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Suryadipta Roy

Lawrence University

7. May 2007

Online at <http://mpra.ub.uni-muenchen.de/3199/>  
MPRA Paper No. 3199, posted 11. May 2007

# **Is Corruption Anti Labor?**

**Suryadipta Roy**

Lawrence University

Department of Economics

PO Box- 599, Appleton, WI- 54911.

## **Abstract**

This paper investigates the effect of corruption on trade openness in low-income and high-income countries. The results suggest corruption is anti-labor, since it reduces trade in low-income countries and increases trade in high-income countries.

JEL Classification code: F0, F1, D73, C23, O17.

Keywords: Openness, corruption, Stolper-Samuelson effects.

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Corresponding author:

Department of Economics,

Lawrence University,

PO Box- 599,

Appleton, WI -54911.

Email: [suryadipta.roy@lawrence.edu](mailto:suryadipta.roy@lawrence.edu)

Phone: 920-832-7343.

Fax: 920-832-6962.

## **1. Introduction**

Global trade is beset with restrictions. These are more conspicuous in underdeveloped countries which have higher trade protection compared to high-income countries. A major explanation of these restrictions is that trade policies are designed at the behest of special interest groups who benefit from such policies (e.g. Rodrik, 1995). Recent literature has also highlighted the role of institutions in determining trade openness and distribution of gains from openness. Anderson and Mercouiller (2004) ascribed higher corruption and poor enforceability of contracts as important factors limiting trade opportunities for developing countries. Given that factor proportions theory of trade has clear distributional predictions about the effect of free trade vis-à-vis protection, an obvious question in this context is: is effect of corruption on trade openness any different between labor-abundant and capital-abundant countries? If corruption is indeed anti-labor, then greater corruption would raise trade barriers in low-income countries and reduce those in high-income countries, thereby adversely affecting labor in both situations.

Marjit (2006) provides a theoretical argument on this asymmetric impact of corruption. In his model, corruption is considered as labor-intensive activity diverting labor away from productive activities, thereby working against the factor endowment bias and restricting trade in labor-abundant countries. Similarly, it reinforces the relative factor endowment bias in capital-abundant countries and hence promotes trade. Tavares (2003) used Mayer's (1984) median voter framework to show political rights as a proxy for the median voter, and argued greater political rights would provide more political power to capital-poor individuals. Given previous evidence on the relationship between

corruption and political rights, (Chowdhury, 2004) greater corruption would imply shifting of political rights away from capital-poor individuals to capitalists. This would reduce openness in labor-abundant countries and increase openness in capital-abundant countries. This paper sets out to test these predictions using cross-country data on corruption, a trade policy indicator, and real percapita gross domestic product (GDP) as a proxy for factor endowment. In the process, it (a) adds to the literature on the effect of corruption on trade volumes across countries; and (b) comments on the income distributional impact of corruption between labor and capital.

## 2. Econometric specification

Since corruption might be endogenous to trade openness, trade-GDP ratio of any country was decomposed into exogenous measures of “natural” and “residual” openness. This was done by estimating the expected level of openness of a country based on its size, geographic, and linguistic characteristics using a gravity-type specification:

$$\log\left[\frac{\text{export}(i) + \text{import}(i)}{\text{GDP}(i)}\right] = \delta_1 \text{Remoteness}(i) + \delta_2 \log[\text{Population}(i)] + \text{LanguageDummies} \\ + \text{GeographyDummies} + e(i) \quad (1)$$

Wei (2000) refers to the predicted value from this regression as a country’s exogenous “natural openness”<sup>1</sup>. The difference between actual trade-GDP ratio and this “natural openness” captures openness determined by policy choices. This *trade policy*

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<sup>1</sup> English, French, and Spanish used as language dummies. Geography dummies were a landlocked dummy, island country dummy, and coast-land ratio. Remoteness, population, French and Spanish language, landlocked and island country dummies generally turned out to be negatively correlated with openness. Coast-land ratio while positive mostly remained not significant. English language dummy remained positive and significant.

*indicator* was used as the dependent variable in the regressions. The remoteness measure is meant to capture the impact of distance on trade. It was constructed as follows:

$$Remoteness(i) = \sum_{i \neq j} w(j) \log[Distance(i, j)], \text{ where } w(j) = \frac{trade(j)}{\sum_{k \neq j} trade(k)} \quad (2)$$

The following specification was used to test the main hypothesis:

$$y_{it} = \alpha + \lambda_j + \gamma_t + \beta_1 * Corruption_{it} + \beta_2 * Corruption_{it} * \log GDPpc_{it} + \beta_3 * \log GDPpc_{it} + \theta * z + \varepsilon_{it} \quad (3)$$

$y_{it}$  - trade policy indicator for country  $i$  in period  $t$ ;  $\alpha$  - common intercept term;  $\lambda_j$  and  $\gamma_t$  are region-specific and time-specific effects common to all countries;  $\beta_i$  - parameters associated with corruption, real percapita GDP, and their interaction;  $z$  - other control variables in the regression. Countries were divided into eight regional groupings based on Easterly (2001). These regional groupings capture effects of regional trading agreements between countries. Use of region-specific effects also allows time-constant variables in the two-way fixed effects regression.

### 3. Results

If corruption is anti-labor (or anti-poor), then in equation (3), the statistical priors are  $\beta_1 < 0$  and  $\beta_2 > 0$ . Table 1 reports the ordinary least squares (OLS) estimates based on cross-country means for the entire time period (1982-'97) for all variables. International Country Risk Guide Ratings (ICRG) data were used as the corruption measure. Both corruption and the interaction term are found to have the expected signs and are statistically significant for the baseline specification in column (1). Thus corruption reduces trade openness in poor countries but increases openness in rich

countries. For robustness check, other control variables were introduced in the regression. An index of ethnolinguistic fractionalization (ELF) and colonial origins of countries capture important structural features. Dummies for island and landlocked countries, population size, and remoteness from other countries indicate geographical characteristics. Legal system and religious affiliations represent cultural characteristics. All regressions included the region dummies. The results are reported in columns (2)-(5). In general, the main results remain quite robust and the asymmetric effect of corruption on the trade policy indicator remains significant, except for specification (4). The effect of percapita income on trade “policy-induced” openness seems to be sensitive to the inclusion of the structural indicators in the presence of corruption and generally turns out to be not significant.

Given that cross-country averages do not capture time dimension of the relationship, equation (3) was re-estimated as a panel. Three different panel data estimators were considered: (a) pooled OLS; (b) two-way fixed effects; (c) random effects regression with country-specific effects estimated by Generalized Least Squares. The results are reported in table 2. The main hypothesis is upheld in every regression. Inclusion of control variables does not change the basic results in any substantial way. Percapita real GDP appears with a negative sign in all the specifications, which indicates that trade for developed countries is mainly determined by “natural” factors rather than policy-related issues. Indeed, percapita GDP appears to be positive and highly significant in regressions with “natural openness” as dependent variable. The calculated threshold level at which higher income reduces openness for different specifications is between 7.018 and 7.145, close to the sample median percapita income of 7.363. The mean

percapita income is found to be 7.467 indicating positive skewness in the income distribution.

#### **4. Other robustness checks**

Other robustness checks were also conducted. Since corruption is highly persistent for any country over time, the error terms might be serially correlated. Following Wooldridge (2002), this was addressed by using a robust covariance matrix adjusting for within-country correlation in the random effects regression. Moreover, since corruption is subjective, the ICRG data might suffer from measurement error. This was accounted for by using the Business International corruption measure used in Mauro (1995) as proxy for the ICRG data in country average OLS regression. Since these data come from another source, cover an earlier period (average from 1980-'83), and have smaller country coverage (65 compared to around 120 for ICRG), measurement errors of the two proxies are probably uncorrelated. The main results remained unchanged in both situations<sup>2</sup>.

#### **5. Conclusion**

The basic conclusion of this paper is that an increase in corruption reduces trade openness in low-income countries (income proxying for capital-labor ratio) and increases openness in high-income countries. Given the median voter (generally with relatively low capital-labor ratio) will be pro-trade in labor-abundant countries and anti-trade in capital-abundant countries, we can conclude that lesser corruption in low-income countries

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<sup>2</sup> These are not reported here for parsimony and are available on request.

should open up trade and benefit labor in those countries. A corollary to this is that greater corruption should lead to income transfer from labor towards capitalists. It is not far-fetched to argue that an increase in corruption would make policymakers lean more towards the producers' groups and enact policies in their favor in the lines of Grossman and Helpman (2001). Thus a strong political argument can be made for improving institutions in the developing countries since it should benefit the abundant factor in these countries.

#### **Appendix- Data sources**

**Corruption- Source:** International Country Risk Guide (ICRG). **Definition:** Indicator of corruption in government. **Unit:** 0-6, higher number denotes greater corruption.

**Real per capita gross domestic product- Source:** World Bank (2006). **Definition:** Logarithm of real gross domestic product (GDP) divided by population. **Unit:** Constant US dollars.

**Trade-GDP ratio- Source:** World Bank (2006). **Definition:** (Exports + imports)/GDP. **Unit:** Percent.

**Population- Source:** World Bank (2006). **Definition:** Logarithm of population. **Unit:** Absolute.

**Island- Source:** World Factbook 2003. **Definition:** Island countries indicator. **Unit:** Dummy variable = 1 denoting island.

**Landlocked- Source:** Easterly (2001). **Definition:** Landlocked countries indicator. **Unit:** Dummy variable = 1 denoting landlocked country.



**Distance-** **Source:** Center D'Etudes Prospectives Et D'Informations Internationales (CEPII). **Definition:** Great circle distance between most populated cities. **Unit:** Kilometers.

**Colony-** **Source:** CEPII. **Definition:** Colonial origin indicator. **Unit:** Dummy variables = 1 for British, French, or other colonial origin.

**Fractionalization-** **Source:** La Porta et al. (1999). **Definition:** Ethnolinguistic Fractionalization, i.e. probability that any two randomly selected individuals within a country belongs to the same religious and ethnic group. **Unit:** 0-1.

**Legal origin-** **Source:** La Porta et al. (1999). **Definition:** Dummy for origin of legal system. **Unit:** Dummy variables = 1 for English, Socialist, French, German, or Scandinavian legal origin.

**Religious affiliation-** **Source:** La Porta et al. (1999). **Definition:** Different religions making up the population, divided into Protestant, Catholic, Muslim, and other denominations. **Unit:** 0-1.

**Region-** **Source:** Easterly (2001). **Definition:** Regional groupings. **Unit:** Dummy variables = 1 for East Asia & Pacific, East Europe & Central Asia, Middle East & North Africa, South Asia, West Europe, North America, Sub-Saharan Africa, Latin America & Caribbean regions.

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**Table 1: OLS Regression (Average 1982-'97)**

	<i>Dependent variable: Trade policy indicator</i>				
	(1)	(2)	(3)	(4)	(5)
<i>Corruption</i>	-0.107*** (0.035)	-0.175*** (0.035)	-0.113*** (0.035)	-0.025 (0.035)	-0.104*** (0.035)
<i>Corruption*</i> <i>log (Real</i> <i>percapita GDP)</i>	0.015*** (0.005)	0.024*** (0.004)	0.016*** (0.005)	0.003 (0.005)	0.016*** (0.004)
<i>Real percapita</i> <i>GDP</i>	-0.021 (0.016)	-0.037** (0.016)	-0.019 (0.015)	0.016 (0.017)	-0.011 (0.018)
<i>ELF &amp; colony</i> <i>dummies</i>	-	Yes	-	-	Yes
<i>Island,</i> <i>landlocked</i> <i>country,</i> <i>log(population),</i> <i>remote</i>	-	-	Yes	-	Yes
<i>Legal origin &amp;</i> <i>religious</i> <i>affiliation</i>	-	-	-	Yes	Yes
<i>Region</i> <i>dummies</i>	Yes	Yes	Yes	Yes	Yes
<i>R-square</i>	0.15	0.26	0.18	0.20	0.35
<i>No. of obs.</i>	121	111	121	120	111

*Note: Robust standard errors in parentheses; \*\*\*, \*\*, \*, # indicate level of significance at 1% or better, 5% or better, 10% or better, 15% level or better respectively (two-tailed test)*

**Table 2: Panel regression (1982-'97)**

	<i>Dependent variable: Trade policy indicator</i>				
	<i>Pooled OLS</i>	<i>Region-year fixed effects</i>	<i>Region-year fixed effects</i>	<i>Region-year Fixed effects</i>	<i>Random effects</i>
	(1)	(2)	(3)	(4)	(5)
<i>Corruption</i>	-0.22*** (0.044)	-0.233*** (0.044)	-0.238*** (0.045)	-0.137*** (0.046)	-0.205*** (0.058)
<i>Corruption*</i> <i>log (Real percapita GDP)</i>	0.031*** (0.006)	0.033*** (0.006)	0.033*** (0.006)	0.019*** (0.006)	0.029*** (0.007)
<i>Real percapita GDP</i>	-0.066*** (0.019)	-0.067*** (0.019)	-0.075*** (0.019)	-0.022 (0.02)	-0.119*** (0.038)
<i>ELF &amp; colony dummies</i>	-	Yes	-	-	Yes
<i>Island, landlocked country, log(population), remote</i>	-	-	Yes	-	Yes
<i>Legal origin &amp; religious affiliation</i>	-	-	-	Yes	Yes
<i>Region dummies</i>	Yes	Yes	Yes	Yes	Yes
<i>Time dummies</i>	Yes	Yes	Yes	Yes	Yes
<i>R-square</i>	0.03	0.04	0.01	0.03	0.25
<i>No. of obs.</i>	1715	1618	1715	1714	1618
<i>Threshold level of percapita real GDP</i>	7.018	7.031	7.107	7.093	7.145

*Note: Robust standard errors in parentheses; \*\*\*, \*\*, \*, # indicate level of significance at 1% or better, 5% or better, 10% or better, 15% level or better respectively (two-tailed test)*