Modelling the economic impact of the China Belt and Road Initiative on East Africa

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Cartagena de la Indias
Economic growth moderated since 2016...

Notes: (*) Forecast.
Data for Eastern Africa is the weighted average (based on current prices GDP figures) of the 12 countries (excluding Somalia and South Sudan).
Sources: National Statistics Offices, UNDESA, IMF, and UNECA calculations.
Ethiopia, Rwanda and Tanzania as the high-performing African countries

…accompanied by rising rates of investment

Improvements in infrastructure quality in recent years...

Note: The higher the ranking, the lower the quality of infrastructure
Yet High Trade Costs Handicap Regional Development

Source: Own elaboration from MINECOFIN data.
China’s Belt and Road Initiative- A new impetus?

China is financing some major projects...

<table>
<thead>
<tr>
<th>Country</th>
<th>Financier</th>
<th>USD millions</th>
<th>Purpose</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kenya</td>
<td>Eximbank</td>
<td>1,500</td>
<td>SGR phase II Nairobi to Malaba sub-phase 1, Nairobi to Naivasha section 120.4km</td>
</tr>
<tr>
<td>Uganda</td>
<td>Eximbank</td>
<td>1,445</td>
<td>Karuma hydropower project 600MW with transmission lines and substations</td>
</tr>
<tr>
<td>Ethiopia</td>
<td>ICBC</td>
<td>700</td>
<td>Omo-Quraz sugar plant-5</td>
</tr>
<tr>
<td>DRC</td>
<td>Eximbank</td>
<td>660</td>
<td>Busanga hydropower project-Sicomines</td>
</tr>
<tr>
<td>Djibouti</td>
<td>Eximbank &amp; CCECC</td>
<td>596</td>
<td>Hasan Gouled Aptidon International Airport &amp; Ahmed Dini Ahmed International Airport in Obock</td>
</tr>
<tr>
<td>Kenya</td>
<td>ICBC</td>
<td>900</td>
<td>Lamu coal power station, 1,050MW, between Karuma and Soyo</td>
</tr>
</tbody>
</table>

And a rapid rise in commitments to infrastructure
The largest beneficiaries? The largest countries...

**Chinese Support to Eastern Africa, 2000-2014 (millions USD)**

- **Infrastructure**
- **Total Aid Projects**

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- **Somalia**
- **Seychelles**
- **Comoros**
- **Burundi**
- **South Sudan**
- **Madagascar**
- **Eritrea**
- **Rwanda**
- **Djibouti**
- **Uganda**
- **Congo, Dem. Rep.**
- **Kenya**
- **Tanzania**
- **Ethiopia**
But could elevated spending lead to debt distress?

But could elevated spending lead to debt distress?

Note: X-axis is Debt/GDP ratio (%).
Kenyan case is illustrative

Source: Economic Survey 2017, KNBS
Kenyan case is illustrative

Share of Bilateral External Debt

- **2012**: 41% Japan, 44% Rest, 15% China
- **2016**: 26% Japan, 57% Rest, 17% China

Source: Economic Survey 2017, KNBS
Has Infrastructure in East Africa peaked anyway?

<table>
<thead>
<tr>
<th>Number of projects</th>
<th>2013</th>
<th>2014</th>
<th>2015</th>
<th>2016</th>
</tr>
</thead>
<tbody>
<tr>
<td>93</td>
<td>51</td>
<td>61</td>
<td>43</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Value (US$bn)</th>
<th>2013</th>
<th>2014</th>
<th>2015</th>
<th>2016</th>
</tr>
</thead>
<tbody>
<tr>
<td>67.7</td>
<td>60.7</td>
<td>57.5</td>
<td>27.4</td>
<td></td>
</tr>
</tbody>
</table>

Source: Deloitte (2017).
The Global Trade Analysis Project (GTAP) Computable General Equilibrium (CGE) model

- The latest GTAP 10 database
- Assume the BRI will result in a 10 percent decline in trade margin costs on both imports and exports
- Model the reduction in trade margin costs for imports/exports as a 10% increase in productivity in trade margin services for imports/exports (conservative vis-à-vis Villafuerte et al. (2016)
- Standard GTAP closure, but allow for high levels of un- and under-employment prevalent in the region by fixing wages
- Shocks applied to Ethiopia, Kenya, Rwanda, Tanzania and Uganda
Gains heavily skewed to Kenya, Ethiopia and Tanzania
Decreasing trade margins result in positive changes to GDP

Change in value of GDP (%)

- Uganda: 0.4
- Rwanda: 0.6
- Tanzania: 0.7
- Ethiopia: 0.9
- Kenya: 1.2

Uganda  Rwanda  Tanzania  Ethiopia  Kenya
Endowment effects constitute the largest share of welfare gains

Welfare Decomposition ($US, Millions)

<table>
<thead>
<tr>
<th>Country</th>
<th>Allocative Efficiency</th>
<th>Endowment effect</th>
<th>Technology effects</th>
<th>Terms of trade effect</th>
<th>Investment savings</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ethiopia</td>
<td>57.8</td>
<td>105.1</td>
<td>39.2</td>
<td>38.4</td>
<td>17.3</td>
<td>257.7</td>
</tr>
<tr>
<td>Kenya</td>
<td>45.6</td>
<td>124.1</td>
<td>89.6</td>
<td>55.1</td>
<td>65.6</td>
<td>380.0</td>
</tr>
<tr>
<td>Tanzania</td>
<td>55.1</td>
<td>85.2</td>
<td>65.0</td>
<td>23.7</td>
<td>5.8</td>
<td>234.8</td>
</tr>
<tr>
<td>Uganda</td>
<td>4.2</td>
<td>12.0</td>
<td>23.3</td>
<td>6.5</td>
<td>0.2</td>
<td>46.3</td>
</tr>
<tr>
<td>Rwanda</td>
<td>6.4</td>
<td>11.4</td>
<td>13.8</td>
<td>2.3</td>
<td>0.1</td>
<td>34.1</td>
</tr>
<tr>
<td>Total</td>
<td>169.1</td>
<td>337.8</td>
<td>230.9</td>
<td>126.0</td>
<td>89.0</td>
<td>952.8</td>
</tr>
</tbody>
</table>
But declining local manufacturing production

Percentage change in industry output by region

<table>
<thead>
<tr>
<th></th>
<th>Grains Crops</th>
<th>Meat Lstk</th>
<th>Extraction</th>
<th>Proc Food</th>
<th>Text Wapp</th>
<th>Light Mnfc</th>
<th>Heavy Mnfc</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ethiopia</td>
<td>0.5</td>
<td>1.5</td>
<td>0.1</td>
<td>0.3</td>
<td>-0.5</td>
<td>-0.5</td>
<td>-1.1</td>
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<tr>
<td>Kenya</td>
<td>0.4</td>
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<td>0.3</td>
<td>-0.7</td>
<td>-0.8</td>
<td>-0.6</td>
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<td>Tanzania</td>
<td>0.2</td>
<td>0.4</td>
<td>0.5</td>
<td>0.3</td>
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<td>-0.9</td>
<td>-1.0</td>
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<td>Uganda</td>
<td>0.2</td>
<td>0.2</td>
<td>-0.2</td>
<td>0.2</td>
<td>-0.6</td>
<td>-0.3</td>
<td>0.0</td>
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<td>Rwanda</td>
<td>0.2</td>
<td>1.7</td>
<td>0.1</td>
<td>0.2</td>
<td>-0.9</td>
<td>-0.5</td>
<td>-1.2</td>
</tr>
<tr>
<td>Average</td>
<td>0.3</td>
<td>0.8</td>
<td>0.2</td>
<td>0.3</td>
<td>-0.6</td>
<td>-0.6</td>
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Intraregional exports up by US$ 278 million, but declines to the ROW
Intraregional imports and imports from ROW up by US$ 127 million and US$ 447 million, respectively.
The BRI initiative could have a significant positive impact on East Africa

- Increase in the welfare of nearly USD 1 billion
- Raise GDP growth in Eastern Africa ranging from 0.4 to 1.2 percentage points
- Boost intra-regional trade but...
  ....at the price of deteriorating trade balance?
  ....at price of weaker industrial capacity?
- Is it fiscally sustainable?
Thank You!

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