower corruption.

Keywords: Corruption; Press freedom

JEL classification: O1; O57; H11; D73

1. Introduction

Freedom of speech and a free press are generally considered important human rights and powerful controls against government malfeasance. An independent press is probably one of the most effective institutions to uncover trespassing by government officials. The reason is that any independent journalist has a strong incentive to investigate and uncover stories on wrongdoing. Countries with a free press should, therefore, ceteris paribus, have less corruption than countries where

*Corresponding author. Tel.: +49-613-1392-0144; fax: +49-613-1392-5053.
E-mail address: beatrice.weder@uni-mainz.de (B. Weder).

0047-2727/02/$ – see front matter
PII: S0047-2727(01)00186-4

the press is controlled and censored. This paper presents an empirical evaluation of this proposition.

The paper is motivated by recent research which has shown that higher corruption is detrimental to economic performance and which has lead to a general acceptance that corruption is one of the central issues in development policy.[1] This has given rise to the question of how differences in corruption across countries can be explained and a few recent studies started to explore possible determinants of corruption in small country samples. This paper argues that of the probable controls on bureaucratic corruption a free press is likely to be among the most effective ones — a proposition that is supported in an empirical analysis of a large cross-section of countries as well as by evidence from time series.

The paper is organized as follows. Section 2 reviews possible determinants of corruption discussed in the literature and explains how press freedom could affect corruption. Section 3 describes the main data, the specifications estimated and the econometric approach. Section 4 shows cross-section empirical results for a range of specifications. Section 5 tests the sensitivity of results to alternative measures of corruption and press freedom. Section 6 presents some panel data evidence and Section 7 concludes.

2. Determinants of corruption and the role of press freedom

In theory the incidence of corruption can be explained by three types of determinants, which also reflect the different approaches in the literature. The first focuses on the role of internal mechanisms and incentives within the bureaucracy in controlling corruption. A second branch stresses the role of external mechanisms in checking corruption, such as an independent judiciary or watch body. Finally, the third branch argues that corruption can be explained by more indirect factors, such as culture or the level of rents that can be appropriated. In this categorization press freedom is an external control mechanism on corruption. Before discussing the role of press freedom we briefly summarize the potential other determinants of corruption in each of the three categories. This motivates our choice of control variables in the specifications used in the empirical analysis.

[1]The costs of corruption have been a topic of academic debate for a long time (see, e.g., Rose-Ackerman, 1975). Case studies such as Klitgaard (1988) and De Soto (1989) helped to popularize the notion that corruption is a major obstacle to growth in developing countries. This notion has been confirmed in a series of recent empirical cross-country studies. Mauro (1995) showed that corruption negatively affects rates of investment. Knack and Keefer (1995) and Brunetti et al. (1998) find that corrupt institutions lower growth through lower accumulation of resources as well as misallocation of resources. Mauro (1996) shows that corruption distorts the allocation of public expenditures and Johnson et al. (1998) find that countries with more corruption have a larger informal sector. For surveys of research on the economic effects of corruption see, e.g., Bardhan (1997) or Tanzi (1994).

2.1. Determinants of corruption

Internal controls include all systems and incentives that control corruption within the bureaucracy. Corruption tends to be high in an administrative environment where there is a lack of explicit standards of performance which are strictly enforced and in an environment where the individual bureaucrat is poorly supervised. Rauch and Evans (2000) argue that an important aspect of internal control is whether the recruitment and promotion process in the bureaucracy is based on meritocracy or on nepotism. Less nepotism tends to reduce the probability that internal control is eliminated by collusion among bureaucrats. Rauch and Evans (2000) test this point by constructing an index of meritocratic recruitment and promotion and showing that it is significantly associated with corruption in a sample of less developed countries. Van Rijckeghem and Weder (2001) argue that a low level of public sector wages compared to wages in the private sector increases the incentives for bureaucrats to accept bribes. In an empirical test of this hypothesis they find a negative relationship between the level of public sector wages and corruption for a sample of less developed countries.

External control of corruption is exercised by individuals or organizations outside the administration. In a working system of checks and balances this is mainly performed by the judiciary power. A court system where corrupt bureaucrats can be easily and effectively sued sharply reduces the potential rewards of corruption. In countries with less-developed checks and balances other parts of the society can play the role of external controller. Rahman (1986) describes such a mechanism in the case of Singapore where citizens committees were established which enable citizens to vent their grievances and seek redress. An empirical analysis of the effects of external control on corruption is difficult since there are few convincing empirical measures for cross-country differences of the power of external control mechanisms. Empirical studies such as Ades and Di Tella (1999) therefore use rather indirect measures such as the general level of development and education to capture the ability of the civil society to control government performance. We argue that a free press is another potentially powerful external control on corruption.

Finally, *indirect determinants* of corruption identified in the literature include culture and the level of distortions in the economy. Lee (1986) for instance suggests that a culture of bureaucratic elitism may lead to a disassociation of civil servants with the rest of society and breed corruption. Tanzi (1994) argues that the absence of a culture of arms-length relationships may lead to corruption becoming systemic. Shleifer and Vishny (1993) suggest that more ethnically diverse countries are prone to particularly harmful forms of corruption. In an empirical study Mauro (1995) indeed finds evidence of a positive relationship between ethnolinguistic fractionalization and corruption. A second indirect determinant of corruption are distortive policies. Tanzi (1994) for example suggests that government interventions in free markets create rents and lead to a sharp rise in

corruption payments. Kaufman (1997) tests the relationship between an indicator of regulatory discretion and corruption and finds a strong correlation in a small sample of developing countries. Ades and Di Tella (1999) generalize this argument by pointing out that monopolistic powers of bureaucrats are an important precondition for the occurrence of corruption. They also provide empirical cross-country evidence that more competition is associated with less corruption.

2.2. Press freedom and corruption

This paper focuses on a particular mechanism of external control, namely, press freedom. A free press is potentially a highly effective mechanism of external control on corruption because it works not only against extortive but also against collusive corruption.

Extortive corruption means that the government official has the discretionary power to refuse or delay a service (say a business license or the approval of a new construction project) in order to extract a rent from the private agent in the form of a bribe. Hindricks et al. (1999) describe extortion in a model analyzing mechanisms against tax evasion and they argue that this is a particularly serious form of corruption, Klitgaard (1988) provides drastic examples in his case study of the corruption structures in the Philippine tax system. He describes how taxpayers were extorted simply to receive the treatment legally due to them. Different strategies were applied by dishonest bureaucrats to extort taxpayers. For example, the tax inspector would assess an unrealistically high payment on the taxpayer. In the Philippine legal framework it was very costly and time-consuming to appeal and in addition the taxpayer in many cases was not sure, what the correct due really was. The tax assessor could take advantage of this situation by extorting a payment in exchange for the correct assessment.

Faced with such blackmailing the taxpayer has the option of either paying the bribe or complaining to a higher official or the judiciary, i.e., use channels of internal or external control. By fighting extortion the private agents help in limiting corruption. This is rather likely to occur as the private agent has a strong incentive to do something against this kind of corruption. However, if the costs of appealing are very high which means that the formal mechanisms of internal and external control are not working well, the taxpayer might in fact be better off by surrendering to the extortion. A free and active press constitutes an additional channel of external control which can substantially reduce the costs of fighting extortive corruption. A firm can reveal (or credibly threaten to reveal) the bureaucrat's behavior to a journalist and the (potential) media reports will raise the costs for the bureaucrat as the probability of being detected and punished is increased. In particular it will be much harder for an administration to keep up ineffective internal control mechanisms such as low penalties or ineffective external control mechanisms such as a weak judiciary if this fact is likely to be

regularly reported in the media. For extortive corruption the press, therefore, reinforces the reaction possibilities of the private sector by providing a platform for voicing complaints.

The second form, *collusive corruption* has been rather extensively treated in the theoretical literature on tax evasion (see, e.g., Besley and McLaren, 1993 or Flatters and MacLeod, 1995). With collusive corruption the incentives are somewhat different than with extortion. The official again has some discretionary power in her application of rules. Take for instance a customs inspector who has information about the value of a firm's imports. For a 'fee' she could make a deal with the firm's management to reduce the overall tariff liability of the company. This is unlikely to be detected by other officials — unless there are very good internal control systems in place — and the firm also has no incentive to report the corruption. Again, Klitgaard (1988) describes an example of this form of corruption in the Philippine tax system; there this kind of corruption is called arreglo (arrangement). In a typical case the taxpayer would submit a return with understated income or too many deductions. If the tax collector discovered these 'errors', arreglo frequently occurred. The taxpayer would for example pay half of the correct taxes and of the other half two-thirds would be paid as a bribe to the tax collector whereas the taxpayer could keep the rest.

In this form of corruption the private agent cooperates in the corrupt act and always pays the bribe. Obviously, this is much more difficult to fight than extortive corruption as the arrangement is beneficial for both, the bureaucrat and the firm and they will do everything to hide it. In contrast to extortive corruption the private agent can, therefore, not be trusted to help fighting this illegal action. A free press is probably the most effective institution to control collusive corruption. Independent journalists have incentives to actively investigate *any* wrongdoing. Other outside bodies, such as the judiciary or even watchdog bodies such as anti-corruption commissions may be less effective, unless their internal incentive structures are closely aligned with the goal of discovering and prosecuting corruption. There is a substantial danger that internal control agencies will be included in the arrangements and get a share of the pie. It may be much harder for the architects of corrupt arrangements to apply the same strategy to journalists. If the press is free and competitive it might be possible to buy some journalists but this only increases the incentives for other journalists to detect such arrangements and publicize this. The more involved a corrupt arrangement the more fame an investigative journalists can earn by uncovering it. As long as there is free entry in journalism and in publishing — which is one of the defining features of a free press — it will be difficult to form an effective cartel which encompasses all journalists.

Therefore, in theory press freedom can help to fight extortive corruption and may be a particularly effective institution to fight collusive corruption where client and bureaucrat have a mutual interest in the corrupt act.

3. Data and empirical strategy

This section presents the data on press freedom and corruption, derives the specifications tested in the empirical analysis, and explains the econometric methodology used.[2]

3.1. Measure of press freedom

Our main *measure of press freedom* is assembled by Freedom House, a think tank that is known for having published widely used indexes for political rights and civil liberties for the last 25 years. Since 1996 Freedom House in addition has compiled expanded indices of press freedom for 145 countries based on experts opinions, findings of international human rights groups and press organizations, analysis of publications and news services and reports of governments on related subjects. The motivation for collecting this kind of information derives from Article 19 of the Universal Declaration of Human Rights, which postulates that ''everyone should have the right to freedom of opinion and expression''. The idea is to gain a comprehensive assessment of press freedom by not focusing exclusively on actual incidents of censorship like for instance arrests or assassinations of journalists but on the overall structure of the news delivery system. Therefore, several dimensions of potential violations of press freedom are evaluated.[3]

1. *Laws and regulations that influence media content* reflects ''our judgment of the degree of actual impact on press freedom (. . .), not simply the ceremonial commitment to press freedom''. For instance, ''if private broadcast media are owned by government with no dissent allowed, the rating will be 15 (i.e., the worst score)'' but if ''a government that owns all broadcast media may permit widely pluralist ideas, even active dissent from government positions'' then the rating will be more favorable.
2. *Political influence over media content* captures ''political pressure on the content of both privately owned and government media and takes into account the day-to-day conditions in which journalist work''. It also includes ''threats from organized crime'' which may lead to self-censorship.
3. *Economic influence over media content:* reflects ''competitive pressures in the private sector that distort reportage as well as economic favoritism or reprisals by government for unwanted press coverage''.
4. *Repressive actions*: measures actual acts which constitute violations of press freedom. For instance, arrests, murders or suspensions of journalists, physical violence against journalists or facilities, self-censorship, arrests, harassment, expulsion, etc.

[2]Data sources, descriptive statistics and correlations are in Appendix A.
[3]Source of quotes: Freedom House (1997).

All four categories are rated for both, the freedom of print media and the freedom of broadcast media. In the first three categories countries are rated on a scale from 0 to 15 (0 meaning absence of violation of press freedom and 15 meaning the highest degree of such violation). The fourth category is rated from 0 to 5. The overall measure of press freedom is the sum of these eight subcomponents, and ranges from 0 (equals total freedom of the press) to 100 (equals the highest degree of violation of press freedom). For instance in 1997 Norway with a rating of 5 was the country with the freest press. Most OECD countries are in the quintile with the best ratings. At the bottom end we find North Korea, Iraq, and Burma with a rating of 100 each. Many of the countries of the Former Soviet Union fall in the fourth quintile together with a few of the East Asian tigers. Overall the world wide picture is one of rather high degrees of violations of press freedom; the world wide average of the index is 46 points.[4]

3.2. Measures of corruption

Measuring corruption is obviously tricky because of it's illegal nature. It is further complicated by a wide range of definitions of a corrupt act. And finally, there seem to be many different expressions of corruption, which range from routine 'tips' and 'speed money' to complicated schemes of favors between businessmen and civil servants.

Data on corruption levels across countries are available from various sources, which are all based on surveys of experts or entrepreneurs. Our main measure of corruption is an indicator collected by the International Country Risk Guide (ICRG). This firm produces annual ratings of corruption levels by using surveys among country experts. The indicator ranges from 0 to 6. A low score means that ''high government officials are likely to demand special payments'' and ''illegal payments are generally expected throughout lower levels'' in the form of ''bribes connected with import and export licenses, exchange controls, tax assessment, policy protection, or loans''.[5] Of all such country risk services ICRG covers by far

[4]Restrictions of press freedom come in many guises. In many countries, the press is regulated through an array of laws which claim to protect national security, personal privacy or even 'the truth'. To take a few examples: In 13 Latin American countries journalists can be penalized for insulting or violating the privacy of officials. Exposing illegal actions by a government official may thus be charged against the journalist rather than the official. In Uganda, a bill could impose 5 years of imprisonment and large fines for a journalist publishing (unspecified) 'false' or 'aggravating' information. In Colombia a regulatory commission has the authority to take television news programs off the air to protect the nations 'honor'. In Bolivia and Botswana laws are planned that impose ethical standards for the press to regulate alleged 'abuse'. In Malawi a law denies journalists the right to protect their news sources. The press in Gambia is hit with high start-up fees and extreme penalties for libel are considered in Brazil and Congo. In 1996, 46 journalist are known to have been murdered on the job and 372 arrested. See Freedom House (1997) for a more detailed discussion.

[5]See Knack and Keefer (1995).

the largest number of countries. We use the average for 1994–1998 which is available for 128 countries. In addition we use corruption measures from three alternative sources (World Bank, Institute for Management Development and Transparency International) which are discussed below.

3.3. Specification

As noted above, the theoretical and empirical literature have identified a number of determinants of corruption. On the one hand there are direct internal and external control mechanisms. On the other hand there are more indirect determinants such as distortions and sociological determinants of higher corruption. This suggests that estimates of corruption should at least include proxies for the direct control mechanisms which leads to our following preferred specification:

$$\mathrm{CORR}_i = \beta_0 + \beta_1 \mathrm{PRESS}_i + \beta_2 \mathrm{BUREAU}_i + \beta_3 \mathrm{RULE}_i + \varepsilon_i. \quad (1)$$

We are mainly interested in the sign and the significance of β_1 which we expect to be significantly negative since a higher value of CORR means less corruption and a higher value of PRESS means less press freedom. The indicator of internal control BUREAU is a measure of the quality of the bureaucracy. The variable is provided annually for a large number of countries by ICRG based on evaluations from country experts.[6] It indicates the degree of ''autonomy [of the bureaucracy] from political pressure'' the ''strength and expertise to govern without drastic changes in policy or interruptions in government services'' as well as the existence of ''established mechanisms for recruiting and training''. A higher value of this indicator means better quality of the bureaucracy so that we expect β_2 to be positive. RULE is our measure of external control and is also provided by ICRG. The indicator marks the presence of ''sound political institutions, a strong court system, and provisions for an orderly succession of power'' and reflects the degree to which ''citizens of a country are willing to accept the established institutions to make and implement laws and adjudicate disputes''. This broad measure covers not only external control through checks and balances but also the degree to which citizens exercise control power. The higher this indicator the better established is the rule of law so that we expect β_3 to be positive. These variables are available for a large number of countries, which allows us to estimate this specification even for corruption measures where we have relatively small country samples.

[6]Sources and precise description of data for control variables are in Appendix A. To reduce endogeneity problems the timing of independent variables is chosen such that they are long averages for a period (10–15 years) previous to the corruption measure.

In addition, we test a second, broad specification which includes a number of the other potentially relevant determinants of corruption discussed above:

$$\begin{aligned} \mathrm{CORR}_i = {} & \beta_0 + \beta_1 \mathrm{PRESS}_i + \beta_2 \mathrm{BUREAU}_i + \beta_3 \mathrm{RULE}_i + \beta_4 \mathrm{GDP}_i \\ & + \beta_5 \mathrm{HUMCAP}_i + \beta_6 \mathrm{TRADE}_i + \beta_7 \mathrm{BLACK}_i + \beta_8 \mathrm{ETHNIC}_i + \varepsilon_i. \end{aligned} \tag{2}$$

This specification includes two more proxies for external control, two proxies for distortions and one proxy for cultural factors. GDP and HUMCAP measure the level of per capita GDP in 1995 (calculated at purchasing power parity), and the educational attainment. Both of these variables proxy for external controls since the ability of civil society to judge government performance and act as an external control on corruption in the administration tends to increase with the level of development (see, e.g., Ades and Di Tella, 1999). We therefore expect β_4 and β_5 to be positive. TRADE and BLACK are proxies for distortions and restrictions of competition in an economy. TRADE measures the exposure of an economy to foreign trade and is defined as the sum of exports and imports as a percentage of GDP. For instance Ades and Di Tella (1999) argue that open countries are subject to larger competitive pressure that in turn reduces monopolistic rents and thus corruption. β_6 is therefore expected to be positive. BLACK measures the black market premium on foreign exchange and is a broad indicator of the degree of government-created distortions in an economy and we expect β_7 to be negative. Finally ETHNIC measures the degree of ethnolinguistic diversity which is a proxy for the cultural background of a country. Mauro (1995) has found a positive correlation between this variable and corruption and we expect β_8 to be negative. This second specification captures almost all relevant variables discussed in Section 2.

3.4. Econometric methodology

The dependent variable is the corruption measure from ICRG. We use a short average of this index (1994–1998) in order to match the timing with our main measure of press freedom while avoiding shocks which would be particular to 1 year (e.g., a financial crisis) and which might affect corruption ratings that are based on subjective evaluations. The dependent variable is therefore a continuous variable and this allows estimates using ordinary least squares. An alternative strategy would be to use the last available value of corruption as dependent variable. In this case the dependent variable can only take on integer values and the ordered probit model is the appropriate method. In the econometric analysis we also show estimates for an ordered probit model for corruption values in a single year.

We conduct tests to determine whether the relationship between press freedom and corruption is driven by outliers or by the difference between developed and less developed countries. We test extensively for robustness to measurement of both the corruption and the press freedom variables. White's test for heteroskedasticity in the residuals of the basic specification rejects the null of no heteroskedasticity, thus all standard errors of coefficients are calculated using White (1980) correction.

A potential criticism is that press freedom may be endogenous since corrupt regimes may tend to limit press freedom. In theory this effect should only be relevant where corruption is systemic, i.e., where all journalists participate in the revenues from corruption or where there is a political machine and extreme repression. In all other cases the causality is likely to run from press freedom to corruption rather than the other way around. The reason is, that journalists have incentives to uncover corruption and it is unlikely that all journalists can be brought to cooperate in corrupt arrangements. Such a cartel would be difficult to sustain in an environment with many independent journalists and high reputational profits from uncovering corrupt arrangements.

On the empirical level we address this issue of endogeneity in three ways. First we exclude the countries with highly repressive regimes from the sample. Second we use several instruments for press freedom and finally we exploit the time series dimension of alternative data set on press freedom. It should be said from the beginning that we cannot fully resolve the issue of causality since we have only imperfect instruments and little time series variation to work with.

4. The cross-section results

Fig. 1 shows a scatterplot that illustrates the close relationship between corruption and press freedom. Recall that the negative relationship observed in the figure implies that less corruption is associated with more press freedom. Inspection of the raw data suggests that there exist no important outliers.

Table 1 presents the cross-section results. The dependent variable is the average corruption level from 1994 to 1998. Column (1) shows the result for the base specification which includes 125 countries. The coefficient of the indicator of press freedom has the expected negative sign and is significant at conventional confidence levels. The coefficients of both control variables have a positive sign and are significant at the 1% level. This indicates that, as expected, corruption is lower in countries with a well-working bureaucracy and in countries with a well-established rule of law. The base specification explains two-thirds of the variation in the corruption levels between countries.

Column (2) documents that the significant relationship between press freedom

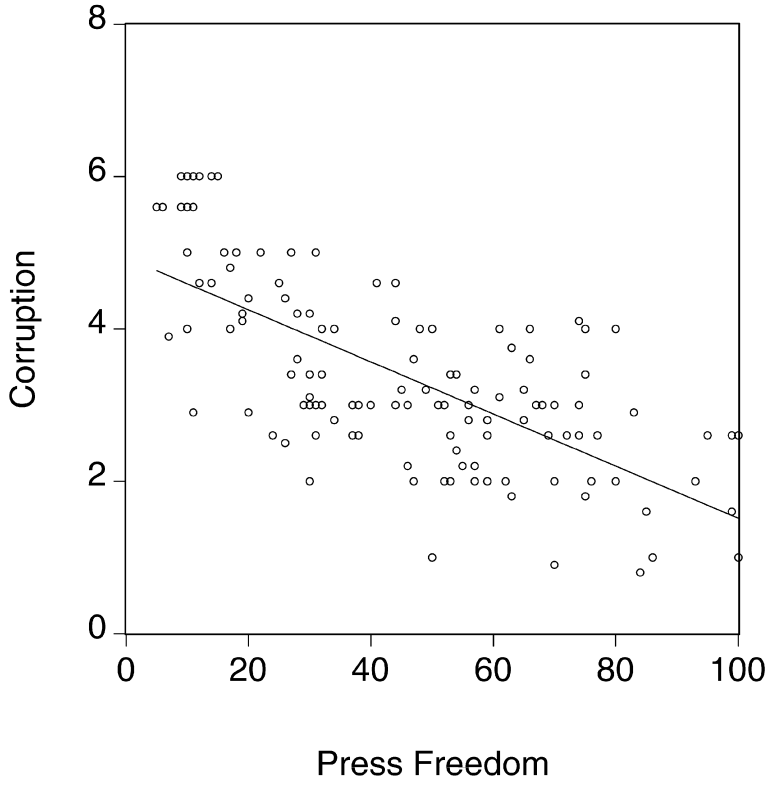

Fig. 1. Corruption and press freedom. Note: corruption index ranges from 0 (highest corruption) to 6 (lowest corruption), index of press freedom ranges from 0 (highest press freedom) to 100 (lowest press freedom).

and corruption is not driven by the differences between developed and less developed countries alone. This regression estimates the base specification for a sample containing only less developed (non-OECD) countries. The coefficient of PRESS is significant and of the expected sign. BUREAU remains significantly related to corruption whereas the coefficient of RULE is not significant in this regression. Compared to regression (1) the adjusted R^2 drops sharply from 0.67 to 0.38 indicating that including the developed countries in the sample improves the fit of the regression. To exclude possible outliers we restricted the sample to observations with residuals plus minus two standard deviations (results not reported). The results are not affected (the coefficient of press freedom is 0.017 with a t statistic of 5.4. Column (3) shows the results of a two-stage least squares

Table 1
Dependent variable: average corruption in 1994–1998

	(1) OLS	(2) OLS (LDCs only)	(3) TSLS	(4) OLS	(5) OLS (LDCs only)	(6) OLS	(7) TSLS
Constant	2.560	2.614	3.392	1.945	1.506	2.946	4.139
	(10.508)	(10.516)	(5.003)	(1.721)	(1.260)	(2.180)	(1.867)
PRESS	−0.017	−0.015	−0.028	−0.017	−0.015	−0.020	−0.037
	(−6.350)	(−4.789)	(−3.266)	(−4.023)	(−3.501)	(−4.439)	(−1.926)
BUREAU	0.220	0.254	0.221	0.200	0.128	0.089	0.073
	(2.893)	(2.708)	(2.310)	(2.058)	(1.220)	(0.942)	(0.663)
RULE	0.265	0.146	0.143	0.259	0.068	0.154	0.044
	(3.482)	(1.624)	(1.527)	(2.583)	(0.607)	(1.530)	(0.251)
log(GDP)				0.104	0.226	0.107	0.127
				(0.681)	(1.358)	(0.538)	(0.523)
HUMCAP				−0.043	−0.085	−0.052	−0.064
				(−1.007)	(−1.562)	(−1.058)	(−1.088)
TRADE				0.002	0.004	0.003	0.003
				(1.103)	(2.091)	(1.358)	(1.367)
BLACK				0.001	0.001	0.001	0.001
				(1.882)	(1.288)	(1.350)	(0.730)
ETHNIC				−0.246	−0.053	−0.457	−0.410
				(−0.690)	(−0.154)	(−1.170)	(−1.021)
AFRICA						−0.142	−0.102
						(−0.521)	(−0.252)
LATIN						−0.563	−0.857
						(−2.298)	(−2.530)
OECD						0.419	0.075
						(0.983)	(0.150)
Observations	125	93	104	68	47	68	68
Adjusted R^2	0.67	0.38	0.67	0.74	0.38	0.77	0.72

t Statistics in parentheses; White-corrected standard errors; political rights as instrument in Columns (3) and (7).

estimation instrumenting with the level of political rights.[7] The result of the

[7]In OLS a good instrument is highly correlated with the instrumented variable but orthogonal to the residual. On this account the political rights instruments could be problematic since there may be multiple interactions between various features of a political system and bureaucratic outcomes. However, it is not obvious that more autocratic countries should a priori be more corrupt and vise versa. Corruption has been known to flourish in democracies as well as in autocracies. Ades and Di Tella (1999), for instance, fail to find a significant positive relationship between political rights and low corruption and explain this finding with the fact that a number of countries such as Iraq, Hong Kong and Singapore combine low corruption with low levels of political rights. By the same token, democracy does not automatically reduce corruption but only through its effect on improving the level of external and internal controls on the bureaucracy, e.g., through the control exercised through a free press. In this view it seems reasonable to assume that our instrument is uncorrelated with the error term.

estimates remain largely unchanged compared with the previous estimates the size of the coefficient on press freedom is larger.[8]

Column (4) includes other variables that could impact on corruption. The coefficient PRESS is again significant at conventional confidence levels and the coefficients of BUREAU and RULE remain positive and significant. The coefficient of the logarithm of GDP per capita has the expected positive sign whereas the measure of human capital is negatively related with corruption. Both coefficients are however, insignificant. The coefficients of the two variables that proxy for distortions in the economy are both insignificant. Whereas TRADE has the expected positive sign, the positive coefficient of BLACK is unexpected. Finally the proxy for the degree of cultural fractionalization ETHNIC has the expected negative sign but is insignificant. Adding these explanatory variables only marginally improves the fit of the regression (the adjusted R^2 increases from 0.67 to 0.74) but comes at the cost of reducing the sample size significantly. Column (5) reduces the sample to the less developed countries and shows that the relationship between press freedom and corruption holds also for within this set of countries in the extended specification.

Column (6) show the results of another sample test; it checks whether there are differences among continents that are not captured in the explanatory variables used in the broad specification. The result on press freedom is unchanged and only the Latin American continent dummy is significant. Finally, Column (7) shows the two-stage least-square estimates for this specification. Again the results are largely unchanged, although the significance of the indicator of press freedom drops somewhat.

Given that all other control variables are insignificant, and that sample size is a consideration in the following sections, we will estimate the base specification in the remainder of this paper.

Overall the results presented in Table 1 indicate that there is a close relationship between press freedom and corruption which is robust to specification and sample variation. Furthermore, the effect of press freedom on corruption is sizable. The absolute value of the coefficient varies between 0.017 and 0.028 for the full sample of countries. This means that an improvement of 46 points in the press freedom indicator (that is a move of the average country to full press freedom) could reduce corruption by about 1 point.[9] With the mean corruption at 3.4 (on a scale from 0 (highest) to 6 (lowest corruption)) this implies that a complete move to press freedom would lead to a dramatic reduction of corruption in the average

[8]Tests for nonlinear relationships did not produce better fits of the data.

[9]Alternatively, a improvement of press freedom by one standard deviation decreases corruption by about 0.5 points.

country. This does not include any indirect effects that higher press freedom might have through improving other bureaucratic controls and other external controls.

We conducted additional tests of sensitivity to specification not reported in the tables. We included in the base specification one by one, inflation, government consumption, a different measure of openness (provided by Sachs and Warner, 1995) and a different measure of human capital (secondary school enrollment) as further determinants of corruption. However, these variables were insignificant and the result on press freedom was unchanged.[10] We substituted BUREAU with more direct measures of internal controls, namely an index of meritocracy and of relative salaries between civil servants and private sector employees (both provided by Rauch and Evans (2000)). Both indicators are only available for 35 less developed countries and the results are similar to those obtained in Table 1, Column (2), for the sample of developing countries.

We now turn to an alternative estimation model. The corruption measure used in Table 1 is a continuous variable by virtue of averaging 4 years of an ordered variable that can only take on discrete values between 0 and 6. However, one could argue that averaging does not really change the discrete nature of the measure which could be interpreted simply as an ordering. This interpretation would be pertinent if the indicators were based on country rankings rather than numerical ratings, but most expert surveys provide explicit numerical ratings with the understanding that they are linear. Supposedly it is for this reason that the literature on determinants of corruption has so far treated the corruption indicators as a continuous variable and has used OLS estimates. However, under the interpretation of an ordered variable, OLS would not be appropriate since this method treats the difference from one value to the next equally, although it is only a ranking. To address this issue, and test its influence on the results, in Table 2 we show results of ordered probit estimates of the basic specification using the corruption value for one single year.

The equations show that press has the expected negative sign and the z value indicates that it is significant at conventional levels. The same applies to the other two control variables. The interpretation of coefficients in the ordered probit model is not straightforward (see Greene, 1997), therefore in the bottom panel we show the marginal effects of the changes in the regressors. Since in all classes the marginal effects are evaluated at the mean of the respective explanatory variable the sign must change when moving from lower to higher classes. Take for instance a large value of PRESS. If our reasoning is correct this should reduce the probability for a country to have high corruption ratings (e.g., classes 1 or 2) and vice versa for small values of PRESS. The signs of the marginal effects displayed in Table 2 show that this is indeed the case as these effects are negative for the

[10]The finding on inflation is consistent with Braun and Di Tella (2000).

Table 2
Ordered probit estimation; dependent variable corruption in 1995

Variable	Coefficient	Std. error	z Statistic
PRESS	−0.0169	0.0050	−3.3824
BUREAU	0.3504	0.1162	3.0162
RULE	0.3712	0.1177	3.1546
Observations:		127	
Likelihood ratio index:		0.28	

Marginal effects (*evaluated at the mean of each variable*)

Variable	Class 1	Class 2	Class 3	Class 4	Class 5	Class 6	Class 7
PRESS	−0.000012	−0.00023	−0.00181	−0.00467	0.00348	0.00295	0.00030
BUREAU	0.00024	0.00485	0.03750	0.09691	−0.07220	−0.06118	−0.00613
RULE	0.00025	0.00514	0.03973	0.10267	−0.07650	−0.06481	−0.00649

low classes of corruption and switch to positive in the high classes. The signs of the marginal effects are as expected for the other two control variables as well. In the remainder of the paper we only report the OLS results because they can be interpreted more readily. Using ordered probit estimations does not alter any results.

Next we address possible concerns about endogeneity. Table 3 presents the results from a sample test and estimates with alternative instruments for press freedom.

Recall from above that the danger of reverse causality should be largest in authoritarian and repressive regimes (that also happen to be corrupt) where the press would be stifled. Column (1) demonstrates that the relationship between press freedom and corruption exists also for the sample of countries that cannot be classified as repressive. The estimate includes the controls of the base specification (not shown) but excludes all countries that are classified as authoritarian, according to Gastil (1989). The number of observations drops substantially but the results on PRESS are not affected.[11] Alternatively by restricting the sample to medium and low corruption countries we obtain the same results.

Columns (2) and (3) are variants of the TSLS estimates in Table 1. Column (2) shows the results using the Jaggers and Gurr (1996) democracy measure as an instrument. In Column (3) press freedom is instrumented with a proxy for European influence, the fraction of protestants in the population and the fraction of

Table 3
Sample tests and two-stage least-square estimates using various instruments[a]

	(1) OLS excluding repressive regimes[b]	(2) TSLS Instr: democracy	(3) TSLS instr: fraction of Protestants, fraction of European language
PRESS	−0.017	−0.016	−0.012
	(−3.072)	(−3.109)	(−2.135)
Adjusted R^2	0.72	0.69	0.46
Number of observations	62	113	66

t Statistics in parentheses; White-corrected standard errors.

[a] All estimates include a constant as well as BUREAU and RULE as additional control variables (not shown).

[b] Defined as an average a value of the Gastil political rights index of higher than 5 (on the scale from 1 to 7 = most authoritarian).

[11] This result is robust to a higher or lower cut off for the definition of a authoritarian regime as well as using the democracy measure by Jaggers and Gurr (1996) to define this cut off.

the population that speaks a European Language as their first language.[12] The results are similar to those obtained earlier.[13]

5. Sensitivity of the results to measurement

The last section has shown results for specific measures of corruption and press freedom. This raises the question whether these results are characteristics of this data since both corruption and press freedom are not easily observable. In this section we use alternative corruption measures and alternative measures of press freedom in order to address this question.

5.1. Alternative corruption measures

We test the robustness of the results by using three other measures of corruption. All of them are based on surveys and they cover a smaller number of countries than the measure by ICRG. The first is a measure of corruption for 1997 based on a firm level survey done for the World Bank's World Development Report 1997.[14] The second corruption indicator is from the annual business executive's survey done by the Institute for Management Development for the World Competitiveness Report. The last indicator is from Transparency International and is based on a 'poll of polls', an average of about five different corruption indices. We use the 1998 value of this indicator.

Table 4 shows regression results for each of these corruption measures. In all cases the indicator of press freedom has the expected sign and is significant at the 10% level in the estimates of two out of the three regressions. It is not significant in the regressions at the corruption indicator provided by IMD. This seems partly to be due to sample composition since IMD includes mostly industrialized

[12]A key feature of Western European expansion around the world was the value attributed to freedom of speech, which of course implies press freedom. Since the expansion of European values can be taken as exogenous, indicators of European influence can serve as instruments. We follow Hall and Jones (1999) and use the fraction of Western European languages (English, French, German, Portuguese, and Spanish) spoken as a first language as a proxy for European influence. A second, measure of a particular kind of European values is given by the fraction of protestants in the population. The other instruments used in Hall and Jones (1999) are the distance from the equator and the predicted trade share of the economy, based on a gravity model. However, these variables are not necessarily natural measures of European influence and indeed their correlation with press freedom is low. The same is true for an indicator of French legal origin.

[13]Hausmann's test of overidentifying restrictions could not reject the exogeneity of the instruments on conventional levels (P value >0.4).

[14]See Brunetti et al. (1998) for a more detailed presentation of the survey.

Table 4
Testing the effects of press freedom for alternative corruption measures[a]

Dep. variable:	Corr-IMD	Corr-WB	Corr-TI
PRESS	0.008	−0.010	−0.028
	(0.364)	(−1.738)	(−2.667)
Observations	46	55	78
Adj. R^2	0.67	0.42	0.71

t Statistics in parentheses; White-corrected standard errors.
[a] All estimates include a constant as well as BUREAU and RULE as additional control variables (not shown).

countries with high ratings in BUREAU and RULE but little variation among themselves.

5.2. Alternative measures of press freedom

As a next step we check whether the results are confirmed by an alternative measure of press independence collected by Humana (1992) for the World Human Rights Guide. This guide contains five indicators related to media freedom, all ranging from 0 (least freedom) to 3 (most freedom). The indicators measure political censorship of the press, independence of newspapers, independence of book publishing, independence of radio and television networks and the possibility to teach ideas and receive information all for the year 1991.

Table 5 shows the results of the basic specification for the overall indicator of press freedom as well as for individual subcomponents. The indicator of overall press freedom is the sum of the sub-indicators; it is scored from 0 (no press

Table 5
Testing alternative measures of press freedom (dependent variable: average corruption in 1994–1998)[a]

	Measure for press freedom				
Press freedom measure:	Overall press freedom	Censorship (lack of)	Independence newspapers	Independence book publishing	Independence broadcasting
	0.052	0.257	0.118	0.228	0.154
	(2.915)	(2.970)	(1.650)	(2.348)	(2.087)
Observations	97	98	98	98	98
Adj. R^2	0.63	0.63	0.60	0.62	0.61

t Statistics in parentheses; White-corrected standard deviations.
[a] All estimates include a constant as well as BUREAU and RULE as additional control variables (not shown).

freedom) and 15 (highest press freedom) therefore we expect a positive relation with corruption.

The overall indicator has the expected sign and is highly significant. The results for the individual subcomponents give more detailed information on the relationship. They are all significant, however, the sizes of the coefficient indicates that lack of censorship may be the strongest curb on corruption. Interestingly, the relationship between independent newspapers and broadcasting with low corruption is less strong. Independence of newspapers is just significant at the 10% level. In economic terms, the effect of press freedom on corruption is somewhat smaller than the one found earlier: here a one standard deviation improvement in overall press freedom reduces corruption by 0.25 points. Overall the results indicate that the relationship between press freedom and corruption is robust to alternative measurements.

6. Panel data evidence

This subsection presents some panel data evidence using a 5-year panel with the Humana press indicator (which is available for three individual years) and a yearly panel for the Freedom House press indicator (1996–1999). Both panels use the ICRG corruption index, the only one that offers time series. It is worth noting that by and large the corruption data varies more across countries than over time, which is probably due to the fact that changes in corruption levels within a country are difficult to detect and may take a long time. The within country variation is only 13% of the total variation. Therefore, much of the research on determinants of corruption has focused on the cross-section.

In Table 6 we present results from both panels. Columns (1) and (2) use the Humana Index and Columns (3) and (4) the Freedom House press indicator.

Column (1) includes country fixed effects in the base specification. We find that the coefficients of press freedom are significant and of the expected sign (positive for the Humana Press index and negative for the Freedom House indicator) though smaller than in the cross-section estimates. The Humana indicator is measured (approximately) at the beginning of each 5-year period while the corruption and the control variables are 5-year averages. This contributes to mitigate the concerns about causality. Column (2) includes GDP per capita as a further control variable. The results are not altered. Columns (3) and (4) relate to the yearly panel for the mid to end 1990s. For this period our standard control variables (BUREAU and RULE) were not available, thus we run more parsimonious regressions. Regression (3) finds that the 1-year lagged panel indicator of press freedom is significantly associated with lower corruption (expected sign is negative for this indicator). The coefficient is much smaller though than the one found in the

Table 6
Panel data evidence[a]

Dep. variable:	(1) Corr-ICRG 5-year averages 1982–1995	(2) Corr-ICRG 5-year averages 1982–1995	(3) Corr-ICRG yearly panel 1996–1998	(4) Difference in log Corr ICRG, yearly panel 1996–1998
PRESS[b]	0.028	0.027		
(Humana)	(2.333)	(2.421)		
PRESS[c]			−0.004	−0.092
			(−3.906)	(−1.909)
LOG (GDP)		−0.945		
		(−2.747)		
Lagged LOG			0.861	
(Corr-ICRG)			(38.029)	
Fixed Effects	Yes	Yes	No	No
Observations	155	150	497	491
Number of countries	70	70	125	125
Adj. R^2	0.84	0.86	0.85	0.005

t Statistics in parentheses; White-corrected standard errors.

[a] Columns (1) and (2) include BUREAU and RULE and Columns (3) and (4) a constant (not shown).

[b] Measured at the beginning of the period (i.e., 82, 86 and 92). Expected sign for Press indicator from Humana is positive.

[c] Using the 1 year lagged value in Column (3) and the log difference in Column (4). Expected sign for press indicator from Freedom House is negative.

cross-section estimates. The coefficient of the 1-year lagged endogenous variable shows that corruption is highly persistent. We also tested fixed and random effects with the lagged press indicators only (i.e., excluding the lagged endogenous since it would lead to biased results): press was significant in the random effects regression but not significant in the fixed effects regression. One way of addressing the problem of omitted variables that are country specific and vary little over time is to look at first differences. In this short period of time many of the fundamental determinants of corruption can be assumed to be time invariant. Thus, the last regression (4) uses first (log) differences and again finds that an increase in press freedom is associated with a decrease in corruption.

7. Conclusions

The empirical evidence presented in this paper shows a strong association between the level of press freedom and the level of corruption across countries. The results suggest that an independent press may represent an important check against corruption. This result is not sensitive to the specifications estimated and

for alternative measures of corruption and press freedom. Theoretical considerations, estimations with various instruments as well as panel data evidence suggest that the causation runs from more press freedom to less corruption. All in all the results indicate that press freedom might be an important check on corruption.

How much improvement in corruption can countries expect from more press freedom? The estimated coefficients range from −0.015 to −0.037. This suggests that an improvement of one standard deviation in press freedom could reduce corruption between 0.4 and 0.9 points (on the scale form 0 to 6). Alternatively, one could ask how much an improvement in press freedom to the level of Norway (the country with the freest press) would affect the corruption index for countries with particularly repressive practices. Even using the lower bound of the estimates we find that the effect might be substantial. By way of illustration, in the case of Indonesia it would mean a reduction in corruption to the level of Singapore, for the Russian Federation it would imply reaching the corruption level of the Slovak Republic, and for Nigeria the level of Belgium.

Acknowledgements

We thank two referees, Boris Zürcher, Peter Kugler, George Sheldon, and seminar participants at the University of Basel, the University of Saarland, the University of St. Gallen and the University of Fribourg for helpful comments. Financial support from the WWZ Förderverein is gratefully acknowledged.

Appendix A. Data definitions and sources

PRESS	Press freedom in 1997 for the cross-section estimates and yearly data from 1996–1999 in the panel estimates (*Freedom House*) (0 = highest, 100 = lowest level of press freedom)
PRESS (Humana)	Press freedom in 1982, 1986 and 1991 (Humana, 1992) (0 = lowest, 15 = highest level of Press Freedom)
Corr-ICRG	Average corruption 1994–1998 (*International Country Risk Guide*) (1 = highest, 6 = lowest level of corruption)
BUREAU	Average quality of the bureaucracy 1982–1995 (*International Country Risk Guide*) (1 = lowest, 6 = highest level of bureaucratic quality)
RULE	Average rule of law 1982–1995 (*International Country Risk Guide*) (1 = lowest, 6 = highest level of rule of law)
HUMCAP	Average educational attainment (Nehru et al., 1995)
TRADE	Average Trade ((Export + Import)/GDP) 1970–1992 (*The World Bank, World Development Indicators*)

BLACK	Black market premium on foreign exchange 1974–1989 (*Pick's Currency Yearbook*)
ETHNIC	Ethnolinguistic fractionalization (Easterly and Levine, 1997)
POLRIGHTS	Average political right 1974–1989 (Gastil, 1989),
GDP	GDP per capita in PPP terms, 1995 (*The World Bank, World Development Indicators*)
DEMOCRACY	Level of democracy (Jaggers and Gurr, 1996) (0 = lowest, 10 = highest level of democracy)
Frac Prot	Fraction of Protestants in a country (La Porta et al., 1998)
Frac Eur	Fraction of European Languages spoken in a country (Hall and Jones, 1999)
Corr-IMD	Corruption indicator in 1996 (*Intern. Institute for Management Development*)
Corr-WB	Corruption indicator in 1997 (Brunetti et al., 1998) (1 = highest, 6 = lowest level of level of corruption)
Corr-TI	Aggregate corruption indicator for 1998 (*Transparency International*) (0 = highest, 10 = lowest level of level of corruption)

Table A.1. Descriptive statistics

	PRESS	BUREAU	RULE	Log(GDP)	HUMCAP	TRADE	BLACK	ETHNIC	Corr-ICRG	PRESS (Humana)
Mean	46.23	3.20	3.33	8.39	5.82	71.98	57.42	0.42	3.37	8.92
Median	47.00	3.00	3.04	8.34	5.73	61.90	9.21	0.43	3.00	10.00
Maximum	100.00	6.00	6.00	10.54	12.58	328.12	732.44	0.92	6.00	15.00
Minimum	5.00	0.89	0.90	6.11	0.57	12.86	−0.27	0.00	0.80	0.00
S.D.	24.51	1.52	1.49	1.12	2.71	42.31	121.75	0.30	1.22	4.89
Observations	145	129	129	122	82	137	96	99	128	99

Table A.2. Correlation matrix

	PRESS	BUREAU	RULE	Log(GDP)	HUMCAP	TRADE	BLACK	ETHNIC	Corr-ICRG
PRESS	1.00								
BUREAU	−0.63	1.00							
RULE	−0.73	0.87	1.00						
Log(GDP)	−0.69	0.80	0.83	1.00					
HUMCAP	−0.60	0.69	0.64	0.79	1.00				
TRADE	−0.01	0.20	0.20	0.22	0.14	1.00			
BLACK	0.34	−0.32	−0.39	−0.45	−0.41	−0.11	1.00		
ETHNIC	0.47	−0.36	−0.41	−0.60	−0.47	−0.11	0.41	1.00	
Corr-ICRG	−0.74	0.79	0.83	0.75	0.58	0.20	−0.28	−0.43	1.00

References

Ades, A., Di Tella, R., 1999. Rents, competition and corruption. American Economic Review 89, 982–993.

Bardhan, P., 1997. Corruption and development. Journal of Economic Literature 25, 1320–1346.

Besley, T., McLaren, J., 1993. Taxes and bribery: the role of wage incentives. Economic Journal 103, 119–141.

Braun, M., Di Tella, R., 2000. Inflation and Corruption, mimeo, Harvard University.

Brunetti, A., Kisunko, G., Weder, B., 1998. Credibility of rules and economic growth: evidence from a worldwide survey of the private sector. World Bank Economic Review 12, 353–384.

De Soto, H., 1989. In: The Other Path. Harper & Row, New York.

Easterly, W., Levine, R., 1997. Africa's growth tragedy: policies and ethnic divisions. Quarterly Journal of Economics 112, 1203–1250.

Flatters, F., MacLeod, B., 1995. Administrative corruption and taxation. International Tax and Public Finance 2, 397–417.

Freedom House, 1997. Press Freedom World Wide, www.freedomhouse.org/Press/Press97/ratings97.

Gastil, R., 1989. In: Freedom in the World: Political Rights and Civil Liberties 1988–1989. Freedom House, Lanham.

Greene, W., 1997. In: Econometric Analysis, 3rd Edition. Prentice-Hall International, London.

Hall, R., Jones, C., 1999. Why do some countries produce so much more output per worker than others? Quarterly Journal of Economics 110, 495–525.

Hindricks, J., Keen, M., Muthoo, A., 1999. Corruption, extortion and evasion. Journal of Public Economics 74, 395–430.

Humana, C., 1992. In: World Human Rights Guide, 3rd Edition. Oxford University Press, New York, Oxford.

Jaggers, K., Gurr, T., 1996. Polity III: Regime Type and Political Authority, 1800–1994, mimeo Inter-University Consortium for Political and Social Research, Ann Arbor.

Johnson, S., Kaufman, D., Zoido-Lobaton, P., 1998. Regulatory discretion and the unofficial economy. American Economic Review Papers and Proceedings 88, 387–392.

Kaufman, D., 1997. Corruption: the facts. Foreign Policy 107, 114–131.

Klitgaard, R., 1988. In: Controlling Corruption. University of California Press, Berkeley, CA.

Knack, S., Keefer, P., 1995. Institutions and economic performance: cross-country tests using alternative institutional measures. Economics and Politics 7, 207–227.

La Porta, R., Lopez-de-Silanes, F., Shleifer, A., Vishny, R., 1998. The Quality of Government. NBER Working Paper 6727. National Bureau of Economic Research, Cambridge, MA.

Lee, R., 1986. Bureaucratic corruption in Asia: the problem of incongruence between legal norms and folk norms. In: Carino, A. (Ed.), Bureaucratic Corruption in Asia: Causes, Consequences, and Controls. NMC Press, Quezon City.

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

Mauro, P., 1996. The effects of corruption on growth, investment and government expenditure. Journal of Public Economics 69, 263–279.

Nehru, V., Swanson, E., Dubey, A., 1995. A new database on human capital stock: sources, methodology and results. Journal of Development Economics 46, 379–401.

Rahman, R., 1986. Legal and administrative measures against bureaucratic corruption in Asia. In: Carino, A. (Ed.), Bureaucratic Corruption in Asia: Causes, Consequences, and Controls. NMC Press, Quezon City.

Rauch, J., Evans, P., 2000. Bureaucratic structures and economic performance in less developed countries. Journal of Public Economics 75, 49–71.

Rose-Ackerman, S., 1975. The economics of corruption. Journal of Political Economy 83, 187–203.

Sachs, J., Warner, A., 1995. Economic reform and the process of global integration. Brookings Papers of Economic Activity 1, 1–118.

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

Tanzi, V., 1994. Corruption, Governmental Activities and Markets. IMF Working Paper 94/99. International Monetary Fund, Washington, DC.

Van Rijckeghem, C., Weder, B., 2001. Corruption and the rate of temptation: do low wages in the civil service cause corruption. Journal of Development Economics 65, 307–331.

White, H., 1980. A heteroskedasticity-consistent covariance matrix estimator and a direct test for heteroskedasticity. Econometrica 48, 817–838.