Structural Change in Ghana 1960 -2010

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Outline

- Introduction
- Patterns of Economic Development in Ghana
- Methodology
- Discussion of Results
- Conclusions
Introduction
Introduction

• Standard structural transformation models distinguish between labour push and labour pull (Alvarez-Cuadrado and Poshcke, 2011)
  - ‘Labour pull’ – industrial revolution attracts underemployed labour to the modern sector
  - ‘Labour push’ – a green revolution surplus labour is released for the modern sector

• So
  - No matter the origin of the structural change, the move of labour is from
    - low productivity to high productivity
In this paper we address the following questions:

- Has Ghana’s economic structure changed over the last half century?
- What has been the nature of the change?
- What is the changing structure ‘growth enhancing’?
Patterns of Development in Ghana
Per Capita GDP (cst 2000 US$, WDI)

Match quite well the census years (1960, 1970, 1984, 2000, 2010)
Changing composition: 1960-2010

- For Agriculture: ↓ share in GDP + ↓ empl’t share = productivity changes ?
- For Industry: No change in GDP and employment share = no change in productivity ??
- For Services: ↑ share in GDP + some change in employment share = increase productivity
Changing composition: 1960-2010

- For Agriculture, cocoa has been part of the decline in GDP share
- For industry, construction picked up a bit, but manufacturing has not changed since 1960
- For services, big increases in TSC, followed by govt and CSP
Sectoral GDP per capita (cst. 2000 $)
Main Commodity Exports

Year


% Cocoa Timber Mining Total

Cocoa
Timber
Mining
Total
Trends in Ghana’s Economic complexity index

![Graph showing trends in Ghana’s Economic complexity index from 1964 to 2006.](image)
Methodology
Methodology

• The analysis follows McMillan and Rodrik (2011)
  • We express per capita GDP as follows

\[
PCGDP_t = \frac{L_t}{POP_t} \times \frac{GDP_t}{L_t} \tag{1}
\]

• In this way, per capita GDP can be driven from either of these components
  • In the case of Ghana, the activity rate has not changed by much over the period \( PCGDP \) has been driven by labour productivity
Methodology contd...

• Now we can decompose the labour productivity component as follows

\[ \delta P_t = P_t - P_{t-1} = \sum_j \theta_{j,t-1} \times (P_{j,t} - P_{j,t-1}) + \sum_j (\theta_{j,t} - \theta_{j,t-1}) \times P_{j,t} \]  

(2)

Weighted average of within sector productivity growth – ‘within’ component (weights are the sectoral employment shares at start of period)
- Here productivity change comes from *capital accumulation* or *technological changes*

Productivity effect of labour reallocations across different sectors – this is the ‘*structural change*’ term
Methodology contd...

• Based on the decomposition here, we can address the question
  • What are the respective contribution of the within structural change components

• We use sectoral data from the WDI from 1960 to 2010

• However employment data is only available for 1960, 1970, 1984, 1992, 2000, 2006 and 2010
Results
Economy-wide labour productivity is about **10 times lower** than the world average.

Across all sectors labour productivity is lower for Ghana.

Public utilities is most productive **??**

Manufacturing is the least productive **= agric more productive !!**

### Sectoral labour Productivity, 2005-06 (2000 PPP US$)

<table>
<thead>
<tr>
<th>Sector</th>
<th>McMillan and Rodrik, 2011</th>
<th>Ghana</th>
<th>Ratio: World av: Gh</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Rank</td>
<td>World Av lab Prod</td>
<td>World min Lab Prod</td>
</tr>
<tr>
<td>Mining and Quarrying</td>
<td>1</td>
<td>154,658</td>
<td>3,652</td>
</tr>
<tr>
<td>Public Utilities</td>
<td>2</td>
<td>146,218</td>
<td>6,345</td>
</tr>
<tr>
<td>Finance Insurance, Real Estates and bus services</td>
<td>3</td>
<td>62,184</td>
<td>9,301</td>
</tr>
<tr>
<td>Transport Storage and Comm</td>
<td>4</td>
<td>46,421</td>
<td>6,671</td>
</tr>
<tr>
<td>Manufacturing</td>
<td>5</td>
<td>38,503</td>
<td>2,401</td>
</tr>
<tr>
<td>Construction</td>
<td>6</td>
<td>24,462</td>
<td>2,124</td>
</tr>
<tr>
<td>Wholesale Retail Trade, Hotels and restuarants</td>
<td>7</td>
<td>22,635</td>
<td>1,507</td>
</tr>
<tr>
<td>Community Social Personal and Govt Services</td>
<td>8</td>
<td>20,534</td>
<td>264</td>
</tr>
<tr>
<td>Agriculture Hunting, Forestry and Fishing</td>
<td>9</td>
<td>17,530</td>
<td>521</td>
</tr>
<tr>
<td>Whole Economy</td>
<td></td>
<td>27,746</td>
<td>1,354</td>
</tr>
</tbody>
</table>
Decomposed Productivity Growth, Ghana 1960-2010 (9 Sectors)

- Productivity in Ghana is generally low but it seems to have picked up in the last decade.
- Before 1992, productivity growth was mainly due to within sector changes but structural change component has become more important after that period with growth driven by 7 sectors (food, cocoa, construction, mining, tourism, finance and business and government services).

<table>
<thead>
<tr>
<th>At start Year</th>
<th>Growth 2000 PPP US$</th>
<th>Annual %</th>
<th>9 Sectors</th>
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<th>15 sectors</th>
<th>15 sectors</th>
</tr>
</thead>
<tbody>
<tr>
<td>1960-1970</td>
<td>2,622</td>
<td>0.8</td>
<td>0.5</td>
<td>0.3</td>
<td>0.5</td>
<td>0.3</td>
</tr>
<tr>
<td>1970-1984</td>
<td>2,850</td>
<td>-3.8</td>
<td>-3.6</td>
<td>-0.2</td>
<td>-3.8</td>
<td>0</td>
</tr>
<tr>
<td>1984-1992</td>
<td>1,651</td>
<td>2.5</td>
<td>3.2</td>
<td>-0.7</td>
<td>4.2</td>
<td>-1.7</td>
</tr>
<tr>
<td>1992-2000</td>
<td>2,017</td>
<td>1</td>
<td>-0.9</td>
<td>2</td>
<td>-1.8</td>
<td>2.9</td>
</tr>
<tr>
<td>2000-2006</td>
<td>2,190</td>
<td>4.5</td>
<td>6</td>
<td>-1.5</td>
<td>6.1</td>
<td>-1.7</td>
</tr>
<tr>
<td>2006-2010</td>
<td>2,851</td>
<td>2.7</td>
<td>0</td>
<td>2.6</td>
<td>-0.5</td>
<td>3.2</td>
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<tr>
<td>1960-2010</td>
<td>2,622</td>
<td>0.4</td>
<td>0.2</td>
<td>0.2</td>
<td>0.1</td>
<td>0.3</td>
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<td>2,017</td>
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<td>1.9</td>
<td>1.1</td>
<td>1.4</td>
<td>1.6</td>
</tr>
</tbody>
</table>
• Negative relationship observed for this period: Change in employment share is highest for agriculture which also had the highest employment share in 1970
We find a positive relationship here – high productivity sectors seem to have experienced positive change in employment share.
Concluding Remarks
Concluding comments

• The results for Ghana are not entirely optimistic
  ▫ But there are some pluses
    • Increased productivity growth after 1992 with the structural component being mostly positive
  ▫ And some negatives
    • If we take account of the growth collapse in the 1980s, then the productivity changes were not that high
    • The economy has experienced some structural change without industrialisation and/or green revolution
  ▫ There remains inherent structural difficulties which could be very challenging for any major labour push or labour pull type structural change (e.g. human capital may restrict sectoral mobility; policy coordination plus high labour costs constrains competitiveness)
THANK YOU