

"Knowledge for Life"

# 17a. Factors Influencing the Intensity of Market Participation of Maize, Rice and Soybean Smallholder Farmers: Recent Evidence from Northern Ghana

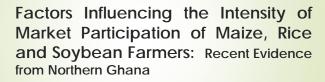
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Agness is a second year master student in Agricultural economics on a Fulbright scholarship. She obtained her bachelor's degree in Agricultural Economics from the University of Zambia, in her home country, Zambia in 2011. She later worked with non-governmental organizations focusing on market systems research, monitoring and evaluation. Her interests are in operations research and agricultural marketing. She hopes to further pursue a PhD degree based in one of these areas.

# Abstract/Summary

While agriculture offers a potential vehicle for the rural poor to escape poverty, the production and marketing challenges faced by the farmers make this potential difficult to tap. This study examines factors influencing the intensity of market participation by Maize, Rice and Soybean farmers in Northern Ghana. The analysis is based on the data from the agriculture production survey conducted 2013 and 2014 and the Population based Survey conducted in 2012 in northern Ghana. Analysis is performed using the Double Hurdle Model. The results show that the factors that significantly influence the decision to participate in the market include farm output (kg), access to information, access to credit, and the type of major crop produced ( whether Maize, Rice or Soybeans). The factors that significantly influence quantity of output sold, apart from total farm output and price, were the access to information, type and number of buyers, as well as transport and transaction costs.

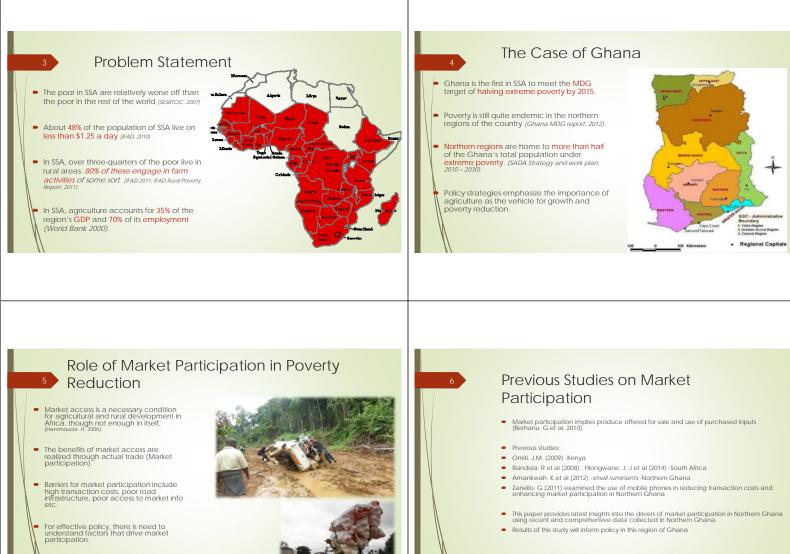


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#### **Presentation Outline**

- Background/Problem Statement
- Study Objectives
- Methods
- Results and Discussion
- Conclusion and recommendations



#### Study Objectives

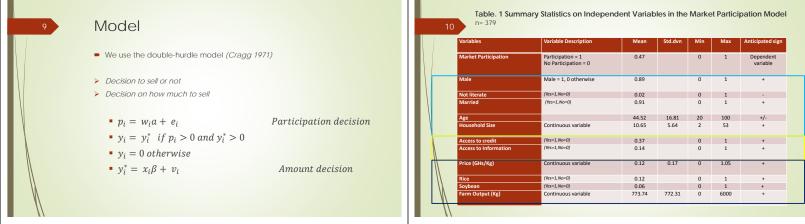
The purpose of this study is to gain better understanding of factors that drive and constrain a smallholder farmers' market participation in northern Ghana.

#### **METHODS:** Data

- Data: agriculture production survey conducted 2013 and 2014 in northern Ghana funded by USAID.
- Total sample: 527
- Study sub-sample: 379 farmers growing maize, rice and soybeans.
- Survey Instrument: Demographic, Production, Marketing, Geographic information.
- The access to credit and additional demographic data were obtained from the 2012 Population Based Survey (PBS).



Intensity of Participation



| 11 | Variables                              | Variable Description    | Mean   | Std.dvn | Min | Max   | Anticipated sig       |
|----|--|-------------------------|--------|---------|-----|-------|-----------------------|
|    | Percent of harvest sold (%)            | Continuous variable     | 21.98  | 30.29   | 0   | 100   | Dependent<br>variable |
|    | Male                                   | Male = 1, 0 otherwise   | 0.89   |         | 0   | 1     | +                     |
|    | Not literate                           | (Yes=1,No=0)            | 0.02   |         | 0   | 1     | -                     |
|    | Married                                | (Yes=1,No=0)            | 0.91   |         | 0   | 1     | +                     |
|    | Age                                    | Continuous variable     | 44.52  | 16.81   | 20  | 100   | +/-                   |
|    | Household Size                         | Continuous variable     | 10.65  | 5.64    | 2   | 53    | +                     |
|    | Access to credit                       | (Yes=1,No=0)            | 0.37   |         | 0   | 1     | +                     |
|    | Access to Information                  | (Yes=1,No=0)            | 0.14   |         | 0   | 1     | +                     |
|    | Rice                                   | (Yes=1,No=0)            | 0.12   |         | 0   | 1     | +                     |
|    | Soybean                                | (Yes=1,No=0)            | 0.06   |         | 0   | 1     |                       |
|    | Farm Output (Kg)                       | Continuous variable     | 773.74 | 772.31  | 0   | 6000  | +                     |
|    | Sold_Consumers                         | (Yes =1, No=0)          | 0.15   |         | 0   | 1     |                       |
|    | Sold_Processor                         | (Yes =1, No=0)          | 0.02   |         | 0   | 1     | -                     |
|    | Sold_Other buyers                      | (yes =1, No = 0)        | 0.145  |         | 0   | 1     | +/-                   |
| N  | Mutiple buyers types                   | (Continuous variable)   | 0.53   | 0.908   | 0   | 4     | +                     |
| // | Price (GHs/Kg)                         | Continuous variable     | 0.12   | 0.17    | 0   | 1.05  | +                     |
| // | Average Distance to markets (Kr        | n) Continuous variable  | 0.40   | 3.41    | 0   | 65.25 |                       |
| 11 | Average Transportation cost (GH        | c) Continuous variable  | 0.13   | 0.53    | 0   | 6     |                       |
| 11 | Average Loading/Offloading co<br>(GHs) | ost Continuous variable | 0.03   | 0.28    | 0   | 5     | -                     |

| n= 379    |                     |
|-----------|---------------------|
| Variables | Market Participatio |
|           |                     |

Table 3: Results and Discussion

|   |                           |        | sig Robust Std.Err | Coef Sig  | Robust Std.Err |  |
|---|---------------------------|--------|--------------------|-----------|----------------|--|
| _ | Constant                  | -0.83  | *** 0.34           | 11.48     | 12.67          |  |
|   | Househols size            | -0.02  | * 0.01             | -0.23     | 0.29           |  |
|   | Age (years)               | 0.004  | 0.00               | 0.02      | 0.13           |  |
|   | Married                   | -0.09  | 0.27               | 4.56      | 6.75           |  |
|   | Literacy level            | 0.40   | 0.25               | 4.55      | 5.58           |  |
|   | Male                      | 0.004  | 0.25               | 9.68      | 7.41           |  |
|   | Access to credit          | 0.28   | * 0.15             | 3.96      | 3.74           |  |
|   | Access to information     | 0.75   | ••• 0.21           | 13.63***  | 5.13           |  |
|   | Farm Output (kg)          | 0.0004 | *** 0.00           | -0.01***  | 0.00           |  |
|   | Rice                      | 0.71   | *** 0.22           | 10.42*    | 5.50           |  |
|   | Soybeans                  | 2.23   | *** 0.50           | 26.90***  | 6.50           |  |
|   | Sold to consumers         |        |                    | -25.89*** | 4.80           |  |
|   | Sold to processors        |        |                    | -19.31*   | 11.53          |  |
|   | Other buyers              |        |                    | 16.60**   | 7.22           |  |
|   | Multiple buyers           |        |                    | 14.93***  | 2.88           |  |
|   | Market distance           |        |                    | 0.10      | 0.18           |  |
|   | Transport cost            |        |                    | 4.82**    | 2.42           |  |
|   | loading & offloading cost |        |                    | 25.25***  | 7.64           |  |
|   | several sales visits      |        |                    | -1.03     | 5.18           |  |
| L | Average Price (GHc/Kg)    |        |                    | 44.49***  | 15.80          |  |
|   | sigma                     |        |                    | 21.43***  | 1.26           |  |

## Average Partial Effects: Intensity

| /ariables                 | Conditional |         | Unconditional |         |  |
|---------------------------|-------------|---------|---------------|---------|--|
|                           | APE         | Std Err | APE           | Std Err |  |
| Farm Output (kg)          | -0.008***   | 0.001   | 0.0008        | 0.002   |  |
| Access to information     | 9.15***     | 1.75    | 12.91***      | 3.21    |  |
| Multiple buyers           | 10.03***    | 1.01    | 4.99***       | 1.01    |  |
| Transport cost            | 3.24***     | 0.84    | 1.61**        | 0.84    |  |
| loading & offloading cost | 16.96***    | 2.67    | 8.44***       | 2.67    |  |
| Average Price (GHs/Kg)    | 29.88***    | 5.50    | 14.88**       | 5.50    |  |

## Average Partial Effects: Participation

| Variables             | Probability Y>0 |           |  |  |
|-----------------------|-----------------|-----------|--|--|
|                       | APE             | Std Err   |  |  |
| Househols size        | -0.0206399      | 0.1581852 |  |  |
| Access to credit      | 0.0914507       | 1.885606  |  |  |
| Farm Output (kg)      | 0.0001376       | 0.0017272 |  |  |
| Access to information | 0.2495038       | 2.709278  |  |  |
| Rice                  | 0.2359869       | 2.885251  |  |  |
| Soybeans              | 0.7401121       | 6.462987  |  |  |



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## Conclusion and Recommendations

- Increased farm output, access to credit and information and cash crop production can increase market participation.
- Major buyer type, multiple buyers, price of produce, access to information, transport & transaction costs & cash crop production positively influence intensity of participation while farm output negatively affects it.
- To improve market participation, policy initiative can:
- ✤ Aim at improving access to credit and information
- Promote cash crop production
- Develop value chain relationships

