Categorization of Rural Cropping Households in Zambia

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Food Security Research Project, Lusaka
16th March, 2011
ACKNOWLEDGMENTS

European Union

USAID | ZAMBIA
FROM THE AMERICAN PEOPLE

Sida
SWEDISH INTERNATIONAL DEVELOPMENT
COOPERATION AGENCY

MINISTRY OF AGRICULTURE AND CO-OPERATIVES (MACO)

ACF
AGRICULTURAL
CONSULTATIVE FORUM

Central Statistical Office
Zambia

MICHIGAN STATE UNIVERSITY
connecting you to the facts
Objectives

- To identify and understand characteristics of smallholder farmers in developing improved assistance programs & policies
- To help develop relevant categories of rural cropping households in Zambia
I. Logic and Overview Explanation of Basic Analysis

II. Income and Related Food Security Indicators

III. HH-Level Demographics and Population Location

IV. HH Assets - Land and Livestock Ownership

VIII. Summary and Conclusion
SS: Empirical Data on Smallholders in Zambia – Nation Wide Random Surveys
(PhS/SS 99/00, 02/03 & 07/08= 364 SEAs)
(CFS 06/07 and onwards = 640 SEAs)

I. Logic and Overview Explanation of Basic Analysis Results

- Three-Year Study Period
- Household Income - best indicator of HH welfare
- Constant 2009/2010 ZMK

\[ NI_t = GI_t - PC_t \]
Four Market Interaction Categories for Cropping Households

1. Grower and Seller of Maize
2. Grower and Buyer of Maize or Mealies
3. Does not Grow but Buyer of Maize or Mealies
4. Not in the market as buyers nor as sellers
Section II
Income and Related Food Security Indicators
Estimated pop of rural cropping households

SS 2007/08 @ 1,493,197 ≈ 1.5 million
SS 2003/04 @ 1,243,811 ≈ 1.2 million
SS 2000/01 @ 1,109,898 ≈ 1.1 million
National HH-level average income

- 2008 @ K 5,070,524
- 2004 @ K 5,144,841
- 2001 @ K 4,004,343

- net incomes ↑ roughly by 28%
HH Income by Terciles and Market Categories - 2008

Annual Income - 09/10 ZMK

1-Grow/Sell (27%)
2-Grow/Buy (39%)
3-Buy/Not Grwg (11%)
4-Not in Mkt (23%)
Overall Ave. (100%)

Maize Mkt Categories - (% HH per category)
HH Income Composition by Tercile in 2008

- **High Income**
- **Med Income**
- **Low Income**

- **Farming**
- **Farm Labor**
- **Non-farm Labor**
- **Business**
- **Remittences**
### HH Income Source Combinations by Study Year

<table>
<thead>
<tr>
<th></th>
<th>2001</th>
<th>2004</th>
<th>2008</th>
</tr>
</thead>
<tbody>
<tr>
<td>Farming Only</td>
<td>52.8</td>
<td>56.1</td>
<td>45.5</td>
</tr>
<tr>
<td>F &amp; FW</td>
<td>4.7</td>
<td>5.4</td>
<td>4.7</td>
</tr>
<tr>
<td>F &amp; N-FW</td>
<td>8.1</td>
<td>9.2</td>
<td>6.8</td>
</tr>
<tr>
<td>F &amp; Bus</td>
<td>25.6</td>
<td>21.6</td>
<td>33.6</td>
</tr>
<tr>
<td>F, B, FW</td>
<td>2.4</td>
<td>2.2</td>
<td>3.1</td>
</tr>
<tr>
<td>F &amp; B, N-FW</td>
<td>4.1</td>
<td>4.2</td>
<td>4.8</td>
</tr>
</tbody>
</table>

F=farming; FW=farm wages; N-FW= non-farm wages; Bus or B = business
Maize Production/Purchases

- Overall, 80% HHs produce maize
- 90% HHs in high income tercile
- 75% - low tercile
- Low income tercile are maize net buyers
- High income tercile are net sellers-K855,000/yr
Off-farm income

- Total income = farming and off-farm
- Off-farm income is very important
- Business make up 50% of off-farm income
% Distribution of HHs in Market Categories by Tercile - 2008

<table>
<thead>
<tr>
<th>Percent of Households</th>
<th>1- Grow/Sell</th>
<th>2- Grow/buy</th>
<th>3-Buy/Not Growing</th>
<th>4-Not in market</th>
</tr>
</thead>
<tbody>
<tr>
<td>High Income Tercile</td>
<td>44</td>
<td>34</td>
<td>8</td>
<td>14</td>
</tr>
<tr>
<td>Mid Income Tercile</td>
<td>25</td>
<td>41</td>
<td>10</td>
<td>24</td>
</tr>
<tr>
<td>Low Income Tercile</td>
<td>13</td>
<td>42</td>
<td>14</td>
<td>31</td>
</tr>
</tbody>
</table>
Section III
HH-Level Demographics and Pop Location
6 members per HH (3 prime age adults)

Female & elderly headed HHs - 25%

Female and elderly headship more in low tercile
Education for Most Educated Males and Females

- Low Tercile:
  - Male HH Member: 4
  - Female HH Member: 5

- Mid Tercile:
  - Male HH Member: 5
  - Female HH Member: 6

- High Tercile:
  - Male HH Member: 8
  - Female HH Member: 7

- National Average:
  - Male HH Member: 6
  - Female HH Member: 5

Note: # Years of Education Of Most Educated Male HH Member

# Years of Education Of Most Educated Female HH Member
AEZ II and III contain vast majority of HHs

AEZ Ila & I Ib has more HHs in high tercile

AEZ III, largest group is medium tercile

Poor HHs are in all parts of the country
Location of HHs by Income Terciles in Selected Provinces

% of Households

- Low Income Tercile
- Mid Income Tercile
- High Income Tercile

Provinces:
- Eastern
- Northern
- Western
- Luapula
- Central
Section IV
Household-Level Assets, Including Land and Livestock Ownership
Mean Area Cultivated in Ha per HH

<table>
<thead>
<tr>
<th>Income Tercile</th>
<th>Land Size Planted (Ha)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low Income Tercile</td>
<td>0.9</td>
</tr>
<tr>
<td>Mid Income Tercile</td>
<td>1.4</td>
</tr>
<tr>
<td>High Income Tercile</td>
<td>2.2</td>
</tr>
<tr>
<td>Total National Average</td>
<td>1.5</td>
</tr>
</tbody>
</table>
Mean Area Cultivated in Ha per HH by Income Tercile

Low Income Tercile

Mid Income Tercile

High Income Tercile

National Average

SS 2000/2001

SS 2003/2004

SS 2007/2008
ACCESS TO OTHER ASSETS

- Chickens most reared then goats, cattle & pigs
- 93% HHs own 14 chickens
- 23 to 29% of households own 6 - 7 goats
- 20 to 24% of HHs own 9-10 cattle
- 2 crops/HH
V. Summary and Conclusion
Characteristics & Categories

Heterogeneity

High income households benefit the most from subsidies

Benefits through market interactions are highly concentrated

Land size cultivated - 1.5 Ha/HH

Cattle ownership – 24%
✓ 80% Smallholders produce maize
✓ 6 members per HH
✓ Existence of poor HHs in all parts of the country despite relative concentration
✓ Eastern has 22% Poor HHs
✓ Poor HHs retain 60% of 2700 calories
Thank You
Twalumba
Zikomo
Mathematically, the following expression of net household income holds:

\[ NI_t = GI_t - PC_t \]  

(1)

where

\( NI_t, \ t = 1, \ldots, N, \) is the net household income observed in SS year \( t \)

\( GI_t, \ t = 1, \ldots, N, \) is the gross household income observed in SS year \( t \)

\( PC_t, \ t = 1, \ldots, N, \) all associated costs of production in SS year \( t. \)

Gross HH income for each study year can be expressed as:

\[ GI_t = \sum_{t=1}^{n} (gvharv_t + vegsales_t + totlivs_t + livprod_t + grossoffarm_t) \]

(2)

where

\( gvharv_t, \ t = 1, \ldots, N, \) is simply gross value of harvest for crops observed

\( vegsales_t, \ t = 1, \ldots, N, \) equals total value of fruits/vegetable sales observed in year \( t \)

\( totlivs_t, \ t = 1, \ldots, N, \) represents total income for livestock observed in year \( t \)

\( livprod_t, \ t = 1, \ldots, N, \) is total income for livestock products observed in year \( t \)

\( grossoffarm_t, \ t = 1, \ldots, N, \) total off farm income observed in year \( t \)

Production Costs equation.

\[ PC_t = \sum_{t=1}^{n} (buscost_t + totfertcost_t) \]  

(3)

Back
“A woman, without her man, is nothing”

“A woman, without her, man is nothing”