The effect of democracy and press freedom on corruption: an empirical test

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Abstract

This paper tests the effect of democracy and press freedom on corruption. The empirical investigation carried out in this paper suggests that democracy and press freedom can have significant impact on corruption.
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1. Introduction

The purpose of this paper is to empirically test the effect of democracy and press freedom on corruption. The existing empirical evidence on the impact of democracy and press freedom is at best mixed. While Besley and Burgess (2002) confirmed the role of both democracy and press freedom on public policies in India, Brunetti and Weder (2003) did not find any impact of democracy on corruption in a cross-country analysis. Similarly, Treisman (2000) found that while a long exposure to democracy reduces corruption, a current degree of democracy is not significant to reduce corruption.

Following Persson and Tabellini (2000), we propose the following channel, which shows the way democracy and press freedom may work to combat corruption. The presence of press freedom brings public corruption cases to the voters while voters in a democracy in turn punish corrupt politicians by

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ousting them from public offices. Hence, elected politicians react to the voters by reducing corruption. Therefore, the whole mechanism can be schematically summarized:

Press freedom → Voters′ state of knowledge → Democracy → Selection of political parties

→ State of corruption

Our paper differs from the previous literature at least in two important aspects. First, as we will see in the next section, we use a more objective measure of democracy that accounts for two important dimensions: political competition and voters' participation. A difficulty of past studies, for instance, Brunetti and Weder (2003), and Treisman (2000), is that they often define democracy as a phenomenon across countries that can be captured by a bivariate variable while the reality is probably more complex. Second, we test the effect of voters' state of knowledge influenced by the degree of press freedom on corruption while controlling for democracy.

2. Measures of democracy, press freedom and corruption

As a quantitative measure of corruption, we have used the corruption perception index (henceforth CPI) published annually by the Transparency International (TI). The CPI measures the degree of corruption as seen by business people, academics and risk analysts, and ranges between 10 (highly clean) and 0 (highly corrupt).[1]

For democracy, we have used Vanhanen's democratization index (henceforth VDI). The VDI is based on two dimensions, public contestation and the right to participate, which are named as *competition* and *participation*, respectively.[2] Competition is based on the electoral success of the smaller parties and calculated by subtracting the percentage of the votes won by the largest party from 100%. For participation, the percentage of the population that actually voted in these elections is used as a measure. For democracy, the author constructed an equally weighted index of democratization (henceforth *democracy*) by multiplying competition and participation and dividing the outcome by 100 which the author considers as the principal indicator of democracy (Vanhanen, 1992, pp. 22–23).

Press freedom is a measure of the press freedom of countries conducted by the Freedom House annually since 1979. The index has three components: first, laws and regulation; second, political pressure, controls and violence; third, economic pressure and control. Each of these components is based on multiple criteria. Each country's rating and score is based on a total of three categories where the higher the number the lower the press freedom.[3]

Like many other subjective indices, CPI and press freedom are subject to multiple criticism. However, despite criticism, these indices have been extensively used in empirical economics literature.[4] Nonetheless, evidences based on such indices should be interpreted with cautions.

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[1] See www.tranparency.org and Lambsdorff (2002) for details.
[2] As mentioned in Vanhanen (1992), these two measures of democracy are based on Dahl (1971).
[3] See http://www.freedomhouse.org and Sussman and Karlekar (2002) for details.
[4] See, for instance, Mauro (1995), Barro (1996, 1999), that use such subjective indices.

3. Estimating the effects: empirical evidences

How much do the democracy and the press freedom matter for controlling corruption? To see this, we carry out a regression analysis for a cross section of countries and use OLS regressions, robustness analysis, instrumental variable regressions, static panel analysis and dynamic panel analysis.

We start our estimation with a parsimonious form where corruption depends primarily on democracy and press freedom. Column 1 in Table 1 reports the OLS regression of CPI for the year 2002 on democracy and press freedom for the year 2000. It suggests that democracy and press freedom have a significant impact on the observed corruption and the presence of democracy and press freedom can reduce the level of corruption significantly: the partial effect of democracy and press freedom are 4.8% and 5.1%, respectively. Column 2 splits democracy into its two components, competition and participation and put them together with the press freedom. It shows that it is the participation part of democracy that is statistically important to prevent corruption. Though we will not report, notably this finding remains robust when we explore alternative methods and specifications.

3.1. Robustness analysis

There is a number of potential problems of OLS regressions such as omitted variables, endogeneity, and measurement errors. To address this issue of omitted variable bias, we have carried out a robustness analysis controlling for additional variables. Needless to say that it is impossible to control for all possible variables that might be correlated with democracy and press freedom and corruption. Columns 3 to 9 in Table 1 report the robustness of the OLS results.

We start with the openness to international trade. Since barriers to trade create opportunities for public diversion, openness to trade could be related to corruption as well as democracy and press freedom. We use the Sachs and Warner (1995) openness index (henceforth S–W Openness) and Frankel and Romer (1996) predicted trade share (henceforth Frank–Rom). Columns 3 and 4 of Table 2 report the estimated coefficients. As can be seen from the table, openness of an economy significantly reduces the extent of its corruption. However, addition of this factor does not change the role of democracy and press freedom in combating corruption.

The second set of controls that we have tested is related to income and regional characteristics. However, there could be a couple of identification problems linked to the inclusion of income as an exogenous variable. There is no doubt that democracy, press freedom, corruption and other institutional variables evolve jointly with economic variables, and Barro (1999) maintains that higher standard of living promotes democracy. However, recent studies (for instance, Mauro, 1995; Hall and Jones, 1999; Acemoglou et al., 2001) found that it is rather the institution that affects income. Nonetheless, we control for income by including gross domestic per capita income (GDPPC) for the year 2000, and for regional characteristics we control for seven geographic regions. For GDPPC, the data is from the World Bank's World Development Indicators, and for regions, we follow the World Bank's classification. Columns 5 and 6 show the result for income and regions, respectively. The inclusion of income turns democracy insignificant. This is primarily because of the high correlation between income and democracy (0.64). For the regions, both democracy and press freedom remain significant, implying that the results are not driven by any particular region.

In Columns 7 and 8, we use religious affiliation (percent protestant) and ethnolinguistic fragmentation (ELF). Barro (1996) used religious affiliation to explain democracy and Mauro (1995) instrumented for

Table 1
Democracy, press freedom and corruption: OLS regressions

Dependent variable: corruption perception index 2002

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9) Graft
Competition		− 0.022							
		(0.014)							
Participation		0.039**							
		(0.014)							
Democracy	0.048**		0.038*	0.059**	− 0.007	0.042*	0.052**	0.071***	0.014**
	(0.022)		(0.023)	(0.025)	(0.016)	(0.025)	(0.022)	(0.027)	(0.007)
Press freedom	− 0.051***	− 0.069***	− 0.028**	− 0.045**	− 0.024**	− 0.051***	− 0.033**	− 0.041***	− 0.019***
	(0.012)	(0.012)	(0.013)	(0.015)	(0.009)	(0.012)	(0.013)	(0.016)	(0.003)
S−W openness			2.410***						
			(0.441)						
Frank−Rom				0.457*					
				(0.256)					
GDPPC × 10^3					0.132***				
					(0.013)				
Regional dummies									
EAP						1.857			
						(0.896)			
ECA						1.146**			
						(0.829)			

LAC						0.067			
						(0.856)			
MENA						2.495*			
						(1.061)			
NA						3.135**			
						(1.438)			
SSA						0.823			
						(0.875)			
Percent protestant							0.033***		
							(0.009)		
ELF								− 0.009	
								(0.008)	
Constant	5.561***	6.692***	4.149***	3.999**	4.433***	4.678***	4.412***	5.324***	0.699***
	(0.901)	(1.160)	(0.893)	(1.259)	(0.641)	(1.214)	(0.940)	(1.152)	(0.268)
Number of observations	97	97	75	81	95	97	85	72	155
F	39.38	27.93	42.75	24.81	86.58	13.38	30.79	25.04	67.57
Prob > F	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.0000
R-squared	0.456	0.474	0.644	0.492	0.741	0.549	0.533	0.525	0.4706
Adj R-squared	0.444	0.457	0.629	0.472	0.732	0.508	0.516	0.504	0.4637

Values in the parenthesis are the respective standard deviations. ***, **, * indicate the level of significance at 1% or better, 5% or better and 10% or better, respectively. EAP: East Asia and the Pacific, ECA: Europe and Central Asia, LAC: Latin America and the Caribbean, MENA: Middle East and North Africa, NA: North America, SSA: Sub-Saharan Africa (SSA). The omitted region is chosen arbitrarily to be South Asia (SA). ELF: ethnolinguistic fragmentation.

Table 2
Effect of democracy and press freedom on corruption: IV and panel data analysis

Dependent variable: corruption perception index

	IV (1)	IV (2)	IV (3)	Random effects (4)	Random effects (5)	ABGMM (6)
$CPI_{(t-1)}$						0.937***
						(0.254)
Competition					− 0.006	
					(0.004)	
Participation					0.011*	
					(0.006)	
Democracy (ID)	0.181***		0.165***	0.017**		− 0.004
	(0.026)		(0.027)	(0.008)		(0.017)
Press freedom		− 0.138***	− 0.022	− 0.034***	− 0.039***	− 0.026*
		(0.032)	(0.028)	(0.005)	(0.006)	(0.014)
Constant	1.046*	9.899***	2.750*	5.591***	5.968***	− 0.002
	(0.597)	(1.176)	(1.455)	(0.356)	(0.433)	(0.055)
Number of observations	82	73	74	403	403	200
Number of groups				99	99	72
Wald chi2				61.460	63.230	17.61
Prob>chi2				0.000	0.000	0.000
F	48.79	18.53	32.56			
Prob>F	0.000	0.000	0.0000			
Adj R-squared	0.273	0.2086	0.4637	0.478	0.494	
Instruments	Eurfrac	ELF	Eurfrac			
	Latitude	CLS	Latitude			
			ELF			
			CLS			
Sargan test of overidentifying restrictions: p value	0.585	0.163	–			0.867
Test result	Accept	Accept	–			Accept
AB test that autocovariance in residuals of order 1 is 0: Pr>z						0.0023
AB test that autocovariance in residuals of order 2 is 0: Pr>z						0.316

Values in the parenthesis are the respective standard deviations. ***, **, * indicate the level of significance at 1% or better, 5% or better and 10% or better, respectively. IV stands for instrumental variable; ABGMM stands for Arellano–Bond GMM estimates; one step procedure; all variables are in first differences and all estimations include year dummies (not reported).

corruption using ELF. However, as can be seen from Columns 7 and 8, these factors do not change the significance of democracy and press freedom.

In the last Column 9, we have used corruption indicator constructed by Kaufmann et al. (2002). Instead of regressing CPI 2002 on democracy and press freedom, we have regressed graft 2000–2001 on democracy and press freedom. Though we see a change in magnitude, the impact of democracy and press freedom remains significant.

3.2. Instrumental variable analysis

The robustness analysis presented in Table 1 shows that democracy and press freedom have significant impact on corruption. However, the analysis is subject to endogeneity and measurement errors. To correct for these, we have used instrumental variables as suggested in Mauro (1995), La Porta et al. (1997), Hall and Jones (1999), Acemoglou et al. (2001), and Dollar and Kraay (2003). For democracy, we have used the share of the population that speaks any major European language (henceforth Eurfrac) and the distance from the equator (henceforth Latitude). For press freedom, we have used ELF and common law system (henceforth CLS) as instruments. The exclusion restriction is that the language (colonial past) and geography (distance from the equator) do not have any impact on present corruption other than their impact on democracy. Similarly, ELF and CLS do not have any impact on corruption other than their impact on press freedom.[5]

Column 1 in Table 2 reports the results of IV regression of corruption on democracy and next column reports the impact of press freedom on corruption. As in the case of the OLS regression, both democracy and press freedom have significant negative impact on corruption. Convincingly, the overidentification test reported at the bottom of the table for Columns 1 and 2 is not rejected implying that the instruments are valid instruments.

To see the partial impact of democracy and press freedom on corruption, we put them together in an IV regression, which is shown in Column 3. However, under this setting, press freedom does not have significant impact on corruption anymore. This is because both democracy and press freedom evolve jointly: countries that stand high in democracy and low in corruption are the countries that are high in press freedom and low in corruption. Therefore, there is a problem of identification. Though it is possible to instrument democracy and press freedom following the recent literature on institutions that relies on historical and geographical determinants of institutions, since both democracy and press freedom are linked to a single set of historical and geographical factors, instruments themselves are highly correlated with each other. This becomes very clear when we examine the correlation coefficients between fitted democracy and fitted press freedom which is -0.57.

3.3. Static panel analysis

Though the use of historical instruments is widely used in literature, the theoretical reasoning for these instruments that we have utilized here is not entirely convincing. Some of these instruments can have direct influence on the outcome. Therefore, at this stage we exploit the time series variation of our data rather than confining to cross section only. We have an unbalanced panel of data starting from 1995 to

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[5] The exclusion restriction assumed here could be questioned. We have explored the alternatives in the next Section 3.3.

2002. We assume no correlation between country specific residuals and explanatory variables and estimate a random effects model.

Columns 4 and 5 of Table 2 reports the GLS estimate of a random effects model. Taken jointly, our estimated coefficients are significant as indicated by χ^2 value. We maintain the structure of Table 1: Columns 4 and 5 of Table 2 are similar to Columns 1 and 2 of Table 1. The results remain similar to that of the OLS regressions. Despite a decrease in magnitude, both democracy and press freedom remain significant in reducing corruption.

3.4. Dynamic panel analysis

Dynamic analysis can add valuable insights if corruption, democracy and the press freedom show variability over time across units. However, if all of them are highly persistence, then the dynamic analysis is not going to add much. Nonetheless, we estimate the following dynamic panel data model following Arellano and Bond (1991), henceforth AB:

$$y_{it} = \alpha_1 y_{i(t-1)} + \beta' \mathbf{x}_{i(t-1)} + \lambda_i + \eta_i + \upsilon_{it} \tag{1}$$

Here y_{it} is the CPI of country i during the time period t, the vector $\mathbf{x}$ contains democracy and the press freedom, λ_t is the time effect that is common to all countries, η_i is the unobservable country specific effect, and υ_{it} is the standard error term. First differencing the equation removes the η_i and produces an equation that is estimable by instrumental variables. We use the generalized method of moments estimator derived by AB which assumes that there is no second-order autocorrelation in the first-differenced idiosyncratic errors. Column 6 in Table 2 reports the estimation results. It is the lagged corruption and press freedom which have significant impact on corruption. It seems that corruption persists at least in the short- to medium-run.

4. Conclusions

The results presented in this paper show that democracy and press freedom have significant impact on corruption, and between the two components of democracy, it is the voters' participation that seems more robust. The findings remain robust under alternative settings. However, there may be a substantial time lag; though a change in democracy and press freedom may influence the extent of corruption, a dramatic change is unlikely. In addition, the findings of this paper should be taken with cautions since the indices employed in our empirical analysis may be endogenous and the observed relations may be due to mere correlations rather than actual causation.

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