Adding Agriculture to the Mix: 
the Living Standards Measurement Study – 
Integrated Surveys on Agriculture

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Outline

- New initiative
  - Motivation
  - Main features
- Preliminary Findings
- Data and dissemination
- Possible new directions
LSMS-ISA

- 6 year project to generate:
  - Better agricultural data
  - Data that allows one to link agriculture to other facets of households, from labor, to health, to welfare
  - Panel data: changes over time
  - Public access data (micro data)
- Main funding from the Bill and Melinda Gates Foundation
- Implemented by the Research Group in the World Bank (Living Standards Measurement Study, LSMS)
- In 7 Sub-Saharan countries
**Motivation**

- Consensus on importance of agriculture for poverty reduction, yet:
  - Data are poor: low quality, inadequate periodicity and comparability;
  - Lack of policy relevance of agricultural data: failure to address (i) household diversification, (ii) linkages to non-farm, poverty, health, (iii) dynamics
  - Institutional constraints in agricultural data production and analysis
  - Low analytical capacity
  - Weak dissemination of data and findings
National Statistical Office  Ministry(ies) of Agriculture

**PARTNERSHIP**

**LSMS INTEGRATED SURVEYS OF AGRICULTURE**

- Demographics
- Welfare (monetary and non)
- Health
- Education
- Food security
- Shocks
- Farm (some or none)
- Non-farm labor: wage, self-empl., ...
- Non-labor: remittances, SA, ...
- Other

**Agriculture**

- Land
- Crop outputs
- Crop disposition
- Farm inputs
- Credit
- Extension
- Livestock
- Fisheries

**National Statistical Office**

- Ministry(ies) of Agriculture

**Farming and household welfare**

- Migration and farm investments
- Farming/crop choice and nutrition
- Own production and food security

**Women's farming and nutrition/welfare**

- Targeting of agricultural subsidies
- Health and farm productivity
- Other
Main features

Integrated approach

- Multi-topic survey instrument
  - Agriculture plus non-farm, poverty, nutrition, *inter alia*
- Build on existing/planned surveys
  - Local partners: National Statistical Office, MoA, TWG
  - National Strategy for the Development of Statistics (NSDS)
  - Global Strategy on Agricultural and Rural Statistics
- Improved links to other data sources
  - PopCensus, AgCensus (Small Area Estimation)
  - Geo-referencing
  - Multiple instruments (community, facilities, markets)
Main features, cont.

Panel
- Frequency (varies by country)
- Tracking of movers
- Tracking of split-offs

Quality (Standard LSMS techniques +)
- Concurrent data entry (moving to CAPI)
- Multiple visits (around agricultural season)
- Small sample (at baseline- splits could increase)
- Population based sample-urban and rural linkages (global strategy)
Main features, cont.

Methodology

- Testing and validation of measures
  - Crop production: Recall vs. Diary
  - Area measurement (and impact on inverse FS-productivity)
  - Income measures
  - Survey to survey imputation

- New technologies
  - Use of mobile phones
  - CAPI

- New Modules
  - Livestock and Fishery

- Sourcebooks/guidelines
  - Tracking
  - Climate change
  - Use of mobile phones
  - Weights in panel surveys
Main features, cont.

Public Access Policy

- Within 12 months of data collection
- Open Access and free of charge
- Where can you find it?
  - On NSO website
  - On World Bank LSMS website
- What documentation?
  - Questionnaires
  - Manuals
  - Sample
  - Problems
  - Format of the Data
Preliminary findings

• Panel
  – Movement in and out of farming
  – Changes in farming

• Additional features
  – Network roster
  – Disaggregation (plot/crop)

• Methodology
  – Recall vs Diary
  – GPS vs. Farmer Estimates
  – Heaping
  – Productivity
## Uganda (1)

### Farming participation rates 2005/06 - 2009/10

<table>
<thead>
<tr>
<th>Farming Participation</th>
<th>Obs</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>HH farming in 05/06 &amp; 09/10</td>
<td>1,958</td>
<td>75.0</td>
</tr>
<tr>
<td>HH farming in 05/06, Not in 09/10</td>
<td>124</td>
<td>4.8</td>
</tr>
<tr>
<td>HH farming in 09/10, Not 05/06</td>
<td>157</td>
<td>6.0</td>
</tr>
<tr>
<td>HH not Farming in 05/06 &amp; 09/10</td>
<td>371</td>
<td>14.2</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>2,610</strong></td>
<td><strong>100.0</strong></td>
</tr>
</tbody>
</table>

Source: Uganda UNHS 2005/06 and 2009/10
### Changes in Land & Input Use: UNPS 2005/06 - 2009/10

<table>
<thead>
<tr>
<th></th>
<th>2005/06</th>
<th>2009/10</th>
<th>Δ</th>
</tr>
</thead>
<tbody>
<tr>
<td>Size of Land Holdings (Acres)</td>
<td>4.9</td>
<td>4.7</td>
<td>-0.1</td>
</tr>
<tr>
<td># of Owned</td>
<td>Cultivated Plots</td>
<td>2.5</td>
<td>2.4</td>
</tr>
<tr>
<td>% using Organic Fertilizer</td>
<td>14.3</td>
<td>16.7</td>
<td>2.4  *</td>
</tr>
<tr>
<td>% using Inorganic Fertilizer</td>
<td>4.6</td>
<td>4.5</td>
<td>-0.2</td>
</tr>
<tr>
<td>% using Herbicides/Pesticides</td>
<td>12.9</td>
<td>14.8</td>
<td>2.0  *</td>
</tr>
</tbody>
</table>

Averages Based on 1,958 HHs Farming in 05/06 & 09/10

* Significant at 95% Level
Household Agricultural Decision-Making (Annual Crops)

<table>
<thead>
<tr>
<th>Crop Categories</th>
<th>Male Only</th>
<th>Female Only</th>
<th>Both</th>
<th>Additional Outside Decision-maker</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cereals/tubers/roots</td>
<td>36.2</td>
<td>23.4</td>
<td>40.4</td>
<td>100.0</td>
<td>3,143</td>
</tr>
<tr>
<td>Legumes / Oil</td>
<td>36.9</td>
<td>20.4</td>
<td>42.6</td>
<td>100.0</td>
<td>388</td>
</tr>
<tr>
<td>Fruit / Vegetable</td>
<td>40.1</td>
<td>18.4</td>
<td>41.5</td>
<td>100.0</td>
<td>230</td>
</tr>
<tr>
<td>Cash Crops</td>
<td>36.7</td>
<td>9.9</td>
<td>53.4</td>
<td>100.0</td>
<td>82</td>
</tr>
</tbody>
</table>

## Tanzania (2)

### Network Roster

<table>
<thead>
<tr>
<th></th>
<th>Buy Seeds</th>
<th>Buy Fertilizer</th>
<th>Sell Crops</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Total</strong></td>
<td>45.5</td>
<td>11.9</td>
<td>49.2</td>
</tr>
</tbody>
</table>

*n=2163*

**Of those...**

<table>
<thead>
<tr>
<th>Location</th>
<th>Buy Seeds</th>
<th>Buy Fertilizer</th>
<th>Sell Crops</th>
</tr>
</thead>
<tbody>
<tr>
<td>Within the village</td>
<td>54.6</td>
<td>60.9</td>
<td>48.8</td>
</tr>
<tr>
<td>Near the village</td>
<td>29.4</td>
<td>21.1</td>
<td>24.2</td>
</tr>
<tr>
<td>Near the town</td>
<td>11.6</td>
<td>13.0</td>
<td>13.9</td>
</tr>
<tr>
<td>Other district</td>
<td>2.4</td>
<td>3.6</td>
<td>9.3</td>
</tr>
<tr>
<td>Other region</td>
<td>1.4</td>
<td>1.5</td>
<td>3.7</td>
</tr>
<tr>
<td>Across the border</td>
<td>0.5</td>
<td>0.0</td>
<td>0.2</td>
</tr>
<tr>
<td><strong>Sum</strong></td>
<td>100.0</td>
<td>100.0</td>
<td>100.0</td>
</tr>
</tbody>
</table>

Network Roster

Buying both from same person / business...

<table>
<thead>
<tr>
<th></th>
<th>Seeds &amp; Fertilizer</th>
<th>Seeds &amp; Sales</th>
<th>Fertilizer &amp; Sales</th>
</tr>
</thead>
<tbody>
<tr>
<td>All Crops</td>
<td>31.1</td>
<td>20.5</td>
<td>2.5</td>
</tr>
<tr>
<td>Cash Crops</td>
<td>29.7</td>
<td>38.6</td>
<td>11.0</td>
</tr>
<tr>
<td>Other Crops</td>
<td>31.2</td>
<td>17.6</td>
<td>1.6</td>
</tr>
</tbody>
</table>

**Recall vs. Diary**

Underreporting takes two forms:
- Lower number of crops (5.2 recall vs. 8.2 diary)
- Lower quantities (USD 8 per month in value)

<table>
<thead>
<tr>
<th></th>
<th>Maize</th>
<th>Beans</th>
<th>S. Potato</th>
<th>Cassava</th>
<th>Banana</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diary (kg)</td>
<td>573</td>
<td>292</td>
<td>292</td>
<td>250</td>
<td>585</td>
</tr>
<tr>
<td>Recall (kg)</td>
<td>274</td>
<td>95</td>
<td>163</td>
<td>134</td>
<td>323</td>
</tr>
<tr>
<td>Difference (kg)</td>
<td>317</td>
<td>201</td>
<td>139</td>
<td>147</td>
<td>264</td>
</tr>
<tr>
<td>Difference (%)</td>
<td>55%</td>
<td>69%</td>
<td>48%</td>
<td>59%</td>
<td>45%</td>
</tr>
<tr>
<td>No. of obs.</td>
<td>1221</td>
<td>821</td>
<td>618</td>
<td>730</td>
<td>739</td>
</tr>
</tbody>
</table>

Source: Uganda UNHS 2005/06
GPS vs. Self-reported

Source: Uganda UNHS 2005/06
GPS vs. Self-reported

Source: Tanzania National Panel Survey 2008/09
Bias in land measurement: “Heaping”

Plot Size Measured with GPS and Farmers’ Estimate

Source: Uganda UNHS 2005/06
Data sets

Seven countries, between 2 – 4 rounds

1. Ethiopia Agriculture Sample Survey (2011-2012)
3. Mali Enquete Modulaire Permanent après des Menages (tentative plan) (2011-12)
## Content of data (Tanzania)

<table>
<thead>
<tr>
<th>Section</th>
<th>Name</th>
<th>Level of observation</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Household Identification</td>
<td>Household</td>
<td>household identifier variables</td>
</tr>
<tr>
<td>B</td>
<td>Household Member Roster</td>
<td>Individual</td>
<td>roster of individuals living in the household, relationship to the household, gender, year of birth, age, marital status, spouse identification, parental status, and place of birth.</td>
</tr>
<tr>
<td>C</td>
<td>Education</td>
<td>Individual</td>
<td>educational attainment, school characteristics, and expenditures</td>
</tr>
<tr>
<td>D</td>
<td>Health</td>
<td>Individual</td>
<td>general health status and on utilization of health services</td>
</tr>
<tr>
<td>E</td>
<td>Labor</td>
<td>Individual</td>
<td>labor market participation during the last seven days, wage work, non-farm enterprise activity, and domestic activities within the home</td>
</tr>
</tbody>
</table>
Data Availability

• Tanzania:
  – [www.nbs.go.tz](http://www.nbs.go.tz)

• Uganda
  – Estimated March 2011

• Malawi
  – Estimated March 2012

• Nigeria
  – Estimated February 2011 and July 2011
Going forward

• Complementary data collection
  o Markets, community, remote sensing, etc.

• More research/validation (link to research component of Global Strategy)

• Analytical agenda/global issues
  o Future of smallholders, lagging regions, adaptation to climate change

• Promoting Data Use
  – Existing networks
  – New partnerships
Thank you
Additional details: 
Country summaries
Partnerships
UGANDA NPS

- UBoS
- Original government plan:
  - 1st wave funded (Netherlands), combined with UNHS
  - no agriculture (AgCensus)
- Two panel visits (as in 2005/06)
- Redesigned and added Ag module; link to AgCensus
- Revisited 2005/06 UNHS subsample (3,200 HHs)
- GPS plot measurement
- Field-based data entry, moved to CAPI in wave 2
- Crop cards (diary) validation for crop production
TANZANIA NPS

- Tanzania National Panel Survey
- National Bureau of Statistics
- 3,200 households, mainland and Zanzibar (urban and rural)
    - Data released on Oct 31, 2010
    - tracking through December 2011
    - Linked with MCC evaluation study with booster sample.
- NPS planned as a complement to the HBS data. LSMS-ISA:
  - Introduced/expanded agricultural focus
  - Field-based data entry and quality controls/protocols
  - Tracking
  - GPS plot area measurement
MALAWI IPHS

• Third Integrated Household Survey (IHS3)
• National Statistics Office
• 12,000 households, of which 3,200 to be panel (urban and rural)
  – Wave 1 March 2010-March 2011
  – Wave 2 planned 2013
  – Possible tracking exercise in 2011/12 with IFPRI
  – Possible link to evaluation of MASAF work program
• Linked with on-going IHS effort to measure living standards. LSMS-ISA:
  – Expanded agricultural focus
  – Added panel dimension
  – Field-based data entry
NIGERIA GHS Panel

• General Household Survey-Panel
• National Bureau of Statistics
• Panel Sample of 5,000 households
  – sub-sample of GHS annual survey of 22,000
  – Wave 1
    • Post-planting visit Aug-Oct 2010, data entry in the field
    • Post-harvest visit Feb-Mar 2011, CAPI, Implemented same time as the core GHS (17,000 cross section and 5,000 panel)
  – Wave 2 in 2012-2013
• LSMS-ISA
  – Added Panel Dimension
  – Redesigned GHS
  – Added agriculture and consumption modules
NIGER ECVMA

• Enquête Nationale sur les Conditions de vie des Menages et Agriculture (National Survey Of Household Living Conditions and Agriculture)
• Niger National Institute of Statistics (INS)
• Grant Agreement close to signing
• Pilot test of questionnaires scheduled for Dec 2010-Jan 2011
• Consumption experiment with the pilot test
• Field work 1st wave: June-August and November-December 2011
ETHIOPIA Rural SES

- Rural Socio-Economic Survey
- Central Statistics Agency
- 3,000-4,000 households rural and small towns
  - Wave 1 Sept 2011 – Feb 2012
    - Subset of Ag Sample Survey households and (new) non-farm households and small-town Eas
    - CAPI planned
  - Wave 2 Sept 2013 – Feb 2014
- Response to CSA request after the RICS to continue support to collect integrated data from rural areas (agricultural data and non-agricultural hh data). LSMS-ISA:
  - Adding panel dimension
  - Introducing CAPI and field-based data entry
  - Introducing extra layer of field supervision
  - Adding non-farm households and towns
MALI

• National Institute of Statistics (INSTAT) and Ministry of Agriculture (CPS)
• USAID funding
• Still at planning stage
• Funding: USAID
• Integration with Enquete Modulaire Permanent après des Menages? Added features:
  – Panel
  – Agriculture (July and Jan visits)
  – Livestock and fishery oversample?
  – Field-based data entry
PARTNERSHIPS

- In-country co-funding: WB, DFID, EU, MCC, GTZ, IrishAid, Netherlands, Norway, Unicef, etc. plus government contributions
- USAID: Mali
- WFP: food security (CFSVA)
- IFAD: community governance
- World Fish Center: fishery
- WB/ARD: livestock
- WB/SD: Climate change
- FAO: income sources, Global Strategy?
- IFPRI: tracking, analysis, HarvestChoice?
- CMAAE: training
Yields and farm size

UGANDA: Inverse Farm Size Productivity Relationship

Source: Uganda UNHS 2005/06