Gold exploitation and income disparities: the case of Burkina Faso

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Motivation

Agricultural country → Mining country

- Burkina Faso is considered as an agricultural country and nearly 80% rural. More than 46% of Burkinabe are poor.

- While cotton and livestock were the major export products during the 90s, the last five years have seen gold as the main product of exports.

- This rapid expansion has brought the country to the rank of the fourth largest gold producer among African nations.
A relevant topic

- The country is experiencing a rapid gold boom.
- The government was recently revisiting the mining code that goes back to 2003: a new mining code for 2015.
- Contribution: this research will add to an existing empirical literature that attempts to establish the links between extractive mining and poverty, inequality.
Research questions and objective

Questions

- Does the gold boom positively impact the living standards in Burkina Faso?

- What is the effect of this resource boom on schooling and child labor?

Objective

- Estimate the impact of the gold boom on a set of socio-economic outcomes

- Investigate the questions theoretically to replicate the situation observed in Burkina Faso.
Approach based on two components

- Develop a theoretical model to assess the impact of gold exploitation in Burkina Faso based on the reality observed in the country.

- Use an empirical strategy to estimate this impact using household data from Burkina Faso.

A simple method is used in the two components:

- Compare the outcomes of two groups: producing departments and non-producing departments.
Methodology and data

- **Comparison of the two groups in the empirical case**
  - Use a regression-based method to estimate the impact of gold exploitation.

- **Estimate the impact: Use of fixed and random effects models**
  - Fixed-effects model:
    \[
    Y_{it} = \alpha_i + \gamma_t + \beta' X_{it} + \theta D_{it} + u_{it} \tag{1}
    \]
  - Random-effects model:
    \[
    Y_{it} = \alpha + \gamma_t + \beta' X_{it} + \delta D_i + \theta D_{it} + u_{it} \tag{2}
    \]
  - Perform an alternative to Hausman test to choose the appropriate model.
Data: 2003 and 2009 household surveys

- Sample of 201 departments for 2 years: 45 producing departments and 156 non-producing departments.
Methodology and data

Evolution of gold exploitation between 2000 and 2009

Figure: Evolution of gold exploitation between 2000 and 2009
Methodology and data

- **Outcomes variables:**
  - Headcount ratio, poverty gap, inequality, average income, schooling and child labor.

- **Covariates:**
  - A set of basic services, demographic characteristics, area, mining revenue, etc.
Main results

- **Theoretical case**
  - Gold exploitation has a positive effect on consumption.
  - Gold exploitation exacerbates inequality and it occurs more in industrial mining than in artisanal exploitation.
  - Children stay less in school when there is gold exploitation. However, they spend more time at school in the department with industrial exploitation.
Main results

- **Empirical case**
  - Gold mining contributes to poverty reduction.
  - Gold exploitation has a positive impact on average income.
  - Regarding inequality, schooling and child labor: effect not statistically significant, but the expected signs are seen in most of the regressions.
### Empirical case

#### Table: Estimated impact

<table>
<thead>
<tr>
<th>Variable</th>
<th>FE model</th>
<th>RE model</th>
<th>Loayza et al.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Headcount</td>
<td>-0.084**</td>
<td>-0.085**</td>
<td>-0.108***</td>
</tr>
<tr>
<td>Poverty gap</td>
<td>-0.037*</td>
<td>-0.039*</td>
<td>-0.048**</td>
</tr>
<tr>
<td>Gini</td>
<td>0.011</td>
<td>0.012</td>
<td>0.006</td>
</tr>
<tr>
<td>Expenditure</td>
<td>0.124**</td>
<td>0.127**</td>
<td>0.142***</td>
</tr>
<tr>
<td>Schooling</td>
<td>0.007</td>
<td>0.016</td>
<td>-0.089**</td>
</tr>
<tr>
<td>Child labor</td>
<td>0.056</td>
<td>0.028</td>
<td>0.089**</td>
</tr>
</tbody>
</table>
Conclusion and policy implications

Conclusion

- Gold extraction increases average income (theoretical and empirical analyses).
- Gold extraction reduces poverty.
- Limit of the paper: does not take into account some adverse effects of gold extraction (artisanal case) such as the environmental degradation and health-related challenges.
Conclusion and policy implications

Policy implications

- Improve gold mining activities in Burkina Faso.

- Better regulate artisanal mining in order to reduce negative impacts on environment and health and to prevent conflicts that result from artisanal gold mining activities.

- Regarding child labor, gold extraction may have scaled it in Burkina Faso. Possibility of using the revenues from gold to cover the Government’ spending in order to support efforts of getting children out of mining sites.
Thank you for your attention!