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IS THERE A TRADE-OFF BETWEEN INCOME INEQUALITY AND CORRUPTION? EVIDENCE FROM LATIN AMERICA

Stephen DOBSON and Carlyn RAMLOGAN

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Dr Juan Carlos Cuestas
Division of Economics
Nottingham Trent University
Burton Street
Nottingham, NG1 4BU
UNITED KINGDOM
Email: juan.cuestas@ntu.ac.uk

Is there a trade-off between income inequality and corruption? Evidence from Latin America

Stephen Dobson

&

Carlyn Ramlogan

Division of Economics, Nottingham Trent University, UK

Abstract

Conventional economic thinking says corruption and income inequality are positively related. In contrast, this study finds that lower corruption is associated with higher income inequality. The finding of a trade-off is not unexpected in the context of Latin America, for two reasons. First, Latin America has a large informal sector and corruption-reducing polices impose a transaction cost on this sector whose members are among the poorest. Second, redistributive measures, promoted by corrupt elements in society, are often cut back with institutional reform and this serves to worsen inequality. The results imply that corruption-reducing policies aimed at lowering inequality may be misguided.

Key words: corruption, Latin America, income inequality, instrumental variables, panel data.

JEL classification: O15, O54

1. Introduction

Conventional economic thinking says that lower corruption reduces income inequality through various channels (e.g., Gupta et al, 2002; Gyimah-Brempong, 2002; Gyimah-Brempong and Muñoz de Camacho, 2006). However, Chong and Calderon (2000) find a non-monotonic relationship between corruption and inequality in a cross sectional study of many countries and conclude that the presence of a large informal sector may be the reason why the expected relationship does not hold for some countries. One way to explore this further is to study corruption and inequality for a group of countries that have a sizeable informal sector and where there is a focus on institutional reform. Latin America seems a good choice because the informal sector plays a significant role in most labour markets, contributing 25-35% of aggregate output. Also, in recent times many countries have been introducing corruption-reducing policies and other institutional reforms[1].

This paper examines the corruption-inequality relationship in Latin America. The novel feature of the paper is the finding of robust evidence of a trade-off between corruption and inequality. This result is important not only because it is consistent with the idea that the corruption-inequality relationship may be different where there is a large informal sector but also because it suggests policy reform measures in Latin America may be misguided. The rest of the paper is structured as follows. Section 2 describes the empirical methodology and Section 3 reports the results. Section 4 concludes.

2. Econometric investigation

Econometric estimation is conducted using four-year panel data over the period 1984-2003 for 19 Latin American countries.[2] The empirical specification in (1) is similar to that in previous empirical research (e.g. Barro, 2000; Lundberg and Squire, 2003):

$$I_{it} = X_{it}\beta + A_i + \varepsilon_{it} \qquad (i = 1,....n; t = 1,.....T) \qquad (1)$$

where I is a measure of income inequality for country i at time t. X_{it} is a vector of explanatory variables that vary across time and countries. The parameter A_i contains a constant and individual-specific variables that are invariant over time and ε_{it} is the classical error term.

The dependent variable is the Gini coefficient. Inequality data is drawn from the United Nations World Income Inequality Database (WIID) (UNU-WIDER, 2005).[3] We use dummy variables to control for the definition of income and the survey unit. The measure of corruption is the widely used International Country Risk Guide (ICRG) corruption index. The ICRG measure takes values from zero (most corrupt) to six (least corrupt).[4]

As in other studies of inequality (e.g., Bourguignon and Morrisson, 1998; Morley, 2000; Gupta et al, 2002; Reuveny and Li, 2003; Albanesi, 2007) the model also includes the following explanatory variables: real output per capita (*lgdp*), real output per capita squared ($lgdp^2$), primary (*primary*) and secondary (*secondary*) gross school enrolment rates, the share of agriculture in total output (*aggdp*), the ratio of broad money to output (*m2gdp*), domestic credit to the private sector (*dcps*), the distribution of land resources (*land*), openness of the economy (*trade*), foreign direct investment (*fdi*), inflation (*inflation*), the concentration of natural resources (*natres*), privatisation (*priv*) and interaction terms. Data for these variables is taken from the Penn World Tables, Version 6.1 (Heston, Summers and Aten, 2002), World Bank World Development Indicators (2003) and Frankema (2005).

To deal with potential endogeneity an instrumental variable (IV) methodology is used. In other research several instruments for corruption have been used (e.g., Gupta, 2002; Gyimah-Brempong and Muñoz de Camacho, 2006). In the case of Latin America there is a limited availability of suitable instruments, which restricts our choice to two: democracy and government consumption. Tests are undertaken to ensure that the instruments are valid and

relevant. Panel based tests for serial correlation and heteroskedasticity are also conducted (Woolridge, 2002).

3. Results

The results of estimating (1) using OLS are shown in Table 1. Several different specifications are shown in columns (1) to (4). The random effects model is rejected in favour of the fixed effects model. The sign on the corruption coefficient (*corrupt*) is positive in column (1). The higher is the corruption index (lower is corruption), the higher is inequality. The positive sign persists for alternative model specifications as indicated in the other columns of Table 1. This result indicates there is a trade-off between inequality and corruption.

Table 2 reports results using an alternative dependent variable, the share of income in the lowest quintile. The results show that as corruption falls the percentage of people in the lowest income group rises (inequality worsens). This result persists over alternative specifications. Table 3 shows the results for the IV estimation.[5] The corruption index is again positive. Based on the *F-1st* statistic and the test for overidentifying restrictions, we conclude that the instruments are relevant and valid. The finding of a trade-off between inequality and corruption appears to be robust.

The finding of a trade-off can be explained as follows. Institutional reform is likely to exacerbate inequality in countries where there is a large informal sector. Firms in this sector have low operating costs arising from their lack of compliance to rules and regulations. It is for this reason that the sector tends to employ the poorest members of society. Since compliance comes with institutional reform and corruption reducing measures, firms will incur rising costs. Furthermore, the actual process of reform requires better trained personnel and support infrastructure, necessitating new taxes. Higher costs of production, new taxes and more vigilant policing will have a direct impact on employment in the informal sector.[6]

A second plausible explanation for the trade-off focuses on the impact of reform on redistributive measures. In many developing countries income redistribution policies are promoted by corrupt elements in society whose primary interest is political power.[7] For example, "special government projects" designed to increase employment of the poor are promoted by particular groups who can benefit from such projects (e.g., construction of roads and housing development schemes). These projects employ manual labourers who would otherwise have been unemployed. As countries introduce institutional reform, rent seeking is reduced since "special government projects" are more stringently assessed and the tendering process becomes more competitive. Projects which would have been undertaken under a corrupt system are not undertaken now because they are not economically viable. Further, contracts which are in operation may be stopped or not renewed. It is also likely that projects are more capital intensive.

4. Conclusion

This paper finds evidence of a trade-off between income inequality and corruption using panel data for Latin America. The result is robust to different measures of inequality and different model specifications and estimation methods. Our key finding is consistent with the idea that the corruption-inequality relationship may be different where there is a large informal sector, as in Latin America. As governments implement institutional reform, a transaction cost is imposed on the informal sector whose members are among the poorest in society. Reform also involves a cutting back on redistributive measures, promoted by corrupt elements, and this serves to worsen inequality. The finding of a trade-off between inequality and corruption is also consistent with work that has examined the impact of institutional reform, such as trade and financial reforms, on inequality in the region.

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Table 1: OLS estimation results (Gini index)

Dependent variable: Gini index	(1)	(2)	(3)	(4)
lgdp	-100.812	-39.460	-97.718	-5.094
	[0.254]	[0.581]	[0.157]	[0.148]
$lgdp^2$	5.419	1.853	5.377	
	[0.283]	[0.639]	[0.165]	
primary	-0.1136**	-0.137**	-0.133**	-0.133**
	[0.040]	[0.051]	[0.055]	[0.048]
secondary	0.123**	0.087*	0.081*	0.099*
	[0.024]	[0.091]	[0.092]	[0.074]
aggdp		-0.111		
		[0.4145]		
m2gdp		0.195**	0.136**	
		[0.030]	[0.0461]	
dcps	0.086**			0.091**
	[0.027]			[0.044]
trade	0.166***	0.123**	0.224***	0.167***
	[0.000]	[0.024]	[0.000]	[0.003]
inflation		0.000		
		[0.603]		
natres		0.262	0.118	
		[0.235]	[0.372]	
land	36.049**	31.655		31.361*
	[0.035]	[0.223]		[0.077]
corrupt	1.566**	1.424**	2.530**	1.831***
	[0.024]	[0.026]	[0.051]	[0.007]
corrupt*trade			-0.026*	
			[0.093]	
trade*natres		-0.0043		
		(0.284)		
corrupt*priv				-0.216*
				[0.057]
fdi		0.1518		
		[0.109]		
priv		0.180		0.705*
		[0.222]		[0.090]
constant	479.160	246.166	465.830	53.807
	[0.214]	[0.443]	[0.110]	[0.1794]
F- test	23.3657	24.1032	23.3657	21.895
(p-value)	[0.000]	[0.000]	[0.000]	[0.000]
Hausman test	15.803	24.167	24.198	16.901
(p-value)	(0.0453)	(0.0437)	(0.0040)	[0.034]
Adjusted R^2	0.527	0.548	0.563	0.537
Number of observations	70	73	70	66

p-values are in square brackets.
* significant at 10%; ** significant at 5%; *** significant at 1%
Fixed effects not reported

Table 2: OLS estimation results (% share in lowest quintile)

Dependent variable: percentage share of population in lowest quintile	(1)	(2)	(3)	(4)
lgdp	-28.476	14.740	0.506	-21.941
	[0.551]	[0.754]	[0.668]	[0.601]
$lgdp^2$	1.500	-1.260		1.123
	[0.584]	[0.644]		[0.661]
primary	-0.225**	-0.184*	-0.193**	-0.215**
	[0.013]	[0.076]	[0.0377]	[0.041]
secondary	0.146**	0.109*		0.142*
	[0.049]	[0.091]		[0.070]
aggdp		-0.471		
		[0.128]		
M2gdp		0.119**	0.106*	
		[0.051]	[0.067]	
dcps	0.124***			0.121***
	[0.003]			[0.003]
trade	0.080**	0.045		0.075*
	[0.024]	[0.556]		[0.091]
inflation		0.000	0.000	
		[0.296]	[0.791]	
natres	0.291**	0.361	0.663***	
	[0.045]	[0.267]	[0.005]	
land		43.9071		67.931***
		[0.162]		[0.001]
corrupt	1.602**	1.465**	1.577**	1.753**
	[0.041]	[0.061]	[0.048]	[0.015]
corrupt*trade			-0.011	
			[0.431]	
trade*natres		-0.025		
		[0.768]		
corrupt*priv				0.118
				[0.481]
fdi		0.144*	0.376**	
		[0.053]	[0.041]	
priv		0.269*	0.344**	0.446***
		[0.061]	[0.043]	[0.003]
constant	80.994	56.818	46.887	135.33
	[0.711]	[0.541]	[0.751]	[0.524]
F- test	15.321	21.71	23.16	19.013
(p-value)	[0.000]	[0.000]	[0.000]	[0.000]
Hausman test	23.470	33.481	19.131	24.940
(p-value)	[0.003]	[0.001]	[0.021	[0.000]
Adjusted R^2	0.631	0.663	0.624	0.668
Number of observations	61	57	58	59

p-values are in square brackets.
* significant at 10%; ** significant at 5%; *** significant at 1%
Fixed effects not reported

Table 3: IV estimation results

Dependent variable:	Gini index	Gini index	% of pop in lowest quintile	% of pop in lowest quintile
lgdp	-170.542	-93.279	-166.918	-78.856
	[0.2526]	[0.376]	[0.341]	[0.545]
$lgdp^2$	9.394	5.210	9.464	4.465
	[0.171]	[0.881]	[0.391]	[0.553]
primary	-0.175**	-0.160*	-0.218***	-0.183**
	[0.045]	[0.08]	[0.009]	[0.041]
secondary	0.164**	0.113*	0.2583***	
	[0.015]	[0.095]	[0.001]	
aggdp		-0.042		-0.287
		[0.868]		[0.357]
M2gdp		0.144*		0.147*
		[0.091]		[0.098]
land	43.318**	27.433		
	[0.026]	[0.138]		
corrupt	3.837**	3.168*	4.254**	4.464**
	[0.050]	[0.063]	[0.045]	[0.047]
dcps	0.0807**		0.078**	
	[0.049]		[0.055]	
trade	0.145***	0.134***	0.055**	
	[0.000]	[0.003]	[0.078]	
inflation		-0.000		-0.001
		[0.3410]		[0.648]
natres		0.2938	0.487***	0.813**
		[0.154]	[0.000]	[0.039]
land		27.433		
		[0.134]		
fdi		-0.017		0.0274
		[0.883]		[0.812]
priv		-0.081		0.482
		[0.654]		[0.112]
constant	773.542	442.283	775.09	388.246
	[0.159]	[0.344]	[0.3410]	[0.483]
F-1st F-statistic	13.139	9.551	14.623	8.55
Test for overidentifiying restrictions	0.353	2.33	0.652	3.541
Adjusted R^2	0.529	0.545	0.614	0.621
Number of observations	68	62	61	58

p-values are in square brackets.
* significant at 10%; ** significant at 5%; *** significant at 1%
Fixed effects not reported

Notes

[1] This set of reforms is collectively known in Latin America as "second generation reforms". Policy also reflects to a lesser extent public concern over corruption and income inequality (Latinobarometro, 2003; see http://www.latinobarometro.org).

[2] Countries included in the sample are: Argentina, Bolivia, Brazil, Chile, Colombia, Costa Rica, Dominican Republic, Ecuador, Guatemala, Honduras, Jamaica, Mexico, Nicaragua, Panama, Paraguay, Peru, El Salvador, Uruguay, and Venezuela.

[3] Available at http://www.wider.unu.edu/wiid/wiid.htm

[4] This measure has been criticised by Lambsdorff (2006) on the grounds that the index measures the political risk of corruption. The problem with using an alternative measure, such as the Corruption Perception Index (CPI), is data is not available for the entire study period. We did experiment with the CPI for a sub period where data is available (1997-2003). The sign of the corruption variable (cpi) is positive (and near to being significant).

$$Gini = 28.321 + 9.417lgdp - 0.460lgdp^2 - 0.109primary + 0.840cpi + 0.815natres + 0.073fdi$$
$$(0.963) \quad (0.754) \quad (0.745) \quad (0.034) \quad (0.120) \quad (0.002) \quad (0.003)$$

$$- 0.066trade - 0.193priv - 21.037land$$
$$(0.280) \quad (0.132) \quad (0.3317)$$

$R^2 = 0.537$ Hausman = 18.756 (0.027) F-test = 17.407 (0.0000) n = 51

p-values are in parentheses

[5] Dynamic panel estimation would be an ideal procedure to adopt given the limited choice of instrumental variables. However, missing observations and the fact that the Arellano-Bond method involves differencing the variables and using lags as instruments, would leave us with too few observations.

[6] Using cross section data, Chong and Calderon (2000) find a non-monotonic relationship between institutional quality and inequality. They allude to the presence of a political Kuznets curve. We tried a squared term for the corruption variable but it was not significant.

[7] Support for this view can be found in Alesina and Angeletos (2005) who state that corruption helps to promote support for redistributive policies.

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