AN AFRICAN MIRACLE?

Richard H. Sabot Lecture, CGD

Dani Rodrik
April 24, 2014
A remarkable growth turnaround in Africa (and the rest of the developing world)

Growth performance of country groups since 1980

-2.0%
0.0%
2.0%
4.0%
6.0%
8.0%
10.0%

World
Low income
Middle income
East Asia & Pacific (developing only)
South Asia
Sub-Saharan Africa (developing only)
Latin America & Caribbean (developing only)

annual average per-capita GDP growth

1980-1990
1990-2000
2000-2012
TFP growth rates are back to 1960s levels

Source: UNECA (2014)
But many countries still have to catch up to income levels of some decades ago

Economic performance in Sub-Saharan Africa, 1960-2012
(GDP per capita, constant 2005 $)
Is growth temporary or permanent? Reasons to be wary

Last two decades have been particularly favorable to developing countries

- high commodity prices
- low interest rates
- plenty of foreign capital
- recovery (from civil wars and macro instability)
- the Chinese impact

So future may not look like recent past
Need to understand drivers of economic growth
Convergence is historically the exception rather than the norm

Unconditional versus conditional convergence

Latecomers have access to

- technology
- capital
- markets

But face other headwinds, specific to each country

- bad policies
- weak institutions
- geographical disadvantages
- poverty traps

So conventional theory: convergence is **conditional**:

\[
\hat{y}_j = \beta \left( \ln y^*(\theta_j) - \ln y_j \right) + \varepsilon_j
\]
The growth “fundamentals”

Long-term convergence is conditional on:

- **Institutional quality**
  - governance
  - rule of law
  - “business environment”

- **Human capital**
  - education, skills, training

Need not take a position on debate as to which is more fundamental than other
Africa’s fundamentals: better policies

FIGURE 2.11: TRENDS IN AFRICA’S FOREIGN CURRENCY BLACK MARKET PREMIUMS AND INDEX POLICY REFORM, 1960–2010

Source: Giuliano, Mishra and Spilimbergo (2013).

Source: UNECA (2014)
Africa’s fundamentals: democratization

Figure 2.12: Trends towards democracy and electoral competition, 1960–2010

Source: UNECA (2014)
Africa’s fundamentals: fewer civil wars

Source: Straus (2012)
The empirical disconnect between fundamentals and growth

- Empirical relationship between fundamentals and growth strong in levels (i.e., in long-run), but not so much in growth rates
  - there is only weak relationship between growth and
    - improvements in institutional quality,
    - standard measures of economic reform (except in the extremes),
    - increases in educational attainment
- High-performing Asian countries have been weak on many of the fundamentals during much of their growth
- Latin American growth post-1990 has been subpar despite significant improvements in governance and policy
  - e.g. Mexico
The policy disconnect between fundamentals and growth

- Institutions: measured as “rule of law,” “expropriation risk”
  - broadly defined, these have large effects on long-run levels of income
  - but no clear, easily exploitable mapping from institutions as “rules of the game” to institutions as “policy”
- Democracy, as example
  - recent paper by Acemoglu et al. (2014) finds full democratization produces ≈20% increase in GDP per capita over 30 years
    - growth effect is 0.6 percent per year -- not insignificant, but it’s temporary and phased out over time
  - typical cross-country findings (in levels) with “expropriation risk,” “rule of law” suggest much larger magnitudes
    - “as much as 75% of the [income] gap between high and low institutions countries” (Acemoglu, Gallego, Robinson, 2014, p. 3)
Another look at convergence

So standard growth equation does not do a very good job of describing growth miracles

\[ \hat{y}_j = \beta \left( \ln y^*(\theta_j) - \ln y_j \right) + \varepsilon_j \]

A complementary perspective: structural change

• economic dualism
  • sectors that have different productive trajectories
• unconditional convergence in modern industries
There is unconditional convergence -- in (formal) 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)
--- regardless of period, sector, or aggregation

\[ \beta \approx 2.9\% \quad (t\text{-stat} \approx 7), \text{ implying a half-life for full convergence of 40-50 years!} \]

Notes: Data are for the latest 10-year period available. On LHS chart, each dot represents a 2-digit manufacturing industry in a specific country; vertical axis represents growth rate of labor productivity (controlling for period, industry, and period × industry fixed effects).

Source: Rodrik (2013)
African manufacturing seems no different (1)

Full sample: 115 countries  Sub-Saharan Africa: 20 countries

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.
African manufacturing seems no different (2)

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.
Putting it together

\[ \hat{y} = \beta (\ln y^*(\theta) - \ln y) \]  \hspace{1cm} (A)

\[ + \alpha_M \pi_M \beta_M (\ln y^*_M - \ln y_M) \]  \hspace{1cm} (B)

\[ + (\pi_M - \pi_T) d\alpha_M \]  \hspace{1cm} (C)
Putting it together

\[ \hat{y} = \beta (\ln y^* (\Theta) - \ln y) \]  
(A)

\[ + \alpha_M \pi_M \beta_M (\ln y_M^* - \ln y_M) \]  
(B)

\[ + (\pi_M - \pi_T) d\alpha_M \]  
(C)

(A) Conditional convergence, dependent on accumulation of fundamental capabilities (human capital and institutional quality)
-- a slow process
Putting it together

\[ \hat{y} = \beta (\ln y^*(\theta) - \ln y) \quad \text{(A)} \]

\[ + \alpha_M \pi_M \beta_M (\ln y^*_M - \ln y_M) \quad \text{(B)} \]

\[ + (\pi_M - \pi_T) d\alpha_M \quad \text{(C)} \]

(B) Unconditional convergence in (formal) manufacturing
-- rapid, but quantitatively small due to small initial share of manufacturing
Putting it together

\[ \hat{y} = \beta (\ln y^*(\Theta) - \ln y) \]  \hspace{1cm} (A)

\[ + \alpha_M \pi_M \beta_M (\ln y^*_M - \ln y_M) \]  \hspace{1cm} (B)

\[ + (\pi_M - \pi_T) d\alpha_M \]  \hspace{1cm} (C)

(C) Structural change
-- industrialization in particular
### A typology of growth processes/outcomes

<table>
<thead>
<tr>
<th></th>
<th>Structural transformation, industrialization ((d_\alpha))</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>slow</td>
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<tr>
<td>Investment in</td>
<td></td>
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<tr>
<td>fundamentals</td>
<td>slow</td>
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<tr>
<td>(human capital,</td>
<td></td>
</tr>
<tr>
<td>institutions)</td>
<td>(1) no growth</td>
</tr>
<tr>
<td></td>
<td>(1) slow growth</td>
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<td></td>
</tr>
</tbody>
</table>
## Table 2. GDP, employment, and relative productivity levels across countries and sectors, 1960 -2010

<table>
<thead>
<tr>
<th>Sector</th>
<th>Value added</th>
<th>Employment</th>
<th>Relative productivity levels</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agriculture</td>
<td>37.6</td>
<td>29.2</td>
<td>24.9</td>
</tr>
<tr>
<td>Industry</td>
<td>24.3</td>
<td>30.0</td>
<td>32.6</td>
</tr>
<tr>
<td>Mining</td>
<td>8.1</td>
<td>6.2</td>
<td>11.2</td>
</tr>
<tr>
<td>Manufacturing</td>
<td>9.2</td>
<td>14.7</td>
<td>14.0</td>
</tr>
<tr>
<td>Other industry</td>
<td>7.1</td>
<td>9.2</td>
<td>7.3</td>
</tr>
<tr>
<td>Services</td>
<td>38.1</td>
<td>40.7</td>
<td>42.6</td>
</tr>
<tr>
<td>Market services</td>
<td>24.5</td>
<td>25.5</td>
<td>28.1</td>
</tr>
<tr>
<td>Distribution services</td>
<td>21.5</td>
<td>20.8</td>
<td>22.7</td>
</tr>
<tr>
<td>Fin. and bus. ser.</td>
<td>3.0</td>
<td>4.7</td>
<td>5.4</td>
</tr>
<tr>
<td>Non-market services</td>
<td>13.6</td>
<td>15.2</td>
<td>14.4</td>
</tr>
<tr>
<td>Government services</td>
<td>10.5</td>
<td>11.7</td>
<td>11.5</td>
</tr>
<tr>
<td>Other services</td>
<td>3.1</td>
<td>3.5</td>
<td>2.9</td>
</tr>
<tr>
<td>Total economy</td>
<td>100</td>
<td>100</td>
<td>100</td>
</tr>
</tbody>
</table>

Source: de Vries, Timmer, and de Vries (2013)
...is lagging behind, even controlling for incomes


Asia: Hong Kong, Indonesia, India, Japan, Korea, Malaysia, the Philippines, Singapore, Thailand, Taiwan, and Vietnam.
Structural change in Vietnam versus…

Notes: Authors’ calculations based on data from the GSO. The bubble sizes indicate the share of total employment in 1990. For sector abbreviations refer to Table A.1.

Source: McCaig and Pavcnik (2013)
Correlation Between Sectoral Productivity and Change in Employment Shares in Ethiopia (1990-2005)

\[ \beta = 9.4098; \text{t-stat} = 0.91 \]

**Note:** Size of circle represents employment share in 1990
**Note:** \( \beta \) denotes coefficient of independent variable in regression equation:
\[ \ln(p/P) = \alpha + \beta \Delta \text{Emp. Share} \]

Source: Authors' calculations with data from National Bank of Ethiopia and Ethiopia's Ministry of Finance

Correlation Between Sectoral Productivity and Change in Employment Shares in Kenya (1990-2005)

\[ \beta = 0.0902; \text{t-stat} = 0.02 \]

**Note:** Size of circle represents employment share in 1990
**Note:** \( \beta \) denotes coefficient of independent variable in regression equation:
\[ \ln(p/P) = \alpha + \beta \Delta \text{Emp. Share} \]


Structural change in Africa has not been always conducive to growth

1990-1999

post-2000

Sources: McMillan (2014)
Informality dominates in African manufacturing

<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)

Source: de Vries, Timmer, and de Vries (2013)
Formal/wage employment very low and often declining across entire economy

Table 3: Distribution of employment by sector (share of the labourforce %)

<table>
<thead>
<tr>
<th></th>
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<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Wage Employment</td>
<td>7.9</td>
<td>7.8</td>
<td>15.3</td>
<td>13.3</td>
<td>19.5</td>
<td>12.4</td>
</tr>
<tr>
<td>Government</td>
<td>5.7</td>
<td>3.0</td>
<td>5.4</td>
<td>3.4</td>
<td>12.5</td>
<td>7.0</td>
</tr>
<tr>
<td>Private</td>
<td>2.2</td>
<td>4.7</td>
<td>9.9</td>
<td>9.9</td>
<td>7.0</td>
<td>5.4</td>
</tr>
<tr>
<td>Self Employed/Family</td>
<td>10.9</td>
<td>18.7</td>
<td>7.6</td>
<td>10.3</td>
<td>30.2</td>
<td>28.1</td>
</tr>
<tr>
<td>Agriculture</td>
<td>80.4</td>
<td>72.3</td>
<td>76.2</td>
<td>75.5</td>
<td>48.4</td>
<td>57.3</td>
</tr>
<tr>
<td>Unemployed</td>
<td>0.8</td>
<td>1.3</td>
<td>0.9</td>
<td>0.9</td>
<td>4.6</td>
<td>3.6</td>
</tr>
</tbody>
</table>

Sources: Kingdon et al. (2006); Haywood and Teal (2009).

Notes: For Nigeria, private wage employment includes NGOs and international organizations.

Source: Golub and Hayat (2014)
Patterns of structural change

<table>
<thead>
<tr>
<th>Informal</th>
<th>Agriculture</th>
<th>Manufacturing</th>
<th>Services</th>
</tr>
</thead>
<tbody>
<tr>
<td>Organized</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Patterns of structural change: East Asia and advanced countries

<table>
<thead>
<tr>
<th>informal</th>
<th>agriculture</th>
<th>manufacturing</th>
<th>services</th>
</tr>
</thead>
<tbody>
<tr>
<td>organized</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
## Patterns of structural change: Africa

<table>
<thead>
<tr>
<th>informal</th>
<th>agriculture</th>
<th>manufacturing</th>
<th>services</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>organized</td>
<td></td>
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</tbody>
</table>
High-growth scenarios for Africa

1. Revive industrialization?
2. Agriculture-led growth through non-traditional agricultural products?
3. Raise productivity in services?
4. Growth based on natural resources?
1. Revive industrialization?

- Is “poor business climate” the main culprit?
  - costs of power, transport, corruption, regulations, security, contract enforcement, uncertainty… (Gelb, Meyer, and Ramachandran 2014)

- If so, remedy is clear-cut
  - for tradable industries, an undervalued exchange rate compensates for these costs
  - where culprit for slow industrialization is market failures, undervalued exchange rate also substitutes for industrial policy,

- The obstacles that industrialization faces are more deep-seated
  - premature de-industrialization a common feature across developing world
  - driven by global competition, demand patterns, and technology
With appropriate exchange rate, Africa can compete with China and Vietnam in certain industries

<table>
<thead>
<tr>
<th></th>
<th>China</th>
<th>Vietnam</th>
<th>Ethiopia</th>
<th>Tanzania</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wage (monthly) relative to China</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Polo shirts</td>
<td>100</td>
<td>42</td>
<td>24</td>
<td>48</td>
</tr>
<tr>
<td>Wooden chairs</td>
<td>100</td>
<td>51</td>
<td>23</td>
<td>27</td>
</tr>
<tr>
<td>Leather loafers</td>
<td>100</td>
<td>27</td>
<td>12</td>
<td>37</td>
</tr>
<tr>
<td>Productivity (items produced per day) relative to China</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Polo shirts</td>
<td>100</td>
<td>42</td>
<td>49</td>
<td>47</td>
</tr>
<tr>
<td>Wooden chairs</td>
<td>100</td>
<td>6</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Leather loafers</td>
<td>100</td>
<td>70</td>
<td>80</td>
<td>100</td>
</tr>
<tr>
<td>Unit labor cost (wages-productivity ratio) relative to China</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Polo shirts</td>
<td>100</td>
<td>101</td>
<td>50</td>
<td>102</td>
</tr>
<tr>
<td>Wooden chairs</td>
<td>100</td>
<td>888</td>
<td>2,592</td>
<td>1,884</td>
</tr>
<tr>
<td>Leather loafers</td>
<td>100</td>
<td>39</td>
<td>15</td>
<td>37</td>
</tr>
</tbody>
</table>

Source: Constructed using data from Dinh and others (2012).

Source: African Center for Economic Transformation (2014)
Premature industrialization is a general problem for today’s developing countries.
De-industrialization in Africa

Manufacturing employment share against per-capita GDP
2. Non-traditional agricultural products?

- Agricultural diversification hindered by many of the same obstacles as manufacturing
  - “poor business climate” (e.g., Golub and Hayat 2014)
- Plus, it requires extensive government effort in technology, land issues, standard setting, input provision,
- Again, role for exchange rate policy as compensatory tool
- Diversification and productivity growth in agriculture have played important role in Asia in early growth
  - China, Vietnam
- But few successful cases of:
  - sustained growth based on agricultural exports
    - which is what agricultural diversification entails
  - slowing down of outmigration from rural to urban areas
    - so creation of high-productivity urban jobs will remain a challenge
3. Raise productivity in services?

- Remember: services are not an escalator sector like manufacturing
- Requires steady and broad-based accumulation of capabilities in human capital, institutions, and governance
  - “technologies” less tradable and more context-specific
  - complementarities across policy domains

<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 growth</td>
<td>episodic growth</td>
</tr>
</tbody>
</table>
| rapid                                                   | rapid, sustained growth | }
4. Growth based on natural resources?

- 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

- Very few countries have succeeded
  - A few small countries with atypical situations
Sustained rapid growth based on natural resources has been exceedingly uncommon in Industrializers in the European periphery and East Asia.
Is an African miracle possible?

- Balance of evidence suggests caution
- Much of recent high growth is due to temporary boosts:
  - highly advantageous external context
  - making up of lost ground
- Main benefit of continent’s improved institutional/macro framework is to establish stability (rather than ignite take-off)
- Best we can expect is moderate, but steady growth
  - sustained 2% growth per annum is not bad!
- If we do get growth miracles, they will look very different from those we have experienced to date, which have been based on rapid industrialization