Are there Productivity Spillovers from Foreign Direct Investment in Uganda? Evidence from Firm Level Panel Data

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Introduction

• Attracting FDI has become an essential part of development strategies of many developing countries;
  • Liberalization of the domestic and external sector
  • Privatization
• Direct contributions of FDI is well documented in Obwona (2001) and other earlier paper
• Although the contribution of policies in attracting FDI cannot be refuted, the effects of FDI on the productivity of domestic firms in Uganda are far from clear.
• the empirical literature is ambiguous on the effects of FDI on productivity spillovers to domestic firms.
Purpose and Objective

• The purpose of this study is to investigate whether the presence of FDI affects the productivity of local firms through vertical spillovers across sectors.
  • Estimate the magnitude and direction of inter-industry spillovers.

• The specific objectives was to estimate:
  • horizontal spillovers within the manufacturing sector;
  • backward spillovers from manufacturing FDI to local firms
  • forward spillovers from manufacturing FDI to local firms
Background: FDI in Uganda

• Uganda began to receive large amount of FDI inflows in the late 1990s following successful implementation of economic structural reforms.

• Uganda’s FDI inflows have been on an upward trajectory since the year 2000.
  • FDI expanded by 18.0 percent between 2000 and 2005;
  • 21.7 percent between 2006 and 2011 albeit with a decline in 2010
The ratio of FDI inflows to GDP increased from 3.0% in 2000 to 5.0% in 2011;

Equity and reinvested earning has been the main component of FDI inflows – stability
Background: FDI in Uganda

- The major FDI recipient sectors were:
  - manufacturing,
  - finance & insurance,
  - information, communication and technology (ICT)
  - mining & quarrying
  - agriculture

- In terms of regional distribution, Uganda’s FDI are concentrated in the Central region mainly within Kampala and its neighbouring districts.
Literature Review

- **Overview of FDI Spillovers**
- FDI productivity spillovers occur endogenously through firm and human resource interaction in the use of superior technology in the host economy.
- Productivity spillovers from FDI to local firms can take the form of:
  - horizontal (intra-industry) spillovers

\[
Horizontal_j = \frac{\sum_{i \text{ for all } i \text{ and } j \text{ foreign}} Foreign\ Share_{it} \times Y_{it}}{\sum_{i \text{ for all } i \text{ and } j} Y_{it}}
\]
Literature Review

• vertical (inter-industry) spillovers
  
  • Backward

  \[ \text{Backward}_{jt} = \sum_{k} \alpha_{jk} \text{Horizontal}_{kt} \]

  • Forward

  \[ \text{Forward}_{jt} = \sum_{m} \alpha_{jm} \left( \sum_{i} \text{Foreign Share}_{it} \times (Y_{it} - X_{it}) \right) \div \sum_{i} (Y_{it} - X_{it}) \]
Literature Review

• Empirical Literature
  – Despite the suggestion in theory that presence of FDI firms have positive productivity on local firms, the empirical evidence have however been mixed
  – The literature on FDI and productivity spillovers have continued to grow, however there has been limited study on SSA economies.
  – This paper extends the literature by estimating FDI and productivity spillovers on Ugandan firms.
Data and Methodology

• **Data**
  
  – unbalanced firm level panel data panel covering the period 2005 –2011.
  
  – Used annual enterprise survey or Private Sector Investment Survey (PSIS) jointly conducted by the Bank of Uganda, Uganda Bureau of Statistics and Uganda Investment Authority;
  
  – Focus on the interaction between manufacturing FDI with other firms in the downstream and upstream sectors
Data and Methodology

• Model Specification

• OLS model

\[ \ln Y_{ijt} = \alpha + \beta_1 \ln K_{ijt} + \beta_2 \ln L_{ijt} + \beta_3 \ln M_{ijt} + \beta_4 \text{Foreign Share}_{ijt} + \beta_5 \text{Horizontal}_{jt} + \beta_6 \text{Backward}_{jt} + \beta_7 \text{Forward}_{jt} + \alpha_t + \alpha_r + \alpha_j + \varepsilon_{ijt} \]

• OLS model with lags

\[ \ln Y_{ijt} = \alpha + \beta_1 \ln K_{ijt} + \beta_2 \ln L_{ijt} + \beta_3 \ln M_{ijt} + \beta_4 \text{Foreign Share}_{ijt-1} + \beta_5 \text{Horizontal}_{jt-1} + \beta_6 \text{Backward}_{jt-1} + \beta_7 \text{Forward}_{jt-1} + \alpha_t + \alpha_r + \alpha_j + \varepsilon_{ijt} \]
Findings

• Focus on the result of the OLS regressions with fixed effects
• Found significant and positive coefficient on both the backward spillovers variables for OLS estimates
• Existence of horizontal spillovers within the manufacturing sector;
• result shoes that forward spillover variable were not statistically significant.
<table>
<thead>
<tr>
<th>Variables</th>
<th>Contemporaneous OLS Results</th>
<th>Lagged OLS results</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>All firms</td>
<td>Domestic</td>
</tr>
<tr>
<td>Intercept</td>
<td>8.534***</td>
<td>8.270***</td>
</tr>
<tr>
<td></td>
<td>(0.0810)</td>
<td>(0.1027)</td>
</tr>
<tr>
<td>Foreign share</td>
<td>0.003***</td>
<td>0.002***</td>
</tr>
<tr>
<td></td>
<td>(0.0004)</td>
<td></td>
</tr>
<tr>
<td>Horizontal</td>
<td>0.001**</td>
<td>0.003***</td>
</tr>
<tr>
<td></td>
<td>(0.001)</td>
<td>(0.001)</td>
</tr>
<tr>
<td>Horizontal (lagged)</td>
<td></td>
<td>0.002*</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(0.002)</td>
</tr>
<tr>
<td>Backward</td>
<td>0.011**</td>
<td>0.016**</td>
</tr>
<tr>
<td></td>
<td>(0.003)</td>
<td>(0.005)</td>
</tr>
<tr>
<td>Backward (lagged)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Forward</td>
<td>-0.001</td>
<td>0.000</td>
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<tr>
<td></td>
<td>(0.002)</td>
<td>(0.004)</td>
</tr>
<tr>
<td>Forward (lagged)</td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Number of observations</td>
<td>5,342</td>
<td>2,736</td>
</tr>
<tr>
<td>Regression fit ($R^2$)</td>
<td>0.86</td>
<td>0.83</td>
</tr>
</tbody>
</table>

**Notes:**

a) The dependent variable is natural log of enterprise output (or lnY). Each regression includes natural log of employment (or lnL), natural log of capital stock (or lnK) and natural log of materials used in production (or lnM);

b) Standard errors are presented in parentheses

c) Levels of significance of variables:

* significant at 10% levels
**significant at 5% levels
***significant at 1% levels
Conclusion

• Uganda like many developing countries in Africa and Asia has designed and used strategies to attract FDI by offering incentive packages expecting direct benefits and externalities;
• This study uses firm level data to estimate backward and forward spillovers;
• Preliminary results suggest that a one-standard-deviation increase in foreign presence in downstream sectors is associated with a 1.5 percent rise in output of each domestic firm in supplying industries.
• Work-in-progress to improve the results
Thank you