Structural change, employment, and growth in Africa
What drives rapid growth?
  - productivity convergence in (formal) manufacturing
  - structural change towards (formal) manufacturing

The role of manufacturing in Africa
  - is there productivity convergence?
  - how rapid is industrialization?

Is there an alternative, “African” model of growth
  - informal activities
  - services
Convergence is historically the exception rather than the norm

Latecomers have access to
- technology
- capital
- Markets

But face other headwinds
- bad policies
- weak institutions
- geographical disadvantages
- poverty traps

So conventional theory: convergence is conditional:

\[ \hat{y}_j = \beta (\ln y^* - \ln y_j) + \sum_i \gamma_i C_{ij} + \epsilon_j \]
Each observation represents a 2-digit manufacturing industry, for the latest 10 year period for which data are available. The horizontal axis is the log of VA per worker in base period, and the vertical axis is its growth rate over the subsequent decade. Period, industry, and period x industry controls are included (in left panel). Data are from UNIDO and cover formal industries mostly.
Specific manufacturing industries

Notes: Vertical axis represents growth in labor productivity over subsequent decade (controlling for period fixed effects). Data are for the latest 10-year period available.
Source: Rodrik (2013)
So why isn’t everyone already rich?

- Manufacturing industry is typically a very small share of economy in poor countries ($\alpha < .10$)
- And industrialization ($d\alpha$) typically takes place very slowly, despite very large productivity gaps between manufacturing and non-manufacturing parts of the economy
Equation of motion of GDP per worker (y):

\[ \hat{y} = g + \alpha \theta_m \beta (\ln y^* - \ln y_m) + (\theta_m - \theta_n) \, d\alpha \]

Notes: The economy is divided into manufacturing (m) and non-manufacturing (n). A “^” over a variable denotes proportional growth rates, g is the underlying long-term growth rate of the economy, \( \alpha \) is the employment share of manufacturing, \( \theta_m \) and \( \theta_n \) are the productivity premia/discounts of the two sectors \( \theta_m = y_m/y \) and \( \theta_n = y_n/y \), and \( \beta \) is the convergence coefficient for manufacturing.

So growth equals an exogenous (or country-specific) component, a manufacturing convergence factor (that is decreasing in the level of manufacturing productivity), and a reallocation term.
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Growth = country-specific (idiosyncratic) term + manufacturing convergence term
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**Growth** = country-specific (idiosyncratic) term

+ manufacturing convergence term

+ reallocation (structural change) term
Each observation represents a 2-digit manufacturing industry, for the latest 10 year period for which data are available. The horizontal axis is the log of VA per worker in base period, and the vertical axis is its growth rate over the subsequent decade. Period, industry, and period x industry controls are included.
Each observation represents aggregate manufacturing industry in a specific country, for the latest 10 year period for which data are available. The horizontal axis is the log of VA per worker in base period, and the vertical axis is its growth rate over the subsequent decade. Period controls are included.
Problem: industrialization is taking place too slowly

Manufacturing employment share against per-capita GDP
... and de-industrialization is happening too early

Manufacturing employment share against per-capita GDP
Premature industrialization is a general problem for today’s developing countries.
Manufacturing employment shares, GGDC and UNIDO datasets, 1990

(Percent)

<table>
<thead>
<tr>
<th>Country</th>
<th>Year</th>
<th>UNIDO</th>
<th>GGDC</th>
<th>Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>BWA</td>
<td>2008</td>
<td>3.6</td>
<td>6.4</td>
<td>56%</td>
</tr>
<tr>
<td>ETH</td>
<td>2008</td>
<td>0.3</td>
<td>5.3</td>
<td>6%</td>
</tr>
<tr>
<td>GHA</td>
<td>2003</td>
<td>1.0</td>
<td>11.2</td>
<td>9%</td>
</tr>
<tr>
<td>KEN</td>
<td>2007</td>
<td>1.5</td>
<td>12.9</td>
<td>12%</td>
</tr>
<tr>
<td>MUS</td>
<td>2008</td>
<td>16.3</td>
<td>21.5</td>
<td>76%</td>
</tr>
<tr>
<td>MWI</td>
<td>2008</td>
<td>0.7</td>
<td>4.3</td>
<td>16%</td>
</tr>
<tr>
<td>NGA</td>
<td>1996</td>
<td>1.4</td>
<td>6.6</td>
<td>21%</td>
</tr>
<tr>
<td>SEN</td>
<td>2002</td>
<td>0.5</td>
<td>8.9</td>
<td>6%</td>
</tr>
<tr>
<td>TZA</td>
<td>2007</td>
<td>0.5</td>
<td>2.3</td>
<td>22%</td>
</tr>
<tr>
<td>ZAF</td>
<td>2008</td>
<td>7.0</td>
<td>13.1</td>
<td>53%</td>
</tr>
<tr>
<td>ZMB</td>
<td>1994</td>
<td>1.5</td>
<td>2.9</td>
<td>52%</td>
</tr>
</tbody>
</table>

Difference in coverage between two data sets: GGDC (which covers informal employment) and UNIDO (which is mostly formal, registered firms)
Which may be why (aggregate) manufacturing in Africa is not converging.

**Figure 1.** An international perspective on productivity (USA = 100)

A. manufacturing

Source: de Vries, Timmer, and de Vries (2013)
## Patterns of structural change

<table>
<thead>
<tr>
<th></th>
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Patterns of structural change: East Asia and advanced countries

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Patterns of structural change: Africa

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The table shows the patterns of structural change in Africa, with informal and organized sectors in relation to agriculture, manufacturing, and services.
Can small, informal firms act as engine of growth?

Three views of informality (via La Porta and Shleifer 2008):

- romantic view (source of dynamism)
- parasitic view (thrive at the expense of formal firms)
- dualistic view (fundamentally different and worse performer)
Three views of informality
(from La Porta and Shleifer 2008)

- Romantic view (source of dynamism)
- Parasitic view (thrive at the expense of formal firms)
- Dualistic view (fundamentally different and worse performer)

Evidence supports third view:

- Large productivity gaps between informal and formal firms
- The costs of formality (registration, taxes, etc.) cannot account for productivity gaps
- Very few formal firms start as informal ones; no evidence that informal firms become formal as they grow
And the answer is...

Evidence supports mostly third (dualistic) view:

- large productivity gaps between informal and formal firms
- the costs of formality (registration, taxes, etc.) do not account for productivity gaps
- very few formal firms start as informal ones;
- few informal firms become formal, if they do not do so relatively rapidly

Source: La Porta and Shleifer 2008.
Where do “capabilities” come from? (John Sutton)

It is either domestic trading companies or foreign firms that seem to be the source of manufacturing capabilities (Sutton)

- role of organizational capital, access to finance, and knowledge of markets
- small firms play little role
Final notes: what kind of growth? How rapid? (1)

Growth based on natural resources?

- Very few countries have succeeded
  - typically, small countries with solid institutions
- Downsides are well known:
  - Resource sectors are capital intensive and absorb little labor
  - Crowding out of other tradables (Dutch disease)
  - Volatility of terms of trade
  - Difficulty of managing/sharing resource rents
**Final notes: what kind of growth? How rapid? (2)**

Growth based on productivity increases in services
- requires steady and complementary investments in human capital, institutions, and governance
- growth that is reliable, but not spectacular

<table>
<thead>
<tr>
<th>Investment in fundamentals (human capital, institutions)</th>
<th>slow</th>
<th>rapid</th>
</tr>
</thead>
<tbody>
<tr>
<td>slow</td>
<td>slow</td>
<td>(1) no growth</td>
</tr>
<tr>
<td>rapid</td>
<td>(1) slow growth</td>
<td>(1) rapid, sustained growth</td>
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