

The Impact of Poverty on Corruption

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Abstract. This paper examines the effect of poverty on corruption using annual unbalanced panel data analysis on 154 countries from 2000 to 2013. In the models, we use corruption measures from three alternative sources as a dependent variable while independent variables are five different poverty measures. In addition, this study has some control variables, such as foreign direct investment (FDI), trade openness, inflation rate and democracy level. According to empirical results, all poverty variables and inflation rates have statistically significant and positive effects on corruption, while FDI, trade openness and democracy levels have statistically significant and negative effects.

Keywords. Poverty, Corruption, Inflation, FDI, Democracy.

JEL. O15, K42, E31, D72.

1. Introduction

Higher inequality in a country's society is generally considered by the literature to be an indicator that raises poverty levels, and could result less effort being made to reduce poverty. By and large, researchers in the field cannot find common ground when defining poverty due to its complex forms. It is usually measured in terms of *per capita* gross domestic product and defined in terms of income. Additionally, excessive poverty means living under the \$1 per person per day threshold in terms of purchasing power parity. Alternatively, it can also be defined as the poorest quintile group in the country's population (Chetwynd, Chetwynd & Spector, 2003). According to poverty literature, extensive poverty levels in economies is a very important factor, as rising poverty in a country may deteriorate a set of multi-dimensional factors, such as economic, social and institutional factors (Popa, 2012; Alonso & Garcimartin, 2013; Hao, Chen & Zhang, 2016).

In this context, one of the other effects of poverty is corruption, and one that is a very important problem both for economists and politicians. Public sector corruption is defined as the misuse of public office for private gain (Chetwynd, Chetwynd & Spector, 2003: 6). Furthermore, corruption combines the public and private sector to realize corrupt activities (Akçay, 2006). The problem of corruption in economies causes damage to resources available for financing governments' total expenditure; therefore, a government is motivated to spend their

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revenue to abortive other sources, particularly seigniorage. This heightens inflation, due to the rising tax burden on both consumption and investment. After all, capital accumulation and growth will be decreased by higher inflation environment (Blackburn & Powell, 2011). As a consequence, it is very important to investigate the effects of poverty on the corruption problem.

This paper presents an empirical investigation of the impact of different poverty measures on corruption by submitting a broad review of the literature. Therefore, with the use of empirical analysis we are able to offer important information to both policymakers and researchers. In addition to poverty variables, the models also include FDI, trade openness, inflation and democracy variables, as determinants of corruption. We also conducted an annual unbalanced panel data analysis of 154 countries over the period 2000-2013. Our main finding is that among the countries included in the sample, corruption is strongly and positively influenced by poverty.

The remaining sections of this paper are organized as follows: in Section 2, we begin by discussing the theoretical investigation and literature review. Next, Section 3 describes the data and methodology. Section 4 presents the empirical estimation results. Finally, the summary and conclusion are in Section 5.

2. Theoretical Investigation and Literature Review

Poverty is becoming an increasingly significant and widespread problem in a large number of countries across the world at the present time. As a result, practical implications for poverty reduction or alleviation strategies remain an important area of study in many countries. Moreover, it is important to know how poverty creates problems for economic and social factors, such as economic growth, health and child development (Ranis, Stewart & Ramirez, 2000; Ramachandran, *et al.*, 2002; Engle & Black, 2008). In this regard, as analyzed in the literature, poverty as a problem may even lead to more corruption.

The notion of corruption is defined as an individual or group's misappropriation of public power to yield pecuniary benefit. From this perspective, this concept includes bribery, nepotism, theft, and other abuses of public funding (Drury, Kriekhaus & Lusztig, 2006). The problem of corruption is still one of the most important institutional problems in the world. Nowadays, with increasing awareness of corruption its effects and determinants have predictably attracted both academic and political interest (Topal & Ünver, 2016).

First, there are many studies relating to the positive or negative effects of corruption on some variables when looking at its effects in empirical literature (Koyuncu & Yilmaz, 2009; Ayaydin & Baltacı, 2013; Ayaydin & Hayaloglu, 2014). Variables with a positive relationship in terms of inflation rates and public debt may be used. In general, the higher the level of corruption in the institutional environment the higher the rates of inflation and public debt levels. This is because of an excessive increase in monetary growth and public expenditures (Blackburn & Powell, 2011). For example, Cooray & Schneider (2013) and Topal & Keyifli's (2016) studies predicted a positive correlation between corruption and public debt, while Al-Marhubi (2000) found corruption to have a positive impact on inflation. On the other hand, the variables that corruption influences negatively can be said to include economic growth and foreign direct investment inflows. Most economists agree that abusing public funding and governmental institutions create some problems by reducing investment, entrepreneurship, and innovation environments (Mauro, 1995). Therefore, in the long term this environment will adversely influence private investment and in particular, the stock of producible inputs. Economic actors will prefer rent-seeking activities instead of accumulation of

capital, knowledge, and skills. Consequently, corruption is unfavorable for economic development (Mo, 2001). Gyimah-Brempong (2002) uses data from several African countries to analyze the impact of corruption on economic growth. This paper found that corruption in this group of countries has a negative effect on economic growth. In addition, previous studies of the empirical literature suggest that there is a negative relationship between corruption and foreign direct investment inflows (Hakkala, Norback & Svaleryd, 2008; Al-Sadig, 2009; Erdogan & Unver, 2015). In this context, some researchers consider that corruption acts as a major deterrent to perfect competition and creates political instability and social issues (Zhao, Kim & Du, 2003). Thus, we can assume that corruption may make it more difficult to attract more foreign direct investment.

Second, as mentioned above, despite there being many studies in which corruption levels affect various factors, the determinants of corruption are also important when investigating and solving the problem of corruption. In general, these determinants in the literature may be classified into economic, institutional and social determinants. For example, previous empirical studies have generally showed that higher income and education levels increase levels of political knowledge and thus, people in countries with wealthier and more educated societies, may attend more political activities. Therefore, these higher levels may help communities to become more informed about corrupt activities. Furthermore, these people are more willing to prevent these activities because of their higher level of political understanding (Glaeser & Saks, 2006). In this regard, having looked at the determinants of corruption in the literature, many studies have empirically investigated what these determinants could be (Koyuncu & Bhattacharyya, 2007; Koyuncu & Yilmaz, 2013). For example, Iwasaki & Suzuki (2012) examined the determinants of corruption, including economic, political and cultural variables, in transition economies.

In the literature, in addition to these variables, poverty has been a cause of corruption. Despite the fact that defining and measuring poverty is very difficult, it usually means the number of households who have total income of less than half or two-thirds of average income (Townsend, 1962). According to poverty literature, this problem widely impacts on society. In this context, the fight against poverty and poverty reduction policies become prominent largely as a result of solving income inequality in society. For example, the fight against poverty is considered to be an essential tool for the application of economic development policies and strategies (Boukhatem, 2016). On the other hand, the reduction of poverty is an important policy for providing opportunities for an equal society. It can prevent discrimination in education, leading to the formation of a more educated labor market. Additionally, this type of policy can solve other social problems, such as maternal and child health, communicable diseases and gender equality through increased higher education (Agrawal, 2008).

The impact of poverty on corruption is an important relationship when the negative effects of poverty are examined. In this context, some studies have theoretically reviewed the literature on this connection and analyzed empirically the relationship between them. Therefore, when considered theoretically and compared with wealthier groups, bribery for private gain by government officials is more likely in poorer societies (Justesen & Bjornskov, 2014). For example, poverty in African countries in which have the least development to improve living standards is a widespread problem. In this region, corruption appears together with poverty issue (Gyimah-Brempong, 2002). On the other hand, many examples from the literature have shown the empirical relationship between poverty and corruption. For example, Negin, Abd-Rashid & Nikopour (2010) tested the causal relationship between poverty and corruption in 97 market economies using the

Granger causal and dynamic panel system GMM estimator over the period 1997-2006. Their empirical results showed that poverty positively and significantly affects corruption.

3. Data and Methodology

We investigated the association between poverty and corruption level in an economy by using five poverty indicators and three corruption indicators. We hypothesize that higher level of poverty leads to higher level of corruption in an economy. The largest period interval under study is between 2000 and 2013. By using unbalanced panel data we estimated the following multivariate fixed time effect models (FEM);

$$CORRUPTION_{it} = (\alpha + \tau_t) + \beta_1 POVERTY_{it} + \beta_2 FDI_{it} + \beta_3 OPENNESS_{it} + \beta_4 INFLATION_{it} + \beta_5 DEMOCRACY_{it} + u_{it} \quad (1)$$

and the following multivariate random time effect models (REM);

$$CORRUPTION_{it} = \alpha + \beta_1 POVERTY_{it} + \beta_2 FDI_{it} + \beta_3 OPENNESS_{it} + \beta_4 INFLATION_{it} + \beta_5 DEMOCRACY_{it} + (\tau_t + u_{it}) \quad (2)$$

where *it* subscript stands for the *i*-th country's observation value at time *t* for the particular variable. α is the intercept term and τ_t represents time-specific effects which affect all countries in the same way (i.e., τ_t is variant across time but not across countries). u_{it} is idiosyncratic error term of the regression model.

Our dependent variable is corruption. Three different corruption variables are used in order to see how robust our empirical results are. Results may vary depending on which corruption variable is used in the models. If the results remain valid across different corruption variables, it will be an indication of their robustness. The list of dependent variables, their definitions, and the data sources are given in Table 1 below.

Table 1. List of Dependent Variables

Variables	Definition	Source
CORRUPTION1	CORRUPTION1= -1*(Control of corruption)	Worldwide Governance Indicators [Retrieved from].
CORRUPTION2	CORRUPTION2= -1*(Corruption perception index)	Transparency International [Retrieved from].
CORRUPTION3	CORRUPTION3= -1*(Freedom from corruption)	Index of Economic Freedom [Retrieved from].

CORRUPTION1 reflects the level of corruption in a country. It is computed by multiplying control of corruption variable of Worldwide Governance Indicators with minus one. The control of corruption captures perceptions of the extent to which public power is exercised for private gain, including both petty and grand forms of corruption, as well as "capture" of the state by elites and private interests. Estimate gives the country's score on the aggregate indicator, in units of a standard normal distribution, i.e. ranging from approximately -2.5 to 2.5. Scores closer to 2.5 means lower level of corruption and scores closer to -2.5 means higher level of corruption. Since CORRUPTION1 variable is calculated by multiplying control of corruption variable with minus one, its higher scores indicates higher level of corruption and lower scores indicates lower level of corruption.

CORRUPTION2 shows the level of corruption in a country. It is computed by multiplying corruption perception index variable of Transparency International with minus one. Since CORRUPTION2 variable is calculated by multiplying

corruption perception index variable with minus one, its higher scores indicates higher level of corruption and lower scores indicates lower level of corruption.

CORRUPTION3 indicates the level of corruption in a country. It is computed by multiplying freedom from corruption variable of Index of Economic Freedom with minus one. Since CORRUPTION3 variable is calculated by multiplying freedom from corruption variable with minus one, its higher scores indicates higher level of corruption and lower scores indicates lower level of corruption.

Our explanatory variables were chosen in the light of previous studies found in the literature, the availability of the data and in accordance with our main hypothesis. Poverty level in the models is represented by five variables. Definition and data source of poverty level variables are given in Table 2 below.

Table 2. List of Poverty Level Variables

Variables	Definition	Source
HDI	-1*(Human Development Index)	[Retrieved from].
GINI	A measure of inequality between 0 (everyone has the same income) and 100 (richest person has all the income)	PovcalNet Data of Worldbank [Retrieved from].
HEADCOUNT	Percentage of population living in households with consumption or income per person below the poverty line	PovcalNet Data of Worldbank [Retrieved from].
MLD	MLD index stands for the mean log deviation. This is an index of inequality, given by the mean across the population of the log of the overall mean divided by individual income.	PovcalNet Data of Worldbank [Retrieved from].
WATTS	Watts' poverty index. This is the mean across the population of the proportionate poverty gaps, as measured by the log of the ratio of the poverty line to income, where the mean is formed over the whole population, counting the nonpoor as having zero poverty gap.	PovcalNet Data of Worldbank [Retrieved from].

There are, in addition, many measures of poverty in the literature. For example Agrawal (2008) presents several poverty measures, including poverty lines, incidence of poverty, poverty gap index and Gini coefficient, with their definitions. We use five different variables to measure poverty levels. The expected association between five proxies of poverty level and three proxies of corruption is positive. This means that higher levels of poverty in a country are associated with higher levels of corruption. In general, it is believed that poor countries have more corrupt activities because these countries cannot use their resources effectively enough to apply efficient legal systems, or because people who have low standard of living will abandon their moral values (Mauro, 1998).

We also introduced four more explanatory variables peculiar to corruption into our analysis to see how robust our finding is. Definition and data source of other independent variables besides poverty variables are given in Table 3 below.

Table 3. List of Independent Variables

Variables	Definition	Source
OPENNESS	Trade (% of GDP)	WDI
DEMOCRACY	Democracy level (scaled between 0 to 10)	[Retrieved from].
INFLATION	Inflation, GDP deflator (annual %)	WDI
FDI	Foreign Direct Investment (Inward, US Dollars at current prices and current exchange rates in millions)	UNCTAD

The following further describes the independent variables and discusses their expected signs. In addition to POVERTY variable, we introduced four more

determinants of corruption into our models to analyze the impact of poverty level on corruption: openness degree of an economy (OPENNESS), democracy level of a country (DEMOCRACY), inflation level of an economy (INFLATION), foreign direct investment level of an economy (FDI).

OPENNESS reflects the degree of openness of an economy. It is measured as percentage ratio of trade in GDP that is linked to the degree of marketization as an economic factor. In addition, this variable suggests that higher degrees of openness in an economy are related to lower levels of corruption (Iwasaki & Suzuki, 2012). Thus, we expect to have a negative relationship between OPENNESS and corruption (see also Koyuncu, Ozturkler & Yilmaz, 2010).

POVERTY reflects the poverty level in an economy. We used five distinct poverty indicators in the models (i.e., HDI, GINI, HEADCOUNT, MLD, and WATTS variables). Additionally, when compared with wealthier countries, government officials in poor countries in which poverty becomes more intense show the potential to claim more bribes, while people in poor country are more likely to pay a bribe for getting private profit from government officials (Justesen & Bjornskov, 2014). We therefore anticipate a positive coefficient for the POVERTY variable.

INFLATION reflects three things; namely, the degree of uncertainty in an economy, political instability, and economic instability. In this regard, variable and high inflation rates imply an increase in price uncertainty and therefore an increase in the cost of auditing for the agent's behavior. This in turn can lead to higher corruption (Braun & Di Tella, 2004). As a result we expect there to be a positive relationship between INFLATION and corruption.

FDI represents inward foreign direct investment in an economy. FDI may be an important resource in the global fight against corruption, and it can also make domestic firms, organizations and economy more competitive (Rehman & Naveed, 2007). Thus, we expect there to be a negative coefficient for the FDI variable.

DEMOCRACY shows the level of democracy in a country. In the political economy literature, there is a consensus that the level of a country's democracy is a way to reduce corruption because high levels of democracy provide a more politically stable environment (Seldadyo & De Haan, 2005). Therefore, we anticipate there being a negative coefficient for the DEMOCRACY variable.

Before estimating models we also conducted the Granger causality tests between poverty and corruption variables in pairs but we do not report the results here in order to save space. However, causality test results indicate that there is no causality from corruption to poverty at all but there rarely exists causality from poverty to corruption.

4. Estimation Results

The results of multivariate estimations are reported in Table 4, 5, and 6 for three different corruption indicators, which are CORRUPTION1, CORRUPTION2, and CORRUPTION3 respectively. Hausman test is used for the selection between fixed time effect model (FEM) and random time effect model (REM), and decision is made at 1% significance level. According to Hausman test results, except Model 1 of Table 4, in all models REM models are selected.

Table 4. Multivariate Estimation Results for "Control of Corruption (CORRUPTION1)" Dependent Variable

	Indicators of Poverty				
	HDI	GINI	HEADCOUNT	MLD	WATTS
	Model 1	Model 2	Model 3	Model 4	Model 5
C	2.72809	0.09495	1.2021	0.9417	1.2096
Std. Error	0.08354	0.16393	0.1151	0.1178	0.1172
Prob.	0.00000	0.56260	0.0000	0.0000	0.0000
POVERTY	3.14570	0.02817	0.0047	0.0115	0.0081
Std. Error	0.12946	0.00292	0.0014	0.0016	0.0028
Prob.	0.00000	0.00000	0.0011	0.0000	0.0044
FDI	-0.000004	-0.000009	-0.000010	-0.000010	-0.000010
Std. Error	0.000001	0.000001	0.000001	0.000001	0.000001
Prob.	0.00000	0.00000	0.0000	0.0000	0.0000
OPENNESS	-0.00257	-0.00223	-0.0038	-0.0028	-0.0038
Std. Error	0.00037	0.00062	0.0006	0.0006	0.0006
Prob.	0.00000	0.00040	0.0000	0.0000	0.0000
INFLATION	0.01318	0.01993	0.0220	0.0182	0.0220
Std. Error	0.00215	0.00380	0.0040	0.0039	0.0040
Prob.	0.00000	0.00000	0.0000	0.0000	0.0000
DEMOCRACY	-0.06197	-0.15385	-0.1442	-0.1582	-0.1445
Std. Error	0.00534	0.00933	0.0103	0.0096	0.0104
Prob.	0.00000	0.00000	0.0000	0.0000	0.0000
Num. Of Obs.	1293	702	703	703	703
Num. Of Countires	154	125	125	125	125
R-square	0.59328	0.52703	0.4692	0.4983	0.4667
F-statistic	143.5128	155.10810	123.2449	138.4543	121.9824
Prob(F-statistic)	0.0000	0.00000	0.0000	0.0000	0.0000
Hausman Statistics	16.273593	3.59992	4.2146	2.7150	3.2286
Prob(Hausman-Stat.)	0.0061	0.60830	0.5190	0.7438	0.6648
Selected Model	FEM	REM	REM	REM	REM

Table 5. Multivariate Estimation Results for "Corruption Perception Index (CORRUPTION2)" Dependent Variable

	Indicators of Poverty				
	HDI	GINI	HEADCOUNT	MLD	WATTS
	Model 1	Model 2	Model 3	Model 4	Model 5
C	1.48337	-4.06848	-1.4363	-2.1529	-1.5088
Std. Error	0.17529	0.34586	0.2339	0.2435	0.2373
Prob.	0.00000	0.00000	0.0000	0.0000	0.0000
POVERTY	6.80209	0.06621	0.0128	0.0288	0.0283
Std. Error	0.27360	0.00617	0.0031	0.0033	0.0064
Prob.	0.00000	0.00000	0.0000	0.0000	0.0000
FDI	-0.000011	-0.000020	-0.000020	-0.000020	-0.000020
Std. Error	0.000002	0.000002	-0.000020	0.000002	0.000002
Prob.	0.00000	0.00000	0.0000	0.0000	0.0000
OPENNESS	-0.00548	-0.00453	-0.0085	-0.0056	-0.0082
Std. Error	0.00078	0.00135	0.0014	0.0014	0.0014
Prob.	0.00000	0.00080	0.0000	0.0001	0.0000
INFLATION	0.02855	0.01854	0.0194	0.0148	0.0197
Std. Error	0.00430	0.00584	0.0062	0.0060	0.0062
Prob.	0.00000	0.00160	0.0019	0.0139	0.0015
DEMOCRACY	-0.10728	-0.33269	-0.3089	-0.3449	-0.3048
Std. Error	0.01127	0.01997	0.0219	0.0205	0.0220
Prob.	0.00000	0.00000	0.0000	0.0000	0.0000
Num. Of Obs.	1268	732	733	733	733
Num. Of Countires	154	121	121	121	121
R-square	0.599628	0.50665	0.4401	0.4810	0.4423
F-statistic	378.0135	149.11660	114.2927	134.7650	115.3159
Prob(F-statistic)	0.0000	0.00000	0.0000	0.0000	0.0000
Hausman Statistics	4.505451	3.74521	7.3755	3.3968	6.9343
Prob(Hausman-Stat.)	0.4792	0.58670	0.1942	0.6391	0.2256
Selected Model	REM	REM	REM	REM	REM

Table 6. *Multivariate Estimation Results for "Freedom from Corruption (CORRUPTION3)" Dependent Variable*

	Indicators of Poverty				
	HDI Model 1	GINI Model 2	HEADCOUNT Model 3	MLD Model 4	WATTS Model 5
C	18.45120	-37.81437	-13.5673	-18.9271	-13.8003
Std. Error	1.83660	3.39810	2.3105	2.3552	2.3548
Prob.	0.00000	0.00000	0.0000	0.0000	0.0000
POVERTY	71.97302	0.64249	0.1434	0.2741	0.2717
Std. Error	2.89991	0.06119	0.0305	0.0331	0.0592
Prob.	0.00000	0.00000	0.0000	0.0000	0.0000
FDI	-0.000116	-0.000200	-0.000223	-0.000217	-0.000222
Std. Error	0.000017	0.000023	0.000023	0.000023	0.000024
Prob.	0.00000	0.00000	0.0000	0.0000	0.0000
OPENNESS	-0.05728	-0.05805	-0.0918	-0.0686	-0.0898
Std. Error	0.00829	0.01358	0.0138	0.0138	0.0139
Prob.	0.00000	0.00000	0.0000	0.0000	0.0000
INFLATION	0.26310	0.16342	0.1786	0.1279	0.1803
Std. Error	0.04471	0.05679	0.0600	0.0584	0.0602
Prob.	0.00000	0.00410	0.0030	0.0287	0.0028
DEMOCRACY	-1.00479	-3.34731	-3.0270	-3.4676	-3.0145
Std. Error	0.11670	0.19264	0.2131	0.1981	0.2146
Prob.	0.00000	0.00000	0.0000	0.0000	0.0000
<i>Num. Of Obs.</i>	1261	763	764	764	764
<i>Num. Of Countires</i>	152	121	121	121	121
<i>R-square</i>	0.592402	0.51163	0.4532	0.4860	0.4507
<i>F-statistic</i>	364.8026	158.61560	125.6890	143.3680	124.3899
<i>Prob(F-statistic)</i>	0.0000	0.00000	0.0000	0.0000	0.0000
<i>Hausman Statistics</i>	7.554651	5.55854	7.0904	6.1227	4.9888
<i>Prob(Hausman-Stat.)</i>	0.1825	0.35160	0.2140	0.2945	0.4172
<i>Selected Model</i>	REM	REM	REM	REM	REM

Multivariate estimation results indicate the following;

1) Estimation results using CORRUPTION1 (Control of Corruption) as dependent variable in Table 4 indicates that:

All coefficients of POVERTY variable are statistically significant at 1% significance level and take the expected positive sign in all five models, indicating that poverty is one of the deteriorating factors for corruption level in an economy.

2) Estimation results using CORRUPTION2 (Corruption Perception Index) as dependent variable in Table 5 indicates that:

All coefficients of POVERTY variable are statistically significant at 1% significance level and take the expected positive sign in all five models, indicating that an increase in poverty level increases corruption level in an economy.

3) Estimation results using CORRUPTION3 (Freedom from Corruption) as dependent variable in Table 6 indicates that:

All coefficients of POVERTY variable are statistically significant at 1% significance level and take the expected positive sign in all five models, indicating that an increase in poverty level enhances corruption level in an economy.

In regard to other variables in the model, the estimated coefficient of OPENNESS variable takes the theoretically expected negative sign and is statistically significant at least at 1% significance level in all five models in Table 4, 5, and 6. Hence, an increase in the degree of openness of an economy lowers the corruption level in that particular economy.

The coefficient of the DEMOCRACY variable takes the anticipated negative sign and is statistically significant at least at 1% significance level in all five models in Table 4, 5, and 6. This result supports the argument that democratic countries experience less corrupt practices.

The coefficient of the INFLATION variable is statistically significant at least at 5% significance level and takes the anticipated positive sign in all five models in Table 4, 5, and 6. This result points out that corruption flourishes in the countries possessing higher uncertainty and political and economic instability.

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The coefficient of the FDI variable is statistically significant at least at 1% significance level and takes the anticipated negative sign in all five models in Table 4, 5, and 6. This result implies that countries attracting more foreign direct investment experience less corrupt activities.

By the way, in terms of robustness, our results are robust in the sense that our primary finding do not alter no matter which proxy is used for poverty and corruption in our models.

5. Conclusion

This study revisits the issue of poverty and corruption one more time and investigates the relation between poverty and corruption level in a country by using five different poverty proxies and three distinct corruption proxies. We hypothesize that higher level of poverty causes to higher level of corruption in an economy. The data used in analyses are unbalanced data and cover the years between 2000 and 2013 in the largest sample.

The main finding of the study is that countries with higher poverty level experience higher level of corruption. This result does not alter when we added other determinants peculiar to corruption into our models. Moreover, our results are robust in the sense that our primary finding remains valid no matter which proxy is used for poverty and corruption in the models.

The policy implication of our primary finding is that countries aiming to lower corrupt practices should seriously fight against poverty.

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