Empirical Analysis of Determinants of Productivity among Small holder Cassava Farmers in Abia State, Nigeria

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Abstract

The study was carried out in 2008 to investigate the determinants of productivity among small holder cassava farmers. The log linear model derived from the Cobb-Douglas functional form was used to analyze the data which was collected through a multi-stage random sampling technique. About 120 farmers were interviewed using the cost-route approach. The study found out that education, farmers experience, farmer's organization and extension contact were positive and significant at 1% level. Age of farmers, land size were positive and significant at 5% level. The coefficient of gender was negative and significant at 5% level. The results of the study calls for policies aimed at encouraging experienced female farmers to form farmers group and land allocated to them to increase output and productivity of cassava in the study area.

Introduction

Nigeria is the largest cassava producing country in the world. Total production in 2005 was 38 million tons (FAO, 2006). Cassava is a cheap and reliable source of food for more than 700 million people in the developing world (FAO, 2003). It is estimated that 250 million people in sub-Saharan Africa derive half of their daily calories from cassava (FAO, 2005). Cassava is Africa's second most important food staple, after maize in terms of calories consumed. It is the mostly widely cultivated in the country and the crop plays a vital role in the food security of the rural economy because of its capacity to yield under marginal soil conditions and its tolerance of drought (Ezedinma, *et al*, 2006). In 2002, the government of Nigeria launched a presidential initiative on cassava. The aim of the initiative was to develop cassava as the engine of growth and diversify Nigeria's economic base away from its principal export – crude oil (Ezedinma, *et al*, 2006). The requirements of consistent supply of large volume of fresh roots by cassava-based industries cannot be supported by the current subsistence production systems. The critical constraint under such production systems is agricultural labour, costs which have been estimated to be between 70-90% of the total labour cost (Ezedinma, 2000) in smallholder farming agriculture. With increase in rural-urban migration, the ageing of the rural population and the feminization of agriculture, rural farm labour is likely to remain inelastic and expensive for agro- industrial purposes (Ezedinma *et al*, 2006). The objective of this paper is to determine the various factors that affect cassava productivity among smallholder farmers in Abia State and state the implication of the study.

Methodology

The study was carried out in Abia State. A multistage randomized sampling technique was used in selecting 120 cassava farmers from the three Agricultural zones of the state namely Aba, Ohafia and Umuahia. This was done using the cost-route approach. These extension blocks were randomly selected from each zone and two circles from each block. Finally, a total of ten farmers were randomly selected from each circle for a detailed study.

Analytical framework

The log-linear model derived from Cobb-Douglas functional form was the economic model specified for explaining labour productivity following Ukoha (2000) and Okoye et al, 2008 in cassava and cocoya production respectively. This functional form is the most popular in applied research because it is easiest to handle mathematically (Koutsiyiannis, 1979). The model is implicitly described thus:

Y = f (Lab, Age, HHS, Edc, Exp, Ft, Dep. Las, Cab, Fog Gen, Exc)

Where;
Y= Cassava output in kg
Y/N = Productivity of cassava (Y/Las)
Lab (A_1)= labour (maydays)
Age (A_2) = Age in years
HHS (A_3) = Household size (numbers)
Edc (A_4) =Educational level in years
Exp (A_5) = Farming Experience in years
Fet (A_6) =Fertilizer in kg
Dep (A_7) =Depreciation (₦)
Las (A_8) = Larnd size (ha)

Cab (A9) =Cassava bundle
Fog(A_{10})=Farmer organization (dummy variable, 1= member; 0=non-member)
Gen (A_{11})=Gender (dummy variable, 1= male; 0=female)
Exc (A_{12}) =Extension contact in number

Therefore ln Y =- A_0 +A_1 ln lab+ A_2 In Age +A_3 ln HHS+ A_4In Edc + A_5 In Exp+A_6 ln Fet +A_7 In Dep+ A_8 ln las +A_9 ln cab+A_{10}Fog+A_{11}gen+ A_{12} ln Exc + e

Results and Discussion

From a-prori expectation, coefficients of education, experience, farmer's organization, extension contact and Age were positive and significant at 1% and 5% levels. This finding is similar to previous work by Chinaka 1995, Anyaegbunam *et al* 2006. Education Age and experience have important roles to play in farming activities in that it makes farmers receptive to new ideas. Also land size was positive and significant at 5% level, it confirms earlier work by Anyaegbunam *et al* 2006, the larger the farmsize the greater the output. Coefficient of gender was negative, implying that women are more involved in cassava production than men. This is similar to earlier work by Ironkwe *et al.* 2007.

Table 1: Determinants of productivity in cassava production

Explanatory variables	Coefficients	Standard error	t-value
Intercept	4.27668	2..26995	1.88*
In lab	0.28258	0.31395	0.90
In Age	0.67990	0.24612	2.76**
In HHS	-0.34766	0.44228	-0.79
In Edc	0.50358	0.16846	2.99***
In Exp	0.02078	0.00529	3.93***
In Fet	-0.01145	0.13967	-0.08
In Dep	0.00905	0.23604	0.04
In las	0.55693	0.24787	2.25**
In Cab	-0.28235	0.25770	-1.10
In Fog	0.43536	0.11887	3.66***
In Gen	0.14084	0.06195	-2.27**
In Exc	0.49528	0.18050	2.74***
K^2	0.6072		
F	12.0468		

Source, field survey, 2008. Note* = Significant at 10%; ** = Significant at 5% and * = Significant at 1%. In = Natural logarithm**

Conclusion

All the factors relative to productivity of cassava- education, Age land size, experience farmers organization, gender and extension contact call f or policies aimed at increasing cassava productivity. Female farmers who are experienced should be encouraged to stay in production and law should be allocated to them..

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