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

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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

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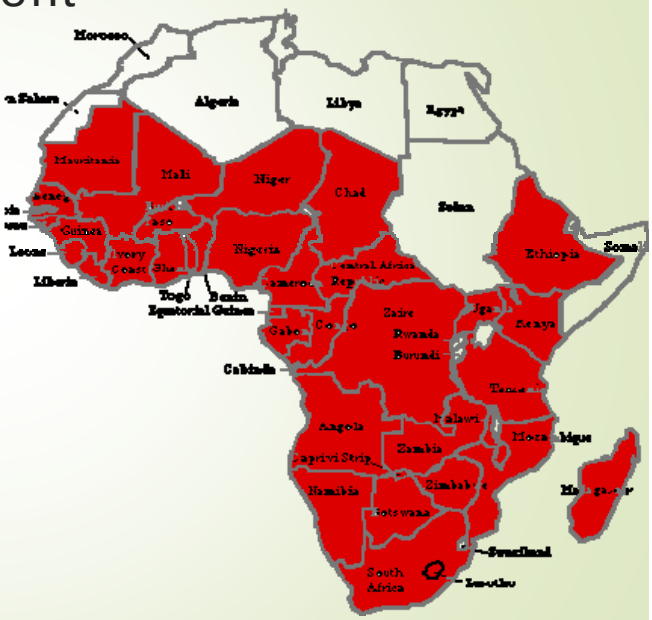
Problem Statement

- The poor in SSA are relatively worse off than the poor in the rest of the world *(SESRTCIC, 2007)*
- About 48% of the population of SSA live on less than $1.25 a day *(IFAD, 2010)*
- In SSA, over three-quarters of the poor live in rural areas. *80% of these engage in farm activities of some sort* *(IFAD 2011, IFAD Rural Poverty Report, 2011).*
- In SSA, agriculture accounts for 35% of the region's GDP and 70% of its employment *(World Bank 2000).*



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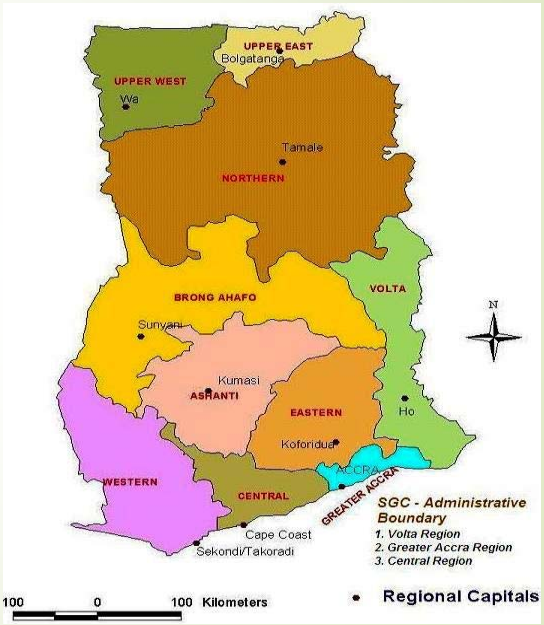
The Case of Ghana

- Ghana is the first in SSA to meet the MDG target of halving extreme poverty by 2015.
- Poverty is still quite endemic in the northern regions of the country *(Ghana MDG report, 2012).*
- Northern regions are home to more than half of the Ghana's total population under extreme poverty. *(SADA Strategy and work plan, 2010 – 2030)*
- Policy strategies emphasize the importance of agriculture as the vehicle for growth and poverty reduction.



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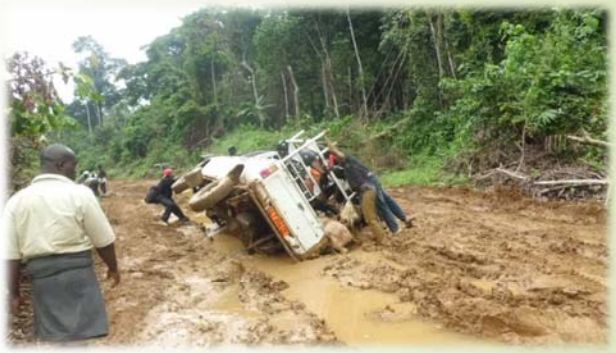
Role of Market Participation in Poverty Reduction

- Market access is a necessary condition for agricultural and rural development in Africa, though not enough in itself, (Hammouda. H, 2006).
- The benefits of market access are realized through actual trade (Market participation).
- Barriers for market participation include high transaction costs, poor road infrastructure, poor access to market info etc.
- For effective policy, there is need to understand factors that drive market participation.



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Previous Studies on Market Participation

- Market participation implies produce offered for sale and use of purchased inputs (Berhanu. G et al, 2010).
- Previous studies:
- Omiti. J.M, (2009) -Kenya
- Randela. R et al (2008) , Hlongwane. J. J et al (2014) -South Africa
- Amankwah. K et al (2012) -*small ruminants* -Northern Ghana
- Zanello. G (2011) examined the use of mobile phones in reducing transaction costs and enhancing market participation in Northern Ghana
- This paper provides latest insights into the drivers of market participation in Northern Ghana using recent and comprehensive data collected in Northern Ghana.
- Results of this study will inform policy in this region of Ghana

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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.

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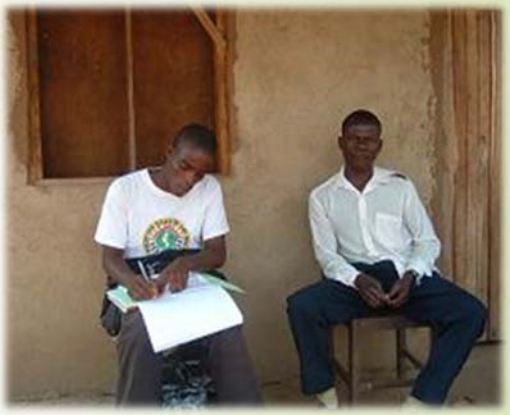
METHODS: Data

- 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).



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Model

- We use the double-hurdle model *(Cragg 1971)*

- *Decision to sell or not*
- *Decision on how much to sell*

  - $p_i = w_i a + e_i$ — *Participation decision*
  - $y_i = y_i^* \ \ if\ p_i > 0\ and\ y_i^* > 0$
  - $y_i = 0\ otherwise$
  - $y_i^* = x_i \beta + v_i$ — *Amount decision*

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Table. 1 Summary Statistics on Independent Variables in the Market Participation Model
n= 379

Variables	Variable Description	Mean	Std.dvn	Min	Max	Anticipated sign
Market Participation	Participation = 1 No Participation = 0	0.47		0	1	Dependent 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		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	+
Price (GHs/Kg)	Continuous variable	0.12	0.17	0	1.05	+
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	+

Table 2: Summary Statistics on Factors Affecting Intensity of Market Participation

n= 379

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Variables	Variable Description	Mean	Std.dvn	Min	Max	Anticipated sign
Percent of harvest sold (%)	Continuous variable	21.98	30.29	0	100	Dependent 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	+/-
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 (Km)	Continuous variable	0.40	3.41	0	65.25	-
Average Transportation cost (GHc)	Continuous variable	0.13	0.53	0	6	-
Average Loading/Offloading cost (GHs)	Continuous variable	0.03	0.28	0	5	-

Table 3: Results and Discussion

n= 379

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Variables	Market Participation		Intensity of Participation	
	Coef *sig*	*Robust Std.Err*	*Coef* *Sig*	*Robust Std.Err*
Constant	-0.83***	0.34	11.48	12.67
Households 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
Average Price (GHc/Kg)			44.49***	15.80
sigma			21.43***	1.26

Note: Asterisks, *** = significant at 1%, ** = significant at 5% and * = significant at 10%

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Average Partial Effects: Intensity

Variables	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

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Average Partial Effects: Participation

Variables	Probability Y>0	
	APE	Std Err
Households 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

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