Food Security by The Numbers

Observations from the USAID-MSU Food Security Cooperative Agreement FS III

Challenges in Collecting and Using Information To Inform Goals of Poverty Reduction, Food Security, Enhanced Productivity and Income Growth for Small-Scale Farmers

at: 2010 USAID Economic Growth Officer’s Conference, June 21-25. Wash, DC.
by: Michael T. Weber –Professor AFRE-Food Security Group -MSU
Discussion Overview

• Discuss forces driving empirical data demands
• Review main FS III country buy-in issues/data strategy
• Discuss typical types of FS III data
• Examine capacity building issues
• Discuss common problems & success factors
• Future issues – selected observations
Numbers for Whom? Strengthen smallholder voice in food security policy and program formulation:

- Build host country capacity to conduct applied research, outreach and training
- Help integrate empirical findings into policy dialogue and program design

FS III Countries with Long-Term Connections:
- Mali
- Mozambique
- Zambia
- AFR/SD – Support to COMESA
- Kenya
- Malawi
- West Africa
- Ethiopia
- Rwanda
- Senegal
- Zimbabwe
Empirical Data – What Are the Driving Forces?

• Data for whom?
• Data for what purpose?
• Broad policy purpose?
• One time and/or panel data?
• Specific design issue/monitoring purposes?
• Trade offs and challenges – no easy answer
• Critical to show improvements & outputs - strengthens credibility & usefulness of data
FS III Country Buy-In
Data Strategy

• Long-term Associate Awards (match local interests with FS III themes & capability)
• Link to countries/USAID Missions wanting a longer-term empirical approach to inform policy
• Simulate demand for empirical policy information & strengthen the local supply response
• Attempt to provide a foundation of empirical data in partnership with host country partners
• Improve data design, collection & processing capacity jointly: use an in-service processes
• Strengthen the tradition of analysis & outreach
Typical Types of Data/Respondents

- If possible get nationally representative data
- Rural households - farmers - full livelihood including:
  - crop, livestock, non-farm & off-farm data income data
  - food security indicators based on what is produced as well as purchased/sold
  - enhanced demographic information at household-member level, including gender information [Zambia example]
- Panel data sometimes & relate to annual crop data
- Village leaders in some countries
- Rural and urban traders/marketing agents
- Market information – prices & quantities
- Increasingly use GIS information – local and international [COMESA example; Zambia example]
- Experiment with ICT for data collection, access, outreach
Capacity Building Issues

- Which host country partners to involve – at least agriculture & statistical offices
- Short-course & longer-term training needed
- Heavier involvement – participation/supervision of FS III staff on key studies. Incentives for quality are key.
- Simultaneous in-service training on using the information to inform policy/program design
- Use many different outreach mechanism not just traditional statistical reports (Zambia-example) (FSG example – Food Security Updates via e-mail & DVD)
- Use software that is most commonly used in host country – SPSS and STATA.
- Experiment with innovation on field/local data entry
- Develop on-line self-tutorials for this software for anyone to use (FSG example)
Common Problems & Success Factors

• What is the right data to collect to deal with some specific questions & anticipate other potential key?
• Iterative programs of applied research and policy outreach require early involvement of local partners
• Local incentives structure are too often driven by per diems to collect the data – what to do about this?
• Academic incentives can also drive efforts towards too little timely interaction and outreach
• Projects and donors often want specific evaluation: often cannot be done with these kinds of data alone
• Having some free time to allocate to hot policy topics, but not being driven by these (Zambia example 2010 maize crop)
• Dealing with empirical information that is politically sensitive about program effects - let the data speak
Selected Future Issues

• Increase in funding for GHFSI & others – will likely demand more impact assessments & evaluations (Insights from IDRC work)
• Turn around demand on impact assessment will increase
• Getting groups of Donors to cooperate on basics for information & analysis with locals – avoid competition - a longer-run challenge
• Getting host country agriculture Ministries and statistical offices to work well together. Reduce bias from an ag view only
• Getting line-items for data/software/ hardware/training/mobility in projects & host govt. budgets
• Panel data, experimental or quasi-exp. program implementation designs are likely to become more important
• But should avoid crowding out more fundamental and broad-based empirical information on rural sector stakeholders
• Opportunities for better targeting with information base & ICT- e-vouchers (SMS scratch cards) to transfer cash & subsidies
Supplemental Surveys: Empirical Data on Smallholders in Zambia – Nation Wide Random Surveys (PHS/SS 99/00, 02/03 & 07/08 = 364 SEAs Supplemental to the Post Harvest Survey)

Listing and Data Collection
17 Sets of Related Indicator Variables
Looking At Household-Level Composition & Diversity From Different Angles

1. Base Variables - Net Yearly Income & Food Security Indicator (calories retained)
2. Cropping and Livestock Income Components
3. Business (Formal and Informal) Income Sub-Components
4. Non-Ag Wage Subcomponents
5. Demographic Characteristics
6. Land Access and Use Information
7. Other Asset Information
8. Livestock Information
9. Cropping Information
10. Area Allocation to Main Crops
12. Maize Specific Cropping Information
13. Maize Fertilizer Use and Acquisition Information
14. Maize Sales Information by Agent
15. Maize as a Single Cropping Information
16. Location Information by Province
17. Location by Agro-Ecological Zone
<table>
<thead>
<tr>
<th>Type of Maize Seller/Buyer Market Category</th>
<th>Households</th>
<th>Households Producing Maize</th>
<th>Households Producing Maize With FACILIT.</th>
<th>HH-Level Maize Yield W/Out FACILIT.</th>
<th>HH-Level Maize Yield With FACILIT.</th>
<th>Com. HH-Level Maize Yield</th>
<th>Total metric Tons</th>
<th>HHL-Level FSP Acquired (proportion of all cropping)</th>
<th>HHL-Level FSP Acquired (proportion of all cropping)</th>
<th>Calorie Retained from Cereals &amp; Tubers</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>% of HHs</td>
<td>Number of HHs</td>
<td>% of HHs</td>
<td>% of HHs</td>
<td>% of HHs</td>
<td>% of HHs</td>
<td>metric Tons</td>
<td>(ROW) / (Col)</td>
<td>Kg/ha</td>
<td>kg/ha</td>
</tr>
<tr>
<td>1. Grower and Seller of Maize*</td>
<td>Low</td>
<td>419,313</td>
<td>25,159</td>
<td>1.86</td>
<td>1.65</td>
<td>1.93</td>
<td>2.97</td>
<td>1.36 / 0.86</td>
<td>1.36 / 0.86</td>
<td>3.520</td>
</tr>
<tr>
<td></td>
<td>Med</td>
<td>128,450</td>
<td>8,657</td>
<td>91.2</td>
<td>91.2</td>
<td>91.2</td>
<td>91.2</td>
<td>91.2 / 91.2</td>
<td>91.2 / 91.2</td>
<td>2.847</td>
</tr>
<tr>
<td></td>
<td>High</td>
<td>218,085</td>
<td>156,366</td>
<td>72.4</td>
<td>72.4</td>
<td>72.4</td>
<td>72.4</td>
<td>72.4 / 72.4</td>
<td>72.4 / 72.4</td>
<td>3.039</td>
</tr>
<tr>
<td></td>
<td>Sub Total</td>
<td>495,848</td>
<td>249,581</td>
<td>80.9</td>
<td>80.9</td>
<td>80.9</td>
<td>80.9</td>
<td>80.9 / 80.9</td>
<td>80.9 / 80.9</td>
<td>3.520</td>
</tr>
<tr>
<td>2. Grower and Buyer of Maize of Maize**</td>
<td>Low</td>
<td>218,085</td>
<td>147,913</td>
<td>156,366</td>
<td>72.4</td>
<td>72.4</td>
<td>72.4</td>
<td>72.4 / 72.4</td>
<td>72.4 / 72.4</td>
<td>2.847</td>
</tr>
<tr>
<td></td>
<td>High</td>
<td>169,507</td>
<td>113,007</td>
<td>158,642</td>
<td>81.6</td>
<td>81.6</td>
<td>81.6</td>
<td>81.6 / 81.6</td>
<td>81.6 / 81.6</td>
<td>1.682</td>
</tr>
<tr>
<td></td>
<td>Sub Total</td>
<td>584,347</td>
<td>498,400</td>
<td>144,449</td>
<td>72.5</td>
<td>72.5</td>
<td>72.5</td>
<td>72.5 / 72.5</td>
<td>72.5 / 72.5</td>
<td>3.056</td>
</tr>
<tr>
<td>3. Does not Grow Buyer of Maize of Maize</td>
<td>Low</td>
<td>218,085</td>
<td>2,449</td>
<td>0.1</td>
<td>0.1</td>
<td>0.1</td>
<td>0.1</td>
<td>0.1 / 0.1</td>
<td>0.1 / 0.1</td>
<td>1.219</td>
</tr>
<tr>
<td></td>
<td>Med</td>
<td>169,507</td>
<td>22,973</td>
<td>0.1</td>
<td>0.1</td>
<td>0.1</td>
<td>0.1</td>
<td>0.1 / 0.1</td>
<td>0.1 / 0.1</td>
<td>2.700</td>
</tr>
<tr>
<td></td>
<td>High</td>
<td>169,507</td>
<td>56,974</td>
<td>0.1</td>
<td>0.1</td>
<td>0.1</td>
<td>0.1</td>
<td>0.1 / 0.1</td>
<td>0.1 / 0.1</td>
<td>3.264</td>
</tr>
<tr>
<td></td>
<td>Sub Total</td>
<td>513,539</td>
<td>502,396</td>
<td>0.1</td>
<td>0.1</td>
<td>0.1</td>
<td>0.1</td>
<td>0.1 / 0.1</td>
<td>0.1 / 0.1</td>
<td>3.056</td>
</tr>
<tr>
<td></td>
<td>Med</td>
<td>218,085</td>
<td>122,355</td>
<td>11.7</td>
<td>11.7</td>
<td>11.7</td>
<td>11.7</td>
<td>11.7 / 11.7</td>
<td>11.7 / 11.7</td>
<td>2.164</td>
</tr>
<tr>
<td></td>
<td>High</td>
<td>218,085</td>
<td>219,645</td>
<td>11.1</td>
<td>11.1</td>
<td>11.1</td>
<td>11.1</td>
<td>11.1 / 11.1</td>
<td>11.1 / 11.1</td>
<td>1.938</td>
</tr>
<tr>
<td>Total Sample</td>
<td></td>
<td>1,578,317</td>
<td>532,981</td>
<td>145,012</td>
<td>8.5</td>
<td>8.5</td>
<td>8.5</td>
<td>8.5 / 8.5</td>
<td>8.5 / 8.5</td>
<td>3.022</td>
</tr>
<tr>
<td>National Ave.</td>
<td></td>
<td>1,578,317</td>
<td>1,578,317</td>
<td>1,578,317</td>
<td>1,578,317</td>
<td>1,578,317</td>
<td>1,578,317</td>
<td>1,578,317 / 1,578,317</td>
<td>1,578,317 / 1,578,317</td>
<td>2.767</td>
</tr>
</tbody>
</table>

*1/3 of this category do buy small amounts of maize or maize meal, but in net terms are sellers, similar to other HHs in this category.**  
**1/10 of this category of households do sell small amounts of grain, but in net terms are buyers, similar to other HHs in this category.***  
***A very small number < 1% buy and sell but on net sales are zero.
Zambia Food Security Research Project (FSRP)

Resource Materials - Zambia Agricultural Fertilizer Programme Study Tour. Gaining Insights From on-going Reforms in Malawi, Kenya and Tanzania. MACO/ACF/FSRP
Self-Tutorial Sample Session for STATA

  - Instructions
  - Data
  - Instructions
  - Data

Self-Tutorial Sample Sessions for SPSS

- Instructions and description of the sample sessions
- Data required for all of the following sample sessions (in Zip format) (for Portuguese TS data see below). This file contains the data files necessary to properly run all the sample sessions. The commands in the sample sessions assume that your data is stored in c:\docs\sample, so we recommend that you unzip the sample files to that folder.
- Self-Tutorial Sample session for Windows- Cross Sectional Analysis. Department of Agricultural Economics, Michigan State University.
  - SPSS 17 (2009). English (CDIE reference number pending)
  - SPSS 15 (2007). English
  - Dados para TS 10 em Português (in Zip Format)
Figure 19. Grid Map of Staple Food Production and Sales, Normal Year

a. Production of Maize Plus Cassava

b. Sales of Maize Plus Cassava
Figure 1. Map of Important Land Use Features and Population Density in Zambia
WHAT HAPPENS TO ZAMBIAN MAIZE PRODUCTION?
COMPARING 2008/09 AND 2009/10 PRODUCTION SEASONS
DISTRICT LEVEL: 2009/10

Click on the (Level : Year) Combination

- National: 2008/09
- Provincial: 2008/09
- District: 2008/09
- National: 2009/10
- Provincial: 2009/10
- District: 2009/10

Definitions

Planned Sales and Retentions by Farm Type
- Smallholder Sales
- Smallholder Retentions
- Large Scale Sales
- Large Scale Retentions

Design by: Steve Longabaugh
Source: MACD/CSO CFS surveys, WFP, FAO, colorbrewer2.org 250 Kilometers
2009/10 Levels of Maize Yield by Quintiles and Type of S/M Households (A, B and C)
Sales Vary More in Zambia by Yield Level Than by Farm Size
- Expected Maize Sales by Year and Yield Quintile of S/M – Scale HHs and Use/Non-Use of Fertiliser in Zambia

Cumulative Tons Maize Sales

Non-Use

<table>
<thead>
<tr>
<th>Year</th>
<th>Sales Non-Use Fert 08/09</th>
<th>Sales Non-Use Fert 09/10</th>
</tr>
</thead>
<tbody>
<tr>
<td>Use</td>
<td>Sales Use Fert 08/09</td>
<td>Sales Use Fert 09/10</td>
</tr>
<tr>
<td>Total</td>
<td>Total Sales 08/09</td>
<td>Total Sales 09/10</td>
</tr>
</tbody>
</table>

- Yield Q-5
- Yield Q-4
- Yield Q-3
- Yield Q-2
- Yield Q-1
MSU AFRE Food Security International Updates

What

We periodically send out an MSU AFRE Food Security Update, which is an e-mail notice about items recently modified, added or in the process of being posted to MSU's Food Security Group's Web Site. All items listed are currently downloadable in Adobe Acrobat format or will be available shortly. Listings for publications at MSU and in each specific country where we work are generally mutually exclusive. Those searching for research publications by specific MSU and/or host-country collaborators should therefore consult specific in-country, as well as the campus-based publication lists. Users may click on the URL for each specific section to gain quick access to the documents.

Prior Issues of MSU AFRE Food Security International Updates

- 2010: April, January
- 2009: October, July, April, January
- 2008: October, July, April, January
- 2007: October, June, March
- 2006: December, September, June, February
- 2005: November, August, May, February
- 2004: December, July, March
- 2003: December
Insights and Humor from IDRC – Impact Evaluation

Output Outcome Downstream Impact Blues – and other IDRC Impact Assessment Training Tools