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HOW DOES THE LEVEL OF CORRUPTION INFLUENCE THE EFFECTIVENESS OF OFFICIAL DEVELOPMENT ASSISTANCE RELATIVE TO GDP FOR DEVELOPING COUNTRIES?

CUM INFLUENȚEAZĂ NIVELUL CORUPȚIEI EFICACITATEA ASISTENȚEI OFICIALE DE DEZVOLTARE (AOD) ÎN RAPORT CU PIB-UL PENTRU ȚĂRILE ÎN CURS DE DEZVOLTARE?

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Abstract: *Comparing the effect of Official Development Assistance (ODA) in high-corrupt and low-corrupt recipient countries, the impact of development aid in terms of per capita GDP growth is significantly higher in low-corrupt countries and insignificant in high-corrupt countries in generating economic growth.*

Key words: *aid effectiveness, development assistance, corruption*

JEL CLASSIFICATION CODE: O1, O17

INTRODUCTION

According to the Organisation for Economic Co-operation and Development (OECD) ODA is the foreign (or development) aid provided to developing countries by governments with the objective of promoting economic development and welfare.

The High-Level Fora on Aid Effectiveness in Rome, Paris, Accra and Busan in 2003, 2005, 2008 and 2011 respectively established the foundational principles of effective aid that led to the Busan Partnership Agreement 2011 endorsed by over 100 countries that set the roadmap of maximising effective development aid (The High-Level Fora on Aid Effectiveness, OECD). These initiatives were borne from the concern surrounding the ineffectiveness of development aid due to the unproductive results of ODA on developing countries.

The debate over the effectiveness of development aid has two opposing views: The optimistic view of Jeffrey Sachs who argues that developing countries are stuck in a vicious poverty cycle reinforced within the economic system. Development aid could be beneficial if it is targeted at public necessities such as infrastructure attracting firms who will invest in that country (Sachs et al., 2004). On the other hand, Easterly argues that the assumptions made by global institutions such as the World Bank on the benefits of development aid are inherently flawed (Easterly, 2007). Moreover, Burnside and Dollar (2000) argue that development aid is conditional to a number of macroeconomic factors that determine the impact of ODA relative to GDP. In this research paper, the effectiveness of ODA relative to GDP will be conditioned on a corruption perception index (CPI) constructed by Transparency International to determine whether the empirical designs of each of the above papers yield similar results under the same conditions. A DiD design will be used to test this hypothesis empirically using official World Bank data from two data sets on average per capita GDP and ODA percentage over two 10-year periods; 1995-2004 and 2005-2014 for 179 countries tested against the CPI.

The rest of the paper is structured in seven sections: Theoretical Framework, Methodology, Results, Discussion, Conclusion, Reference List and Appendix. In the Theoretical Framework the theory presented in Burnside and Dollar, 2000, on the effectiveness of development aid on developing countries is introduced and the hypothesis to be tested is presented. In the Methodology, the type of empirical design, the variables used and the method of research is further explained to understand the possible correlation to the hypothesis. The Results, demonstrates the final regressions of the test and

the Discussion section will prove or disprove the hypothesis. In the Conclusion, the limitations of the paper's findings are raised.

THEORETICAL FRAMEWORK

Burnside and Dollar, 2000, analyses development aid with a focus on the interrelationships among bilateral aid, macroeconomic policies and growth of per capita GDP, to determine the effect of aid on growth. Two equations were used to test these relationships; the growth equation and the aid equation. The growth equation includes measures of aid and policy, as well as their interaction. The aid equation tries to determine how policies that affect growth essentially determine the effectiveness of aid. The central hypothesis tested is the extent to which a good policy environment of an aid recipient country increases the effectiveness of aid relative to GDP (Burnside and Dollar, 2000).

According to Burnside and Dollar, 2000, the policies that affect growth and thereby determine the effectiveness of aid include: trade openness, inflation as a measure of monetary policy, budget surplus as a measure of fiscal policy, as well as variables that captured institutional and political factors. The policy index was constructed to weigh the correlation between such policies and their effect on growth as the exogenous (independent) variable in both equations. The higher the policy coefficient, the better the policies that are in place. The endogenous (dependent) variables were the real growth rate, aid relative to GDP (aid/GDP) and the interaction term between aid/GDP and policy. The results of the regressions showed a significantly positive coefficient with the interaction term. With 95% confidence in the regressions with simple interaction terms, at a policy coefficient of 2.4, aid was more than twice as effective than at a policy coefficient of 1.2. Therefore, the results showed that indeed in a good policy environment, aid relative to GDP had a greater impact on growth.

This research paper tests the effectiveness of ODA relative to GDP against the level of corruption to determine whether there is a strong correlation between corruption and ODA effectiveness relative to GDP. According to the theory of Burnside and Dollar, 2000, a good policy environment is inversely correlated with corruption. Therefore, it is expected that recipient countries with high levels of corruption will obstruct the effectiveness of ODA on growth in GDP per capita.

METHODOLOGY

To test this hypothesis, a Difference-in-Difference design (DiD) was used to evaluate the effect of corruption between ODA receiving countries on GDP per capita, using non-recipient countries of ODA as the control group of this design. The treatment in this design is ODA and the measure of this treatment is its effect on GDP per capita growth in the after period. The dummy variable 'after' was developed to distinguish the time period, where before is 0 and after is 1. The independent variable in this empirical design is ODA recipients and the dependent variable is GDP per capita growth. As mentioned above, the data used to investigate the hypothesis empirically includes two data sets on average per capita GDP and ODA percentage over two time periods before and after, 1995-2004, 2005-2014 respectively for 179 countries and their CPI. The database consists of 35 non-recipient countries and 144 recipient countries of ODA at two time periods. Table 1 displays the summary statistics of the variables used in the design.

Table 1: Summary statistics; raw data

Variable	Obs	Mean	Std. dev.	Min	Max
country	0				
after	358	.5	.5006998	0	1
gdp_capita	358	11800.8	17026.34	197.606	104390.9
oda	358	5.220422	8.718237	-.054378	76.1578
oda_recipient	358	.8044693	.3971638	0	1
oda_rise	358	.4022346	.4910351	0	1
oda_drop	358	.7932961	.405508	0	1
cpi2004	280	4.193571	2.243883	1.5	9.7

The mean GDP per capita for 179 countries over two time periods is 11800.8\$. The average level of ODA as a percentage of GNI is 5.2%. The mean number of ODA recipients is 0.8. There are more ODA recipient countries than non-recipients of ODA. According to the number of observations, only 140 countries have a CPI for two 10-year periods in the database.

Conditioning for the level of corruption, the CPI developed is scaled so that a low CPI indicates a high level of corruption and vice versa. The CPI is low if the value is above the median. For ODA recipient countries a low CPI thereby high levels of corruption is above 2.85. For non-recipients of ODA, a high CPI and thereby low levels of corruption is above 7.3. Here we see that non-recipient countries of ODA are less corrupt according to the CPI. The purpose of this distinction is to recognize high levels of corruption in recipient countries and test to see whether this impacts the effectiveness of ODA in developing countries.

A variable ‘X’ was developed to define the interaction between ODA recipient’s variable and the after variable. The coefficient of the interaction term ‘X’ indicates the effectiveness of the development aid to recipient countries in the after period. The variable ODA recipients is a negatively defined as the amount of aid given to these countries drops over time and therefore expect a decrease in GDP per capita subsequently. This can be seen in Table 2. ODA dropped from 7.08% to 5.89% of GDP for recipient countries; a decrease of 1.2%.

Table 2: ODA drop for recipient countries

after	N	Mean	SD
0	144.00	7.08	8.73
1	144.00	5.89	9.81
Total	288.00	6.49	9.29

4. RESULTS

Table 3: Regressions

	(1) c	(2) d	(3) e
X	4.14*** (1.14)	1.63 (1.47)	5.48*** (0.88)
oda_recipient	-28.1*** (3.52)	-17.7*** (3.94)	-38.2*** (3.94)
after	5.65*** (1.10)	2.34 (1.46)	7.74*** (0.81)
_cons	33.2*** (3.47)	19.5*** (3.93)	46.8*** (3.75)
N	358	140	140

Standard errors in parenthesis; * p<0.05, ** p<0.01, *** p<0.001

To compare the control group to the treatment group in the DiD design, we analyse the effect of the treatment ‘X’; the effect of ODA, controlling for the level of corruption. Table 3 illustrates three different regressions; c, d and e. Regression c is a simple regression without controlling for corruption. The CPI control variable was added in regressions d and e. Regression d displays the beta coefficients for high-corrupt countries and regression e displays the beta coefficients for low-corrupt countries. The variable ‘_cons’ describes the average GDP per capita of the countries in each regression.

For regression c, the average GDP per capita is 33.2 (k\$). High-corrupt countries; regression d, have a 19.5 (k\$) per capita GDP. Low-corrupt countries have the highest GDP per capita average of 46.8 (k\$). Without controlling for corruption, the effect of ODA has a significant coefficient of 4.1 (k\$) per capita GDP at a 1% significance level. This suggests that had ODA increased by 1.2% of GNI, GDP per capita would increase by 4000\$ per capita. When controlling for corruption, regressions d and e show different results. For high-corrupt countries the effect of ODA (X) is insignificant with a small coefficient of 1.63 (k\$). This indicates that ODA is not effective in countries with high levels of corruption. Conversely, regression e; the beta coefficients of low-corrupt countries, displays a larger and significant coefficient of 5.48 (k\$) at a 1% significance level. This demonstrates

a causal relationship between high levels of corruption ODA ineffectiveness relative to per capita GDP growth. ODA effect on GDP per capita is significantly higher in low- than in high-corrupt countries.

DISCUSSION

Based on Burnside and Dollar (2000) low levels of corruption are highly correlated with good policy environments. Where good policies are in place, ODA is significantly more effective. Such policies include trade openness, low inflation, a low government budget deficit, democratic institutions and other political factors that are conducive to low levels of corruption.

Thus, it was expected that in high-corrupt countries the effectiveness of ODA relative to per capita GDP growth would be obstructed. The results of this paper's empirical design are in line with its hypothesis. There is a significant coefficient of 5.48 (k\$) showing that low-corrupt countries make good use of development aid as compared to the insignificant coefficient for high-corrupt countries of 1.63 (k\$) which shows that aid is obstructed. Therefore, the research demonstrates a high correlation between low-corrupt countries and the effectiveness of ODA relative to per capita GDP growth.

At the same time however, it is assumed that high-corrupt recipient countries and non-recipient countries both would follow the same trend line relative to GDP per capita when controlling for corruption. This would lead to an 'apples to oranges' comparison if non-recipient and recipient countries would be compared, due to evident differences in welfare levels. A non-recipient country of ODA is assumed to have a higher GDP.

CONCLUSION

Based on the official data derived from the World Bank and the results produced using a DiD empirical design, the impact of development aid in terms of per capita GDP growth is significantly higher in low-corrupt countries and insignificant in high-corrupt countries in generating economic growth. This is a robust conclusion, in line with Burnside and Dollar, 2000, as good policies and corruption are inversely correlated. It is important to note however, that there are limitations present in method of research conducted. The CPI constructed by Transparency International, is a ranking based on the perceived levels of public sector corruption sourced from global economic institutions including the World Bank and Transparency International. In recent years, the integrity of such institutions has been called to question, and it is therefore reasonable to doubt the credibility of such a complex measurement of corruption. Moreover, it is fundamental to understand the underlying reason for which countries with a low CPI are corrupt. Corruption is not an inherent factor in countries' political and economic institutions. Further research should be made to quantify and explain how so called "bad policies" are conducive to corruption.

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