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Is Corruption Really Bad for Inequality? Evidence from Latin America

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Abstract:

This paper presents new evidence on the relationship between corruption and income inequality. Using a panel data methodology, we find that lower corruption is associated with higher income inequality in Latin America. This result is in contrast to other empirical studies but it makes sense in Latin America for a number of reasons. The finding of an inverse relationship between inequality and corruption suggests that institutional reform policies by themselves may be misguided.

Keywords: Inequality, Corruption, Latin America.
JEL classification: D73, O15, O43.

1. Introduction

Corruption and income inequality have been symbols of Latin America since colonial times. During the colonial period profitable activities were controlled by a privileged few and, to protect their interests, institutions were structured in such a manner that the majority of the population were denied access to land, education and political power (Engerman and Sokoloff, 2002; Acemoglu et al., 2002). Following independence the Creole elite gained control of key institutions and were able to wield significant influence on the formation and implementation of government policies.[1] In more recent times the emphasis has switched to greater government transparency and good governance, which can be seen in the second generation reforms.[2] Furthermore, surveys of public opinion highlight corruption as a major problem facing the region (Lagos, 2003) and for many it has become the common denominator explaining all of the region's woes, including inequality.

The aim of this study is to investigate the relationship between corruption and inequality in Latin America. This research is timely and important for two reasons. First, little is known empirically about the link between corruption and inequality in the region even though the two are perceived to be closely connected. Moreover, the nature of the inequality-corruption relationship has important policy implications. Second, the conventional view, based on empirical work in other parts of the world, suggests that corruption and inequality are positively related. However, Chong and Calderón (2000) find a non-monotonic relationship between corruption and inequality in a cross sectional study of many (rich and poor) countries. For the poorer countries in their sample lower corruption is associated with higher inequality. They suggest that the presence of a large informal sector in some countries may be the reason for this. Since the informal sector in many Latin American countries is relatively large, and since there is a focus on institutional reform, the region is ideal for exploring further the finding of Chong and Calderón.

The structure of the paper is as follows. Section 2 reviews the relevant literature. The empirical model and data issues are discussed in Section 3. In Section 4 the empirical results are presented and discussed. Section 5 reports some robustness tests and Section 6 concludes.

[1] One example is the failure to invest in public education which helped to protect the vested interests of the elite group.

[2] It has been suggested that international organisations have attempted to de-politicise corruption by adopting terminology such as good governance and transparency.

2. Literature Review

The empirical and theoretical literature on the link between corruption and income inequality, when taken together, is inconclusive with regard to the relationship between inequality and corruption. Much of the empirical literature reports a positive relationship – more corruption is associated with higher inequality (e.g., Mauro, 1995, 1997; Gupta et al., 1998; Fisman and Svensson, 2000; Gyimah-Brempong, 2002, Gyimah-Brempong and De Camancho, 2006). The argument made to support the empirical finding is as follows. Corruption, in the form of tax evasions and exemptions, reduces funds for social programmes, including education and health. Further, since the beneficiaries of tax evasion and exemptions are more likely to be the relatively wealthy, the tax burden falls almost exclusively on the poor, making the effective tax system regressive. The impact on social programmes can be direct as funds may be siphoned out of poverty alleviation programmes in order to extend benefits to relatively wealthy population groups. Even when social programmes are not reduced, corruption may change the composition of social spending in a manner that benefits the rich at the expense of the poor; for example, expenditure on tertiary rather primary education. In a corrupt system, the allocation of public procurement contracts may lead to inferior public infrastructure, which also has implications for welfare and inequality. In sum, corruption favours higher income groups and so promotes greater inequality.

In contrast to the above, Chong and Calderón (2000) find a quadratic relationship between corruption and inequality for a cross section of rich and poor countries. For poor countries in the sample they observe that a fall in corruption (measured by institutional quality) is associated with a rise in income inequality. They explain the finding for poor countries in relation to the informal sector. In many poor countries the informal sector is relatively large and its members are among the poorest. It is the main source of income to the poor who cannot find jobs in the formal sector because of their personal characteristics, institutional barriers or labour market discrimination. Institutional reform and formalisation generate additional costs on members of the informal sector via improvements in tax collection, imposition of new taxes, new regulations, bureaucratic requirements and policing.[3] They add that reform may also directly affect the mechanism by which the informal sector carries out

[3] Taxes on formal firms constitute a major source of government revenues, especially in developing countries. Regulation refers to environmental protection, consumer protection, quality control, workers' welfare etc.

transactions. Hence, mechanisms that make the informal sector work are no longer useful and new ones will have to be learned. Since the informal sector mostly employs those in the lowest quintile of the income distribution, a rise in institutional quality is likely to be translated into a fall in the absolute and relative income of this group.

Chong and Calderon also say that those poor countries with high inequality and high corruption may become trapped in inequality regardless of the development of their institutions. For poor countries close to the inflection point, however, institutional development and formalisation may promote lower inequality. With formalisation business will be able to take full advantage of government services, including skills-training programmes and government sponsored activities. Firms will also be able to exercise all property rights over their capital and product, and contracts can be enforced. Being formal means that firms do not have to hide and operate on a scaled down capacity, instead they can increase production and enjoy economies of scale. Thus, if the main reason for going informal is the lack of services (Dabla-Norris et al., 2005), formalisation will allow business to take advantages of all such services which can lead to increased productivity and efficiency, business expansion, job creation and declining levels of inequality.

Some of the theoretical literature predicts a positive relationship between corruption (defined in various ways) and inequality. Gleaser et al. (2003), for example, develop a model of judicial corruption and show that weak institutions allow only those who are able to protect themselves to become rich. Other researchers have shown that causation can run both ways: inequality encourages the under-development of institutions, which in turn leads to more inequality (e.g., Sonin, 2003; Chong and Gradstein, 2007). Bourguignon and Verdier (2000), however, predict a non-monotonic relationship between democracy (a proxy for corruption) and inequality. They develop a political economy growth model in which public decisions are initially made only by the educated minority. The (educated) voting minority therefore runs the country and initially inequality rises. In order to achieve higher growth, less educated persons are schooled and the proportion of educated citizens rises. The political power of the old elite thus becomes diluted as the decision making group grows and becomes more diverse. Subsequently, redistribution policies will grow in number and inequality will fall.[4]

Bureaucratic requirements pertain to a firms having accountants and lawyers. All of these will increases the operational costs of a business.

[4] This has been termed a political Kuznets curve. See also Acemoglu and Robinson (2000).

The formal analysis of Alesina and Angeletos (2005) shows that in developing countries large public projects aimed at reducing income inequality create more opportunities for corruption (via things like tax loopholes and corruption in the allocation of public projects). Their model indicates that the most well meaning of policy makers will not cut large public projects, even though doing so would reduce the scope for corruption, because the cost of corruption is worth paying, as it is often the only way to improve the condition of the poor. In other words, there may well be a trade-off between corruption and inequality. Blackburn and Forgues-Puccio (2009) suggest that corruption may be less harmful in countries where corruption is well organised. Their model shows that if bureaucrats are organised and act as a de facto joint monopoly, negative externalities arising from non-coordinated, individual rent-seeking behaviour are internalised. Individuals no longer engage in numerous separate bilateral bribe negotiations with different government officials. Furthermore, the uncertainty associated with bribery is reduced, as payments are transparent and predictable. Better organised corruption can lead to a greater provision of government goods, which helps to improve the welfare of the poorest. Mandal and Marjit (2010) consider the impact of corruption on wage inequality. Their model assumes a small open economy with competitive markets where two goods are produced using three factors of production. The model predicts that the impact on both relative and absolute wages is ambiguous following a decline in the degree of corruption.

The above discussion indicates that the relationship between corruption and inequality is inconclusive. Though numerous empirical studies have found that a fall in corruption reduces income inequality, there is also evidence suggesting that the inequality-corruption relationship is non-monotonic, with lower corruption being associated with higher inequality in poor countries. Furthermore, some of the theoretical literature predicts an inverse relationship between corruption and inequality. Many countries in Latin America have a large informal sector and high levels of corruption and inequality. Institutional reform and formalisation will likely weaken the informal sector with adverse consequences for its members who are among the poorest. While formalisation may bring benefits over time that lead to lower inequality, countries with initially high inequality and high corruption may become trapped in inequality.

3. Model Specification and Data

Econometric estimation is conducted using four-year panel data over the period 1982-2002

for 19 Latin American countries,[5] with each observation of the dependent variable being the relevant four year average value. There are some missing observations in the data so the panel is unbalanced. A priori, a fixed effects model is preferred to a random effects model since we expect the explanatory variables to be correlated with the unobserved individual effects. The specification of the general model is similar to that in previous empirical research (e.g., Barro, 2000; Lundberg and Squire, 2003):

$$Gini_{it} = \alpha_0 + \eta_i + \gamma_1 corrupt_{it} + \gamma_2 \lg dp_{it} + \gamma_3 \lg dp_{it}^{\,2} + \gamma_4 primary_{it} + \gamma_5 secondary_{it} + \gamma_6 aggdp_{it} + \gamma_7 m2gdp_{it}(dcps) + \gamma_8 trade_{it} + \gamma_9 land_{it} + \gamma_{10} fdi_{it} + \gamma_{11} inflation_{it} + \gamma_{12} natres_{it} + \gamma_{13} priv_{it} + interaction terms + e_{it} \quad (1)$$

for $(i = 1,....n; t = 1,.....T)$

where η_i is the country-specific fixed effect, γ_is are coefficients to be estimated, e_{it} is the stochastic error term, i and t index countries and years respectively, and other variables are defined as follows. The dependent variable (*Gini*) is a standard measure of income inequality, the Gini coefficient. The data on inequality is drawn from the United Nations World Income Inequality Database (WIID) (UNU-WIDER, 2005).[6] We use the new quality label provided in Version 2a of the WIID, which combines and improves the quality ratings in Deininger and Squire (1996) with older versions of the WIID. Data classified as the lowest quality is excluded. Furthermore, only data which covers the entire population is used. Gini coefficients are based on income rather than consumption because of data constraints.[7] In a manner similar to others, we include dummy variables to control for the survey unit and the definition of income.[8] For each country, we have formed the longest possible series of observations.

[5] The 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.

[6] Available on http://www.wider.unu.edu/wiid/wiid.htm.

[7] One limitation of the income based measure is an upward bias in the Gini coefficient since individuals/households can smooth their consumption via borrowing, in spite of fluctuating income. Furthermore, in Latin American countries the large informal sector means an underreporting of income. This will amplify the Gini coefficient, hence one may believe that inequality is worse than it actually is.

[8] Ginis based on the individual are expected to be higher than those based on the household because there is a tendency for poorer households to be larger than richer ones. Also, households are in a better position to make adjustments to expenditure patterns than individuals. With progressive tax systems, the Gini coefficient based on net income is expected to be lower than that based on gross income.

The corruption measure (*corrupt*) is the International Country Risk Guide (ICRG) corruption index. It is intended to capture the likelihood that high level government officials will demand special payments and the extent to which illegal payments are expected throughout lower levels of government (Knack and Keefer, 1995).[9] The ICRG measure has the advantage of having the broadest coverage for Latin American countries for the study period. It takes values from zero (most corrupt) to six (least corrupt). The natural logarithm of real output per capita (*lgdp*) and natural logarithm of real output per capita squared ($lgdp^2$) are included in the model to test the classical Kuznets hypothesis (Kuznets, 1955; Lewis, 1954). In line with other studies (e.g., Bourguignon and Morrison, 1998; Li et al., 1998; Alderson and Nielsen, 1999; De Janvry and Sadoulet, 2000; Morley, 2000; Gupta et al., 2002; Reuveny and Li, 2003; Breen and García-Peñalosa, 2005; Albanesi, 2007) the model includes the following variables: primary (*primary*) and secondary (*secondary*) gross school enrolment rates, the share of agriculture in total output (*aggdp*), openness of the economy (*trade*), and financial development (measured as the ratio of broad money to output (*m2gdp*) or domestic credit to the private sector (*dcps*)). Other variables included are the distribution of land resources (*land)*, foreign direct investment (*fdi*), inflation (*inflation*), the concentration of natural resources (*natres*), privatisation (*priv*) and interaction terms. Data for all these variables is taken from the Penn World Table, Version 6.2[10] (Heston, Summers, and Aten, 2002), World Bank's World Development Indicators (2003) and Frankema (2005).

In panel data models it is assumed that the errors are uncorrelated and homoskedastic. It is possible that these assumptions will not hold because the sample has both cross sectional and time-series elements. Therefore, tests for serial correlation and heteroskedasticity, as discussed in Woolridge (2002), are undertaken. Depending on the diagnostics, the model is re-estimated allowing for autocorrelation and heteroskedasticity or both. Another important issue in estimating equation (1) is the endogeneity of the control variables (in particular the corruption variable). Incorporating time invariant fixed effects into the model addresses this issue to some extent, but the inclusion of time varying factors means omitted variable bias is still a potential problem. Furthermore, if there is correlation between at least one explanatory

[9] Lambsdorff (2006) cautions that this index does not measure a country's level of corruption but the political risk involved in corruption. However, the ICRG index has been widely used to measure corruption (e.g., Clague, 1997; Chong and Calderón, 2000; Fisman and Gatti, 2002).

[10] Available on http://pwt.econ.upenn.edu/php_site/pwt62/pwt62_form.php.

variable and the error term, OLS estimates will suffer from simultaneity bias.[11] One way to potentially deal with these problems is to do instrumental variable (IV) estimation.

In the literature on inequality, numerous instruments for corruption have been used. These include a black market premium, financial development, government spending on defence as a percentage of GDP, democracy, latitude of a country, ratio of government spending to GDP, ethno-linguistic fractionalization, and mortality rate of colonial settlers. It is difficult to justify instruments such as financial development and black market premium as they may have a direct impact on inequality (e.g., Barro, 2000; Morley, 2001; Lundberg and Squire, 2003; Gourdon et al., 2008), while spending on defense diverts resources away from education and health. The mortality rate of colonial settlers and latitude are not appropriate for this study since we use panel data rather than pure cross-sectional data. While ethnolinguistic fractionalisation may be a valid instrument for corruption in a growth equation, it is unsuitable in an inequality regression (Mauro, 1995).[12] The use of democracy as an instrument is problematic since it is likely that a more equal distribution of political rights in the form of democracy leads to a more equal income distribution (e.g. Gradstein et al., 2001; Reuveny and Li, 2003). Perhaps the only reasonable instrument is the ratio of government spending to GDP but this may be problematic as countries with the largest ratios tend to be the least corrupt.[13] Given the weaknesses with potential instruments, we decided to reject IV estimation in favour of a model with lagged explanatory variables.

Table 1 shows the four-year average values for the Gini coefficient. Inequality increased steadily over the period for the region as a whole. There is evidence of variation across individual countries and variation over different time periods. For example, while countries like Panama and Paraguay saw marked increases in the Gini coefficient over the period, others like Costa Rica and Uruguay saw more modest rises. No country experienced a large reduction in inequality over the period as a whole. Table 2 presents four year averages for the corruption index. The average value of the index for Latin America as a whole has increased over the study period (corruption levels have fallen), though there is some variation to this

[11] Many researchers discuss the channels through which inequality affects corruption (e.g Jong-Sung & Khagram, 2005; Uslander, 2006).

[12] In any event we do not have data on this variable for all four-year averages.

[13] Dynamic panel estimation would be an ideal procedure to adopt given the lack of suitable instruments. 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.

pattern across countries. Figure 1 shows the relationship between the Gini coefficient and the corruption index.

4. Empirical Results

The results from estimating (1) are reported in Table 3. Several different specifications are shown in columns (1) to (4). For the OLS estimates, a Hausman test rejects the random effects model in favour of the fixed effects model. Along with the fixed effects, the explanatory variables account for more that 50 per cent of the variation in income inequality across countries.

The sign on the coefficient *corrupt* is positive in column (1). A positive coefficient is also found in alternative model specifications as indicated in the other columns of Table 3.[14] This result is particularly interesting as it indicates that lower corruption (a rise in the corruption index) is associated with a rise in the Gini coefficient. In other words, there is a trade-off between corruption and inequality. Though at odds with empirical results outside of Latin America, this finding is consistent with the findings in some of the literature discussed in Section 2. Moreover, the finding is not surprising given the potential impact of institutional reform in countries with a relatively large informal sector. The informal sector in many Latin American countries accounts for 25-30 per cent of aggregate output and provides employment for more than 50 per cent of the urban workforce.[15] Tokman (2007) notes that out of every 100 jobs created since 1980, 60 have been informal ones.[16] Therefore, a move to formalisation will have a significant impact on employment and cause relatively large losses for low income groups. In Peru, for example, Tokman (2001) shows that formalisation could lead to a 50 per cent cut in profits for 75 per cent of enterprises. The adverse employment effect is compounded because informal workers are largely poor with little or no education or experience (Freije, 2002).

Turning to other results in Table 3, there is no support for the Kuznets hypothesis as the coefficients are statistically insignificant and have incorrect signs. This finding is in line with

[14] We also tested for the presence of a non-monotonic relationship between corruption and inequality (political Kuznets curve) by including a squared term for the corruption variable. It was not significant.

[15] According to Maloney (2004) the informal sector includes 30-70 per cent of urban workers in Latin America.

[16] This is true even for Chile (South America's most stable economy) over the first half of the 1990s, where 90 per cent of all jobs originated in the informal sector. In Peru, the economy would have to grow by 7 per cent

the findings of others, including Ravallion (1995), Deininger and Squire (1988), Odekokun and Round (2004), and Angeles (2007). Indeed, Fields and Jakubson (1994) show that the estimated curve can go from inverted U-shaped to U-shaped when allowing for fixed effects. The coefficients on *primary* reflect the widely accepted view that a rise in primary school education serves to reduce income inequality (e.g., Tinbergen, 1975; Sylwester, 2002; Chu, 2000). The positive coefficient on *secondary* suggests that a higher level of secondary education worsens inequality. This finding may be a reflection of the fact that education above the primary school level remains largely a privilege. A natural solution is the introduction of an education strategy which achieves a significant leap in both participation rates and quality across the school system, and in particular at the secondary school level.

The coefficient on financial development defined as either the domestic credit to the private sector or the ratio of broad money to GDP is statistically significant and positive, which means that as the financial sector develops inequality rises. Similar results were found by Morley (2000), who noted that while the positive sign does not concur with the theory, it supports the assertion that inequality in the region widened after the implementation of reforms (Berry, 1998; Bulmer-Thomas, 1996). Openness, defined as the trade ratio[17], also exacerbates inequality. Similar results have been reported by several researchers and there are many channels through which the impact occurs (Goldberg and Pavcnik, 2004). In line with the findings of Odekokun and Round (2004) and Angeles (2007), our results suggest that the concentration of land exacerbates the income inequality problem in the region.

Although the agriculture variable has the expected sign, it is not significant. Neither inflation nor resource abundance (defined as the share of ores and mineral as a percent of merchandise exports) is significant. Foreign direct investment is marginally significant and privatisation (cumulative value of the sales and transfers of companies as a proportion of GDP) is only significant when included with an interaction term. Two of the interaction terms (corruption*trade and corruption*privatisation in columns 3 and 4, respectively) are

each year to accommodate the demand for jobs. Venezuela's informal sector accounts for more than half the workforce despite being an oil rich economy that once boasted of Latin America's highest GDP per capita.

[17] Other measures of openness were also investigated, including the Sachs and Warner openness index and the average tariff rate.

significant and have opposite signs to the corruption variable. This may suggest that more liberal polices reduce the impact of corruption on inequality (see Section 5 below).[18]

5. Robustness Tests

As an alternative to the Gini coefficient, we use the share of income in the lowest quintile as the dependent variable (*Quintile1*). Table 4 shows that a rise in the corruption index decreases the share of income in the lowest quintile. In other words, as corruption falls inequality worsens. This result is consistent with the finding in Table 3. A similar result is obtained using alternative specifications (columns (2)-(4) of Table 4). Table 4 also shows that there are some differences with respect to other explanatory variables in the model. Foreign direct investment, natural resource endowment and privatisation have a negative impact on the share of income in the lowest quintile. When the latter variables are included the trade ratio and secondary schooling becomes insignificant (column (2)) and their performance improves once these variables are omitted (column (3)). The agriculture variable is significant and positive meaning that as the share of agriculture in GDP increases, the share of income to the lowest quintile rises (inequality falls). In contrast to the results in Table 3, none of the interaction terms are significant.

Table 5 shows the results of the model with lagged explanatory variables.[19] The results for the corruption variable are consistent with those above (positive sign in the case of the Gini coefficient and a negative sign in the case of Quintile 1). The agriculture variable (column 2) is marginally significant and negative (a rise in the share of agriculture lowers inequality) which is consistent with the result obtained when the dependent variable is Quintile 1. Results for the interactions terms are not reported as they are statistically insignificant. Table 6 reports results using an adjusted version of the Gini coefficient. As the Gini coefficient is bounded between 0 and 100, OLS may be problematic since it assumes that the dependent variable is unbounded. In order to overcome this potential problem, the dependent variable is transformed using the formula log [Gini/(100-Gini)] to become unbounded. Table 6 reveals no marked difference in the results.

[18] We also included other interaction terms that have been used in the literature such as natural resource abundance*corruption, openness*natural resource abundance, and openness*secondary (see Perry and Olarreaga, 2006).

[19] The variables are lagged one period. Any further lags would result in too few degrees of freedom. The lagged values can be seen as pseudo-instruments in the regression and their effect is to lessen the potential problems of endogeneity and simultaneity.

An alternative measure of corruption is the corruption perception index (CPI). The CPI measures the perceived level of public-sector corruption, with a higher score indicating lower corruption. We are unable to use this measure for the entire sample period because it is only available from 1995 and it is not until 1998 that it is available for the majority of countries in the region. We include the CPI in a fixed effects equation using *annual observations* for all variables (where data is available) over the period 1995-2003. The relevant dependent variable is the Gini coefficient and the results are presented in Table 7. The corruption variable (*cpi*) has the correct (positive) sign (as corruption falls, inequality rises) and it is bordering on being significant at the 10 per cent level.

6. Conclusion

This paper examines the income inequality-corruption relationship in Latin America. The results show that corruption and inequality are inversely related: corruption contributes to reducing inequality and may be perceived as a means of pro poor redistribution. The finding of an inverse relationship between corruption and inequality, while at odds with results from other empirical studies, makes sense in Latin America for a number of reasons. First, there is a large informal sector in many Latin American countries. The informal sector provides jobs and a source of income for people who are among the poorest in society. Many of these people lack the personal characteristics required to find work in the formal economy, while discrimination and institutional barriers also inhibit work opportunities. As corruption is reduced business becomes more formal: operational costs rise, profits are reduced and jobs are lost. Second, corruption may be seen as a price worth paying for lower inequality. The provision of certain government projects, while fostering corruption, serves to improve the welfare of the very poor. Well-intentioned policy makers are hesitant to reduce or eliminate corrupt programmes because this is often the only way to improve the condition of the poor. A third reason, and one which merits additional research, is the possibility that as corruption becomes more organised the provision of some government goods may improve, thus contributing to improving the well being of the poor.

The implication for policy of our key finding is that countries plagued by inequality may benefit from allowing corruption to grow. However, this seems a risky interpretation. If corruption is allowed to grow, countries may end up later on with an even weaker institutional framework, and so end up in a bad governance/low productivity trap. Furthermore, a

significant proportion of the Latin American labour market is unregulated with many workers (adults and children[20]) facing exploitation and dangerous working conditions. Low productivity and the absence of social protection characterise the informal sector and letting corruption grow would exacerbate this situation.

A safer way of tackling inequality in Latin America is to encourage countries to fight corruption and at the same time adopt policies that directly promote the productivity of the poorest groups. In this way, if anti-corruption measures were to make inequality worse the harm could be offset by improvements in the human capital development of those in the lowest income quintile. Institutional reform programmes combined with action that helps the poor acquire skills and maintain good health seems a better way forward.

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[20] According to UN figures, one in five 10-14 year olds work in Brazil, Honduras and Haiti, and more than one in ten work in most Latin American and Caribbean countries. The International Labor Organisation puts the figure for the total number of working children (aged between 5 and 14 years) in Latin America and the Caribbean at 17.5 million. See http://natlex.ilo.ch/wcmsp5/groups/public/---ed_norm/---declaration/documents/publication/wcms_decl_fs_51_en.pdf.

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Table 1: Inequality in Latin America (average Gini coefficient)

Country	1982-85	1986-89	1990-93	1994-97	1998-2002
Argentina	40.98	41.55	45.60	45.83	47.90
Bolivia		51.50	53.50	51.41	60.10
Brazil	57.23	58.75	61.83	59.03	60.30
Chile	54.53	55.11	55.65	53.00	56.50
Columbia	55.75		55.05	58.29	57.40
Costa Rica	46.90		48.13	48.15	48.68
Dominican Republic		45.20	51.50	51.60	48.90
Ecuador		44.40		56.07	56.97
Guatemala		56.00	55.30		54.90
Honduras		54.80	55.33	55.05	53.90
Jamaica			54.45	59.40	56.75
Mexico		50.60	53.10	54.55	54.90
Nicaragua				53.90	54.30
Panama	47.60		57.75	56.80	57.20
Peru			50.90	54.70	50.12
Paraguay	45.10		39.80	55.85	55.40
El Salvador			47.10	50.15	53.60
Uruguay	42.10	40.13	41.14	43.17	43.79
Venezuela	45.40	46.23	44.29	44.01	47.91
Latin America (19)	48.40	49.48	51.20	52.83	53.66

Source: UNU-WIDER (2005).

Table 2: Corruption in Latin America

Country	1982-85	1986-89	1990-93	1994-97	1998-2002
Argentina	4	4	3.75	2.75	2.63
Bolivia	1	1.5	2	2.5	3
Brazil	4	4	4	3.0	2.73
Chile	3	3	3	3	4
Colombia	3	3	3	3	1.75
Costa Rica	5	5	5	5	4.5
Dominican Republic	3	3	3	3.5	4
Ecuador	3	3	3	3	3.25
Guatemala	2	2	2	2	4
Honduras	2	2	2	2	1.88
Jamaica	2	2	2	2.75	3
Mexico	3	3	3	3	2.5
Nicaragua	3	5	5	4.75	4
Panama	2	2	2	2	2
Peru	2	3	3	3	3
Paraguay	1	0.25	1.5	2.25	2
El Salvador	2	2	2.25	3	3.75
Uruguay	3	3	3	3	3
Venezuela	3	3	3	3	3
Latin America (19)	2.74	2.83	2.93	3.01	3.09

Source: International Country Risk Guide (ICRG); Published by the PRS Group (2003)
Corruption index is from 0 (high) to 6 (low).

Table 3: Estimation results (Gini coefficient)

Dependent variable: Gini coefficient	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	-0.114**	-0.137**	-0.133*	-0.133**
	[0.040]	[0.051]	[0.065]	[0.048]
secondary	0.123**	0.087*	0.081*	0.099*
	[0.024]	[0.091]	[0.092]	[0.074]
aggdp		-0.111		
		[0.415]		
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		0.152		
		[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	23.366	24.103	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)	(0.045)	(0.044)	(0.0040)	[0.034]
Adjusted R^2	0.527	0.549	0.514	0.539
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 4: Estimation results (Quintile 1)

Dependent variable: share of the income in the lowest quintile	1	2	3	4
lgdp	24.653	17.450	0.414	16.349
	[0.279]	[0.314]	[0.599]	[0.357]
$lgdp^2$	-1.343	-0.948		-0.900
	[0.400]	[0.337]		[0382]
primary	0.054***	0.019**	0.022***	0.039**
	[0.001]	[0.031]	[0.009]	[0.036]
secondary	-0.054***	-0.012		-0.040**
	[0.001]	[0.493]		[0.033]
aggdp		0.116**		
		[0.051]		
m2gdp		-0.024*	-0.020*	
		[0.057]	[0.072]	
dcps	-0.019***			-0.021***
	[0.000]			[0.003]
trade	-0.022**	0.045		-0.009
	[0.037]	[0.556]		[0.433]
inflation		-0.000		
		[0.614]		
natres	-0.051**	-0.061	-0.102**	
	[0.051]	[0.128]	[0.025]	
land		-10.636***		-15.721***
		[0.001]		[0.009]
corrupt	-0.514**	-0.555**	-0.595**	-0.781**
	[0.031]	[0.051]	[0.048]	[0.011]
corrupt*trade			-0.005	
			[0.166]	
trade*natres		0.001		
		[0.500]		
corrupt*priv				0.016
				[0.158]
fdi		-0.027	-0.035*	
		[0.179]	[0.095]	
priv		-0.048	-0.0733**	-0.321**
		[0.217]	[0.024]	[0.019]
Constant	-107.387	-67.568	7.709	-56.015
	[0.178]	[0.154]	[0.386]	[0.262]
F- test	25.151	21.634	28.160	26.523
(p-value)	[0.000]	[0.000]	[0.000]	[0.000]
Hausman test	39.70	18.91	20.85	33.62
(p-value)	[0.003]	[0.041]	[0.013]	[0.000]
Adjusted R^2	0.501	0.595	0.523	0.523
Number of observations	64	63	64	64

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

Table 5: Estimation results (lagged explanatory variables)

Dependent variable:	Gini (1)	Gini (2)	Quintile1 (3)	Quintile1 (4)
lgdp	-88.733	-55.348	31.335	19.645
	[0.279]	[0.401]	[0.204]	[0.300]
$lgdp^2$	4.676	2.857	-1.725	-1.045
	[0.314]	[0.445]	[0.221]	[0.338]
primary	-0.140**	-0.097*	0.050***	0.018*
	[0.052]	[0.087]	[0.008]	[0.108]
secondary	0.138***		-0.060***	
	[0.006]		[0.002]	
aggdp		-0.616*		0.013**
		[0.106]		[0.046]
m2gdp		0.134*		-0.022*
		[0.107]		[0.095]
dcps	0.081**		-0.018**	
	[0.023]		[0.019]	
trade	0.172***	0.132**	-0.020**	
	[0.002]	[0.042]	[0.026]	
inflation		-0.000		-0.000
		[0.793]		[0.826]
natres		0.170	-0.072**	-0.085*
		[0.294]	[0.088]	[0.097]
land	38.132**	25.587		
	[0.015]	[0.167]		
corrupt	1.432*	1.221**	-0.719**	-0.878***
	[0.053]	[0.061]	[0.013]	[0.011]
land		29.880		
		[0.165]		
fdi		0.166		-0.036**
		[0.096]		[0.038]
priv		0.174		-0.073*
		[0.182]		[0.092]
Constant	325.271	283.196	-135.870	-86.750
	[0.159]	[0.56]	[0.202]	[0.288]
F- test	21.68	24.661	18.63	22.87
(p-value)	[0.000]	[0.000]	[0.000]	[0.000]
Hausman test	14.78	19.32	19.35	20.32
(p-value)	[0.029]	[0.032]	[0.0072]	[0.009]
Adj R^2	0.54	0.57	0.52	0.51
Number of observations	52	51	51	48

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

Table 6: Estimation results (adjusted Gini coefficient)

Dependent variable: Unbounded Gini coefficient	1	2
lgdp	-3.250	-3.081
	[0.222]	[0.252]
$lgdp^2$	0.176	0.169
	[0.234]	[0.269]
primary	-0.0055**	-0.006**
	[0.037]	[0.023]
secondary	0.002**	0.005**
	[0.083]	[0.047]
aggdp		-0.001
		[0.941]
m2gdp	0.005*	
	[0.063]	
dcps		0.004**
		[0.027]
trade	0.007***	0.006***
	[0.002]	[0.001]
inflation		0.000
		[0.589]
natres	0.010*	0.008
	[0.053]	[0.333]
land	1.021**	1.536**
	[0.021]	[0.033]
corrupt	0.066**	0.067**
	[0.052]	[0.025]
fdi		-0.002
		[0.321]
priv		0.006
		[0.272]
Constant	13.735	19.033
	[0.251]	[0.244]
F- test	21.312	19.234
(p-value)	[0.000]	[0.000]
Hausman test	17.514	16.757
(p-value)	(0.0235)	(0.0431)
Adjusted R^2	0.521	0.536
Number of observations	66	70

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

Table 7: Estimation results (alternative measure of corruption)

Dependent variable: Gini coefficient	1	2	3
lgdp	9.471	7.225	11.600
	[0.754]	[0.709]	[0.423]
$lgdp^2$	-0.460		
	[0.745]		
primary	-0.109**	-0.280**	-0.381**
	[0.034]	[0.053]	[0.013]
secondary		0.223**	0.274***
		[0.017]	[0.001]
aggdp		-1.953***	2.207***
		[0.008]	[0.000]
m2gdp		0.051	
		[0.120]	
dcps			0.031
			[0.353]
trade	0.066	0.285	0.263
	[0.280]	[0.117]	[0.142]
inflation		-0.025	
		[0.765]	
natres	0.815		
	[0.020]		
land	-21.037		
	[0.3317]		
cpi	0.840	1.785	3.024
	[0.120]	[0.105]	[0.112]
fdi	0.073		
	[0.003]		
priv	0.193		
	[0.132]		
Constant	28.321	30.813	46.929
	[0.963]	[0.816]	[0.712]
F- test	18.32	21.67	19.63
(p-value)	[0.000]	[0.000]	[0.000]
Hausman test	18.75	15.29	17.25
(p-value)	(0.027)	(0.033)	(0.029)
Adjusted R^2	0.51	0.46	0.44
Number of observations	54	54	48

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

Figure 1: Inequality and Corruption