SOME INSIGHTS ON DETERMINANTS OF AGRICULTURAL PRODUCTIVITY IN KENYA

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OUTLINE

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Motivation

### Motivation...

<table>
<thead>
<tr>
<th>Country</th>
<th>Contribution of agriculture to GDP (%)</th>
<th>Employment in Agriculture (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Burundi</td>
<td>35.2</td>
<td>93.6</td>
</tr>
<tr>
<td><strong>Kenya</strong></td>
<td>23.1</td>
<td>61.1</td>
</tr>
<tr>
<td>Rwanda</td>
<td>32.2</td>
<td>78.8</td>
</tr>
<tr>
<td>Tanzania</td>
<td>27.1</td>
<td>76.5</td>
</tr>
<tr>
<td>Uganda</td>
<td>23.4</td>
<td>65.6</td>
</tr>
</tbody>
</table>

Motivation...

Source: World Bank (2012); Statistical Abstracts
Observations

- Government policies – Import substitution industrialization
- Oil shock – 1973/1974
- Coffee & tea booms – 1976/77; 1985/86
- Adoption of SAPs
- Political pluralism – 1992 to date
Objectives

- Is there structural change in Kenya’s agriculture which could lead to agricultural transformation?
- What are the determinants for agricultural productivity in Kenya?
Methodology

- What is structural change?

- Al-Kawaz and Qasem (2003):

  
  - “structure” refers to either the internal composition of a system (e.g., an economic or sectoral system), or to interactive relations between the system components. **Structural change therefore refers to the shifts in a system’s internal composition and/or patterns of interdependence.**
Methodology...

- From an econometric viewpoint:

Structural change is a violation of the stationarity assumption in time series analysis (Hansen, 2001)
Methodology…

- Total Factor Productivity (TFP) - agricultural productivity – 1964-2009
- Malmquist index approach – computes productivity index as a product of technical change & efficiency (“catching up”) [Fare et al., 2004]
- Chow’s test to test for structural change on agricultural productivity
- A system GMM to evaluate factors influencing agricultural productivity in Kenya
Results
Overall TFP Trend

Av. TFP = 0.13% p.a.
Inter-decade TFP

Malmquist index

Decade

Year-on-year changes in TFP

Average TFP change (%)

Decade


0 1 2 3 4 5 6 7
Era-wise TFP

Malmquist index

Kenyatta
Moi
Kibaki

0.970
0.975
0.980
0.985
0.990
0.995
1.000
1.005
1.010
1.015
Year-on-year era-wise TFP change

Average TFP change (%)

Kenyatta  Moi  Kibaki
## Structural change?

<table>
<thead>
<tr>
<th>Break-point</th>
<th>Corresponding year</th>
<th>F-value</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>10</td>
<td>1974</td>
<td>0.19</td>
<td>0.9897</td>
</tr>
<tr>
<td>26</td>
<td>1990</td>
<td>0.77</td>
<td>0.63183</td>
</tr>
<tr>
<td>39</td>
<td>2003</td>
<td>1.29</td>
<td>0.2891</td>
</tr>
</tbody>
</table>

- None of the years proxy for a structural break
## GMM Results

<table>
<thead>
<tr>
<th>Variable</th>
<th>Coefficient</th>
</tr>
</thead>
<tbody>
<tr>
<td>TFP&lt;sub&gt;t-1&lt;/sub&gt;</td>
<td>-1.26202***</td>
</tr>
<tr>
<td>RAIN&lt;sub&gt;t-1&lt;/sub&gt;</td>
<td>0.00001**</td>
</tr>
<tr>
<td>lnEDUC&lt;sub&gt;t-1&lt;/sub&gt;</td>
<td>0.076344***</td>
</tr>
<tr>
<td>TARMAC</td>
<td>0.01637</td>
</tr>
<tr>
<td>SAPs</td>
<td>0.04171</td>
</tr>
<tr>
<td>MULTIPARTY</td>
<td>-0.14447**</td>
</tr>
<tr>
<td>ODA</td>
<td>-0.01408**</td>
</tr>
<tr>
<td>DROUGHT</td>
<td>-0.11487**</td>
</tr>
</tbody>
</table>

***, **, * = Sign. at 1%, 5% & 10%; Adjusted R^2 =0.6449
Observations

- Low TFP growth [0.13%] - mainly due to technical change rather than catching up – seen in other African countries (Fulginiti et al., 2004; Coelli and Rao, 2005; Alene, 2010)
- No clear pattern of agricultural growth - no structural change
- Little growth in 1990s
- SAPs seems not to have a significant effect on agricultural growth
- Politics matters with respect to policy articulation & implementation
Thank you