AFRICA’S UNFOLDING AGRI-FOOD SYSTEM TRANSFORMATION

T.S. Jayne, Milu Muyanga, Felix Yeboah, Ayala Wineman

Presentation at the African Green Revolution Forum (AGRF)
7 September 2017, Abidjan, Côte d’Ivoire
7 UNMISTAKABLE SIGNS OF AGRI-FOOD SYSTEM TRANSFORMATION IN SSA

1. Major growth in per capita incomes
RISING REAL INCOMES

• 35% growth in inflation-adjusted real p.c. incomes in SSA, 2000-2014
  – Doubling in many countries

• Poverty rates falling for the region
  – % of people living on less than $1.90 a day declined from 54% in 1990 to 41% in 2013 (Barrett et al., 2017)
7 UNMISTAKABLE SIGNS OF AGRI-FOOD SYSTEM TRANSFORMATION IN SSA

1. Major growth in per capita incomes

2. Impressive agricultural growth rates
IMPRESSIVE AGRICULTURAL GROWTH

Annual inflation-adjusted agricultural growth rates, 2000-2016:

- Sub-Saharan Africa: +4.62%
- Latin America: +2.49%
- East Asia: +3.07%
- South Asia: +2.96%
- World: +2.75%
AGRICULTURAL VALUE ADDED ANNUAL GROWTH RATES 2000-2016 (constant local currency units)

Source: World Development Indicators, 2017
RELATIONSHIP BETWEEN AGRICULTURAL GROWTH AND POVERTY REDUCTION

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3. Rise of commercialized African investor farmers
# Changes in Farm Structure in Tanzania (2008-2012)

**LSMS/National Panel Surveys**

<table>
<thead>
<tr>
<th>Farm size</th>
<th>Number of farms (% of total)</th>
<th>% growth in number of farms between initial and latest year</th>
<th>% of total operated land on farms between 0-100 ha</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2008</td>
<td>2012</td>
<td>2008</td>
</tr>
<tr>
<td>0 – 5 ha</td>
<td>5,454,961 (92.8)</td>
<td>6,151,035 (91.4)</td>
<td>12.8</td>
</tr>
<tr>
<td>5 – 10 ha</td>
<td>300,511 (5.1)</td>
<td>406,947 (6.0)</td>
<td>35.4</td>
</tr>
<tr>
<td>10 – 20 ha</td>
<td>77,668 (1.3)</td>
<td>109,960 (1.6)</td>
<td>41.6</td>
</tr>
<tr>
<td>20 – 100 ha</td>
<td>45,700 (0.7)</td>
<td>64,588 (0.9)</td>
<td>41.3</td>
</tr>
<tr>
<td>Total</td>
<td>5,878,840 (100%)</td>
<td>6,732,530 (100%)</td>
<td>14.5</td>
</tr>
</tbody>
</table>

-6.1% increase

+6.1% increase
<table>
<thead>
<tr>
<th>Ghana</th>
<th>Number of farms</th>
<th>% growth in number of farms</th>
<th>% of total cultivated area</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-2 ha</td>
<td>1,458,540</td>
<td>1,582,034</td>
<td>8.5</td>
</tr>
<tr>
<td>2-5 ha</td>
<td>578,890</td>
<td>998,651</td>
<td>72.5</td>
</tr>
<tr>
<td>5-10 ha</td>
<td>116,800</td>
<td>320,411</td>
<td>174.3</td>
</tr>
<tr>
<td>10-20 ha</td>
<td>38,690</td>
<td>117,722</td>
<td>204.3</td>
</tr>
<tr>
<td>20-100 ha</td>
<td>18,980</td>
<td>37,421</td>
<td>97.2</td>
</tr>
<tr>
<td>&gt;100 ha</td>
<td>--</td>
<td>1,740</td>
<td>-</td>
</tr>
<tr>
<td>Total</td>
<td>2,211,900</td>
<td>3,057,978</td>
<td>38.3</td>
</tr>
</tbody>
</table>

Source: Ghana GLSS Surveys, 1992, 2013
MEDIUM SCALE FARMS’ SHARE OF TOTAL CROP VALUE IN TANZANIA – 14% TO 30% IN 6 YEARS

% of total crop value by farm size category

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RAPID INVESTMENT IN AGRICULTURAL VALUE CHAINS BY AFRICAN ENTREPRENEURS

- **800% increase** in the volumes and value of food marketed through rural-to-urban value chains since 2000 (Tschirley et al, 2017)

- Underlying drivers:
  - rapidly rising urban demand
  - high global food prices
  - agricultural sectoral reforms of 1990s
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5. Diversification of the labor force into off-farm activities
RAPID DECLINE IN SHARE OF LABOR FORCE IN FARMING (IN FULL-TIME EQUIVALENTS)

Source: Yeboah and Jayne (2018)
Farming is the single largest employer in most countries despite declining job share.
MAJORITY OF OFF-FARM AGRI-FOOD SYSTEM JOBS IN COMMERCE, MUCH LESS IN AGRO-PROCESSING

<table>
<thead>
<tr>
<th>Country</th>
<th>Survey years</th>
<th>Farming</th>
<th>Agro-processing</th>
<th>Downstream commerce and distribution</th>
<th>Non-farm</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>% of FTE jobs</td>
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<td>% of FTE jobs</td>
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</tr>
<tr>
<td>Ghana</td>
<td>2005/06</td>
<td>43.5</td>
<td>6.3</td>
<td>8.6</td>
<td>41.6</td>
</tr>
<tr>
<td></td>
<td>2012/13</td>
<td>34.3</td>
<td>3.7</td>
<td>15.5</td>
<td>46.5</td>
</tr>
<tr>
<td>Nigeria</td>
<td>2010/11</td>
<td>30.6</td>
<td>2.3</td>
<td>18.7</td>
<td>48.2</td>
</tr>
<tr>
<td></td>
<td>2012/13</td>
<td>33.7</td>
<td>4.6</td>
<td>18.6</td>
<td>43.1</td>
</tr>
<tr>
<td>Rwanda</td>
<td>2005/06</td>
<td>65.7</td>
<td>0.4</td>
<td>7.4</td>
<td>26.6</td>
</tr>
<tr>
<td></td>
<td>2010/11</td>
<td>54.0</td>
<td>1.2</td>
<td>7.7</td>
<td>37.0</td>
</tr>
<tr>
<td>Tanzania</td>
<td>2010/11</td>
<td>47.3</td>
<td>2.5</td>
<td>15.0</td>
<td>35.2</td>
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<tr>
<td>Zambia</td>
<td>2005</td>
<td>61.2</td>
<td>1.6</td>
<td>3.1</td>
<td>34.1</td>
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<td>46.7</td>
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Source: Yeboah and Jayne (2018)
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6. Greater vibrancy of agricultural factors markets
### Mode of Acquisition of All Farm PLOTS in Tanzania

#### Percent of PLOTS

<table>
<thead>
<tr>
<th>Mode of Acquisition</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inherited</td>
<td>33.17%</td>
</tr>
<tr>
<td>Gifted</td>
<td>10.33%</td>
</tr>
<tr>
<td>Purchased</td>
<td>29.63%</td>
</tr>
<tr>
<td>Borrowed</td>
<td>11.09%</td>
</tr>
<tr>
<td>Rented</td>
<td>9.63%</td>
</tr>
<tr>
<td>Other (squatting / cleared land/ allocated)</td>
<td>6.16%</td>
</tr>
</tbody>
</table>

#### Percent of Total Farmland Area

- **Inherited/ gifted**: 38.34%
- **Purchased**: 36.46%
- **Rented**: 7.00%
- **Borrowed**: 6.90%
- **Other mode of acquisition**: 11.30%

**Observations**: 4,291

Source: LSMS/National Panel Survey 2014/15
NOMINAL VALUE OF TRACTOR IMPORTS TO SUB-SAHARAN AFRICA (EXCL. SOUTH AFRICA), 2001-2015

Source: Van der Westhuisen et al, 2018, based on Trade Map database
% OF FARM HOUSEHOLDS RENTING TRACTOR SERVICES IN TANZANIA, 2009 VS 2015

Source: Van der Westhuisen et al., 2018, based on NPS/LSMS surveys
% OF FARM HOUSEHOLDS RENTING TRACTOR SERVICES IN TANZANIA, 2009 VS 2015

Source: Van der Westhuisen, 2018, based on LSMS/NPS surveys
MEAN LAND PRICES IN TANZANIA: +53.9% IN REAL TERMS IN 6 YEARS

OUTPUT AND FACTOR PRICE INDICES, RURAL MALAWI, 2004-2013

Sources: LSMS-ISA and IHS for land and wages; FEWSNET for urea and maize
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7. Improved market access conditions for African farmers
FARMER REPORTED NUMBERS OF TRADERS BUYING MAIZE IN THEIR VILLAGE, 2014

Source: Sitko and Jayne, 2014
## MARKET ACCESS CONDITIONS, ZAMBIA, 2014

<table>
<thead>
<tr>
<th>Distance from farm to:</th>
<th>Percentile of farm household distribution</th>
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<tr>
<td></td>
<td>Mean</td>
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<td>Nearest district town (km)</td>
<td>37.1</td>
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<td>Point of maize sale to trader (km)</td>
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Source: Chapoto and Jayne, 2014, based on 2014 Crop Forecast Survey, n=13,859 farm households
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<tr>
<td>Point of maize sale to trader (km)</td>
<td>6.8</td>
</tr>
</tbody>
</table>

Source: Chapoto and Jayne, 2014, based on 2014 Crop Forecast Survey, n=13,859 farm households
CHANGE IN FARM HOUSEHOLDS’ DISTANCE TO SERVICES IN RURAL KENYA, 1997-2010

Percentage of 1997 value

Km to nearest...

- maize sale
- fertilizer seller
- veterinary service
- telephone
- extension service
- motorable road
- tarmac road
- improved water
- health center
- electricity

Source: Chamberlin and Jayne, 2012
MAJOR CHALLENGES TO BE TACKLED

1. Future ag growth needed from higher value per hectare and per laborer, not just area expansion
AFRICA’S AGRICULTURAL GROWTH STILL RELIES MAINLY ON CROPLAND EXPANSION, NOT ENOUGH ON PRODUCTIVITY GROWTH

MAJOR CHALLENGES TO BE TACKLED

1. Future ag growth needed from higher value per hectare and per laborer, not just area expansion

2. Land/soil degradation – will make continued agricultural transformation more difficult unless addressed

   • Proximate causes: low adoption of “climate smart” and “sustainable” land management practices

   • Underlying culprits – ineffective national ag R&D and extension systems

3. The “employment challenge”: each year, roughly 17 million young Africans enter working age
LOOMING EMPLOYMENT CHALLENGE IN SSA

Age pyramid: rural SSA, 2015

62% < 25 years old
YOUTH LIVELIHOODS OPTIONS 62% < 25 years

40% Non-farm

10% Successful non-farm

30% Struggling non-farm

60% Farming

50% Struggling farm

10% Successful farm

Pulled out of agriculture
• In jobs with high barriers to entry
• Post-secondary education
• Invested in skills

Pushed out of agriculture
• Relatively unskilled / limited education
• Limited access to land / finance
• Mainly informal sector / wage workers

Pushed into agriculture
• Few productive assets
• Poor access to land, finance, knowledge
• High concentration of poverty

Pulled into agriculture
• Good access to land, finance, etc.
• Favorable market access, infrastructure
• Diversified income sources
YOUTH LIVELIHOODS OPTIONS
62% < 25 years

40% Non-farm

30% Struggling non-farm

10% Successful non-farm

70% Successful non-farm

60% Farming

50% Struggling farm

10% Successful farming

30% Successful farming

POLICIES

- Inclusive economic growth
- Infrastructure
- R&D
- Education
  - Post-secondary

- R&D / ext.
- Land access
- Finance
- Infrastructure and investments along value chain
  - Irrigation
  - Roads
  - Electricity

STRUCTURAL TRANSFORMATION PATHWAY
SUMMARY : UNMISTAKABLE PROGRESS IN SSA

1. Africa’s labor force diversifying away from subsistence farming

2. Share of labor force in non-farm employment up sharply since 2000

3. Governance has improved, albeit unevenly. Days of hyperinflation, black market exchange rates and macro turmoil largely over.

4. Greater proportion of young Africans acquiring secondary and university educations

5. Per capita GDP increased between 2000 and 2014 by 35% in real terms. SSA has been world’s second-fastest growing economy, exceeded only by Asia

6. +4.6% inflation-adjusted p.a. ag growth between 2000-2016 (WB, 2017) vs. world avg. of 2.75%

7. Women have become considerably more active in labor markets and better able to hold stocks of wealth on their own

8. Poverty rates declined significantly since 2000

9. Nutritional indicators also show gradual but clear improvement
AFRICA’S UNFOLDING AGRI-FOOD SYSTEM TRANSFORMATION

T.S. Jayne and Holger Kray
World Bank Senior Leadership Technical Meeting
25 January, 2018
Paris, France
SUB SAHARAN AFRICA: ONLY REGION OF THE WORLD WHERE RURAL POPULATION CONTINUES TO RISE PAST 2050

Source: UN 2013
AGRICULTURAL EMPLOYMENT SHARE IN TOTAL NUMBER OF JOBS AND IN FULL-TIME EQUIVALENTS (FTE)

Source: Yeboah and Jayne (2018)