Correlation Between Corruption and Education in Developing Countries

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ABSTRACT

Two empirical studies analyze the relationship between corruption perception and education indicators. In this study, the PISA outcomes to proxy for education quality as well as other education indicators and regress them with two different corruption measures and control variables. Running GLS on the standardized mean values of the PISA results shows that lower corruption is associated with an increase in the PISA scores for math (0.23 e), science (0.20 e), and reading (0.29 e) across countries; however, these coefficients are not statistically significant after controlling for fixed effects and other control variables. Dropout ratios show a stronger relationship (-3.15). In addition, we use other educational indicators such as enrollment and schooling years to study the effect of corruption in the access to education and human capital stock. Using interactions in my regressions show worse PISA outcomes for developing countries in general.

EMPIRICAL RESULTS

GLS on PISA Outcomes (Social Indicators)

<table>
<thead>
<tr>
<th></th>
<th>MATH</th>
<th>SCIENCE</th>
<th>READING</th>
</tr>
</thead>
<tbody>
<tr>
<td>(1)</td>
<td>(2)</td>
<td>(3)</td>
<td>(4)</td>
</tr>
<tr>
<td>WDI corruption indicators*</td>
<td>0.230***</td>
<td>0.122**</td>
<td>0.195***</td>
</tr>
<tr>
<td>Expenditure in education (% of GDP)</td>
<td>0.106***</td>
<td>0.070***</td>
<td>0.099***</td>
</tr>
<tr>
<td>Corruption</td>
<td>-0.081**</td>
<td>0.0044</td>
<td>-0.038**</td>
</tr>
<tr>
<td>GIP per capita</td>
<td>-0.002</td>
<td>0.0001</td>
<td>0.0002</td>
</tr>
<tr>
<td>Constant</td>
<td>-0.120***</td>
<td>0.372**</td>
<td>-0.299**</td>
</tr>
<tr>
<td>Country fixed effects</td>
<td>No</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Time fixed effects</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Observations</td>
<td>218</td>
<td>155</td>
<td>218</td>
</tr>
<tr>
<td>R-squared (overall)</td>
<td>0.379</td>
<td>0.670</td>
<td>0.330</td>
</tr>
</tbody>
</table>

GLS on Education Indicators (Quality, Access, and Human Capital Stock)

<table>
<thead>
<tr>
<th></th>
<th>Dropout (%)</th>
<th>Enrollment (%)</th>
<th>Schooling (years)</th>
</tr>
</thead>
<tbody>
<tr>
<td>(7)</td>
<td>(8)</td>
<td>(9)</td>
<td>(10)</td>
</tr>
<tr>
<td>WDI corruption indicators*</td>
<td>-0.661***</td>
<td>-3.15**</td>
<td>-1.83***</td>
</tr>
<tr>
<td>Expenditure in education (% of GDP)</td>
<td>-0.13***</td>
<td>0.185***</td>
<td>0.029***</td>
</tr>
<tr>
<td>Corruption</td>
<td>-0.034**</td>
<td>0.0044</td>
<td>-0.038**</td>
</tr>
<tr>
<td>GIP per capita</td>
<td>0.027</td>
<td>0.0001</td>
<td>0.0002</td>
</tr>
<tr>
<td>Constant</td>
<td>-1.37***</td>
<td>-19.97***</td>
<td>-0.62***</td>
</tr>
<tr>
<td>Country fixed effects</td>
<td>No</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Time fixed effects</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Observations</td>
<td>1071</td>
<td>1039</td>
<td>1441</td>
</tr>
<tr>
<td>R-squared (overall)</td>
<td>0.524</td>
<td>0.634</td>
<td>0.527</td>
</tr>
</tbody>
</table>

Interaction of Corruption in Developing Countries

<table>
<thead>
<tr>
<th>Education Quality</th>
<th>Dropout (%)</th>
<th>Enrollment (%)</th>
<th>Schooling (years)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Standardized</td>
<td>Dropout (%)</td>
<td>Enrollment (%)</td>
<td>Schooling (years)</td>
</tr>
<tr>
<td></td>
<td>(7)</td>
<td>(8)</td>
<td>(9)</td>
</tr>
<tr>
<td>Developed</td>
<td>0.08 - 0.141*</td>
<td>0.06 - 0.362*</td>
<td>0.06 - 0.362*</td>
</tr>
<tr>
<td>Developing</td>
<td>0.014 - 0.146*</td>
<td>0.014 - 0.146*</td>
<td>0.014 - 0.146*</td>
</tr>
<tr>
<td>Education</td>
<td>2.2 - 29.2</td>
<td>2.2 - 29.2</td>
<td>2.2 - 29.2</td>
</tr>
<tr>
<td>Country fixed effects</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Time fixed effects</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Observations</td>
<td>218</td>
<td>155</td>
<td>218</td>
</tr>
<tr>
<td>R-squared (overall)</td>
<td>0.379</td>
<td>0.670</td>
<td>0.330</td>
</tr>
</tbody>
</table>

DISCUSSION

My analysis shows that a better governance score is associated with increased scores on the PISA examinations across countries; however, they are not significant after controlling for other background variables. Education quality (dropout rate) shows a stronger and more significant relationship with corruption even after controlling for fixed effects and other variables.

Access to education (enrollment rate) shows a 0.13 increase for a one unit increase in the corruption indicator. The effect becomes small and insignificant after controlling for fixed effects and other variables.

Human capital stock is measured by the mean schooling years does not show a strong relationship with corruption.

The effect of corruption in developing countries’ education sectors in harsher in the aspects that quality than quantity, and the accumulation of human capital.

One of the assumptions I make is that the overall perception of corruption implies that there is also corruption in the education sector. This may not be true for all cases, and I gathered data from Global Corruption Barometer survey (2004-2015) where people answered in this question: “What extent do you perceive the following sectors in this country/territory to be affected by corruption?" (1: not at all corrupt, 5: extremely corrupt). This table shows the interaction of corruption in education within countries after controlling for time effects and other variables:

Global Corruption Barometer Surveys

<table>
<thead>
<tr>
<th>Perception of Corruption within the sector of Education</th>
<th>Developed</th>
<th>Developing</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dropout (%)</td>
<td>2.99</td>
<td>1.30</td>
</tr>
<tr>
<td>Enrollment (%)</td>
<td>-0.672</td>
<td>-0.749</td>
</tr>
<tr>
<td>Schooling (%)</td>
<td>-0.26</td>
<td>0.174</td>
</tr>
</tbody>
</table>

CONCLUSIONS & COMMENTS

- Corruption is associated with worse education quality. I cannot conclude that corruption is highly correlated with worse education access and less accumulation of human capital.

- Not clear stronger/weaker effect in developing countries.

- Corruption in general is associated with corruption within the education sector in specific corruption; within the sector is associated with worse quality. Cannot conclude the same about quantitative education outcomes.

- Better specifications (SLS, non-linearity, etc) and more comparable data across countries are needed.

- More research needed. Criticism on PISA as outdated exam and small sample. Control for students that took the test in the same year. What is the best way to control for other variables? The correlation between corruption and education outcomes is complex.

- In the B.I, the fact that more resources are being spent in the education sector does not mean that all of these resources are being used effectively and honestly. Still, the country needs time to see if the money will be translated into better education. More data and research is needed to track the expenditures in education and how they are being utilized and managed. A country case study based on surveys such as PETS in Brazil (Ferre et al, 2014) would shed light on the real situation of education in the B.I.