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The degree and determinants of crop commercialization among emerging smallholder farmers in the former homelands of the Eastern Cape Province of South Africa.

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Abstract:

Emerging smallholders in the former homelands have been a subject of extensive academic research in South Africa over the past two decades. These farmers are largely described as those coming from previously disadvantaged racial groups, mainly black, who at least sell part of their produce and aspire to fully commercialise their production. But how much is 'at least'? This article seeks to contribute to the literature by determining the degree of commercialisation using the Crop Commercialisation Index. Factors influencing maize commercialisation were also determined using Binary Logistic Regression. A sample of 115 household heads was drawn randomly from three districts of the Eastern Cape Province and interviewed using a local language. Results show that emerging farmers in the study area are more commercial orientated in vegetable production than in maize. Binary Logistic Regression suggests that hiring external labour strongly promotes maize commercialisation.

Key words: Emerging smallholders, commercialisation, Eastern Cape, South Africa.

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1. Introduction

In the last two decades of the democratisation of the South African agricultural sector, a developing concept of the black middle class of semi-commercial smallholder farmers have emerged, who fall in between subsistence and commercial smallholders similar to the Asian experience noted in Pingali and Rosegrant (1995). These farmers are defined as those who come from previously disadvantaged groups—mainly black, who at least sell a proportion of their produce and aspire to become fully commercial and are generally termed 'emerging farmers' (Niewoudt, 2000).

Even though there is extensive discussion in literature (Rother et al., 2008; Macleod et al., 2008; Mohlatlole et al., 2015) about emerging farmers and their untapped potential noted by Khapayi and Celiers (2016), very few details are provided about their attributes and how they can be differentiated from other categories of smallholders. One of the few details given about the emerging farmers is that they at least have some degree of commercialisation, but how much is 'at least' and what are the driving forces behind their commercial behaviour?

This paper seeks to shed light on this hiatus by first, identifying major crops produced by emerging farmers and determine the degree of commercialisation of each crop. Then, since maize is the dominant produced crop by emerging farmers in the sample studied, a Binary

Logistic Regression model is used to determine factors affecting its commercialisation. The rest of the paper is sub-divided as follows: the subsequent section, outlines the concept of commercialisation and its importance; while the third section outlines the methodology of the paper before presenting the results in the fourth section. Finally, the last section will give conclusions and recommendations.

2. Concept of agricultural commercialisation

Leavy and Poulton (2007) define commercialisation of agricultural production as a "degree of participation in the market focusing more on cash or the degree of commercialisaation in terms of the amount of output sold"p.6. In simple terms the process of agricultural commercialization entails moving from subsistence to commercial production. Agricultural commercialization is viewed as a prerequisite for stimulating rural economic growth through agriculture (Von Braun, 1995). Mostly two factors are used to measure commercialization, degree of purchased input use and degree of output sold. Figure 1 below gives a brief summary description of the concept of commercialisation, it further describes the drivers and frictional forces hindering the flow as well as some detrimental effects of commercialisation. For detailed description on various measures of smallholder commercialisation see: Jaleta et al. (2009) and Gebremadhin and Jaleta (2010).

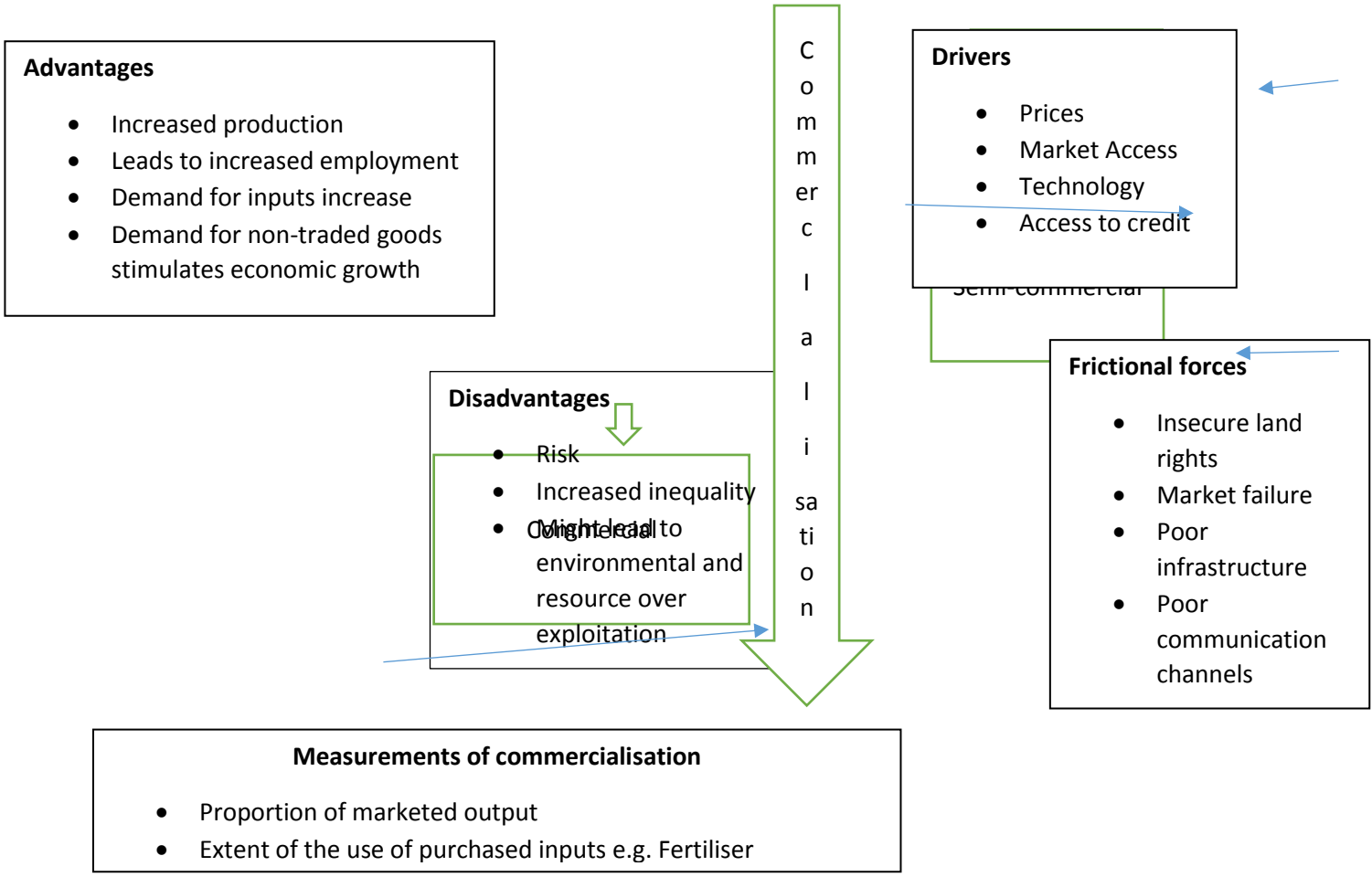

Figure 1: Flow chart diagram showing the process of commercialisation

Source: Own, adapted from Von Braun, 1995 and Pingali & Rosegrant, 1995.

3. Methodology

3.1 Study Area

The Eastern Cape Province covers an area of close to 169 580 square kilometer (13.9% of SA's land area) making it the second largest province after the Northern Cape. Furthermore, EC has a population of 6 562 053 and is the third most populous province (Statistics South Africa—StatsSA, 2011). This province is largely made up by the two former homelands, namely Transkei which was the largest homeland, and Ciskei. Lastly, EC is one of the rural provinces, as such more than 50% is considered rural. It is divided into six district municipalities as shown in Figure 2 below.

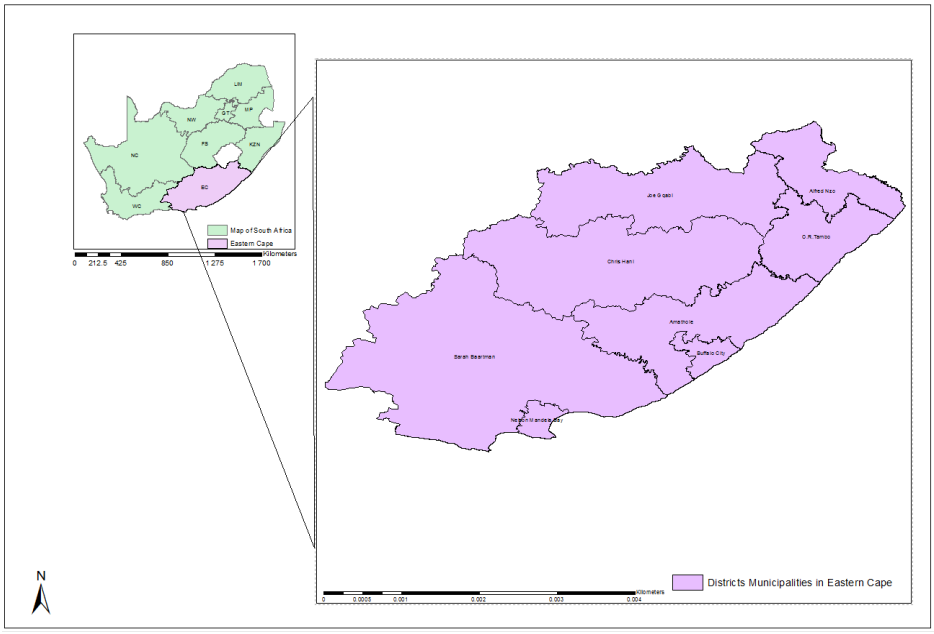

Figure 2: Map showing Eastern Cape's district municipalities

While the Eastern Cape Province is the second largest in South Africa, it is also the second poorest. It has one of the highest unemployment rates in the country, particularly in the former homelands, where it is estimated at more than 60% (Aliber, 2017). In rural parts of the province (former homelands), most households live below the poverty line and the dominant income sources are state transfers in the form of social grants (Westaway, 2012).

Smallholder agriculture is practiced by many households in the Eastern Cape. Aliber and Hart (2009) argued that the Eastern Cape Province has the highest share of African (black) households engaged in smallholder farming. Most households practice mixed farming systems, i.e. keeping livestock and growing crops; however, this is mostly determined by rainfall availability (Andrew et al, 2003). In terms of crop farming maize is by far the most important crop, planted together with dry beans and pumpkins (McAllister, 2001; Kotey et al., 2016).

3.2 Sampling procedure and size

According to StatsSA there are 1,773,395 households in the Eastern Cape Province. Of those households 27% practice some form of farming mostly for producing their main sources of food. Furthermore StatSA estimates that only 4.2% of the 27% produce for income which can be arguably regarded as emerging smallholder farmers (StatsSA, 2016). Within the Eastern Cape, smallholders are mostly found in three district municipalities, Amathole, OR Tambo, and Chris Hani District Municipality respectively (Aliber & Hart, 2009). However, the exact number of emerging smallholders in the Eastern Cape are not known. Initially a sample of

379 households was drawn randomly from the above three mentioned districts. Of those households only those who participate in crop activities were selected (115) for this paper. 59 participants hail from Amathole and the other two 28s were in Chris Hani and OR Tambo respectively.

A semi-structured questionnaire was used to collect the data from household heads using the local language (isiXhosa) spoken in the study regions. Only households who have sold their produce were interviewed. In this regard only households selling at least twenty percent was used as a condition for selecting the households. This was used to ensure that only farmers who at least have some degree of commercial orientation are interviewed.

3.3 Analytic methods

Apart from descriptive statistics, two principal analytical methods were used in this paper, firstly the Crop Commercialisation Index (CCI) and secondly, the Binary Logistic Regression. Regarding the first, various methods have been used to gauge commercialisation across the globe (see: Von Braun, 1995; Jaleta et al., 2009; Gebremedhin & Jaleta, 2010). In this study, due to the nature of the available data, Crop Commercialisation Index was used. Following Strasberg et al. (1999) CCI is the total quantity of a specific crop sold by a household per year divided by the total quantity of a specific crop that was produced by a household per year. This method has been widely used to assess commercialisation of smallholders, for example in the following studies: Govereh et al. (1999), Kibiridge (2016) and Dube & Guveya (2016).

Logistic Regression also referred to as the Logit model is used to analyse the relationship between multiple independent variables and a dependent categorical variable. There are two types of logistic regression, binary and multinomial logistic regressions. The first is typically applicable when there is a dichotomous (assuming only two values 0 and 1) dependent variable and the independent variables that are continuous, categorical or ordinal. The latter is used in cases where the dependent variable is dichotomous but with more than two categories. In this study, a Binary Logistic Regression was chosen since the dependent variable have only two outcomes i.e. if a household is subsistence orientated denoted by 0 or commercial orientated denoted by a value of 1. Households who have a CCI ranging between 0 and 0.5 are regarded as subsistence orientated while those who have a CCI ranging from 0.6 to 1 are regarded as commercially orientated.

4. Results and discussion

4.1 Descriptive results

Descriptive statistics of the variables used for the logistic regression are presented in Table 1 below. The results show that more farmers in the study sample were male (73%). The average age of the household heads was 59 years old. There was a great variation between the ages of the respondents, the youngest farmer was 24 years old while the oldest was 65 years of age. Furthermore, most household heads have primary and secondary education excluding matric, there were modest numbers of household heads with tertiary education (18%) and 6% had no formal education at all.

The majority of households received non-farm income from remittances and salaried work, the highest income earnings was R800, 000 per annum. However, the average non-farm income was less than the average net farm income. Most households owned more cars than tractors.

Most households cultivated gardens[1] and fewer households cultivated fields, but both with the aim of obtaining revenue. Moreover, the total land size of the garden was bigger than that of the fields because most households cultivated more than one garden. Further, family labour was mostly used, rather than hired labour. Maize, potatoes and cabbage were the most commonly planted crops in the study sample. The average maize yield was 16 (50kg) bags p/ha, while the lowest yield was two bags and the highest yield was 150 (50kg) bags p/ha. In potatoes an average of 24 (10kg) bags per was produced with the highest yield reaching 230 (10kg) bags per hectare. An average of 30 heads per 50m^2 of cabbage was produced with the highest yield of 500 heads per 50m^2. The household heads were also asked if they were willing to relocate and rent farms outside the former homelands. Most were willing to relocate on condition that they get post settlement support from the government. They were modest in taking the risk of moving and mostly required an average of a 92 hectare farm.

Table 1: Descriptive statistics for the variables used in the Logistic regression

Variable name	Description	Mean	Standard deviation
	Dependent variable		
MaizeCCI	Maize household Commercialisation index	0.66	0.20
	Independent variables (continuous)		
hh_Age	Age of household head	59.37	8.41
Non_farmIncome	Non-farm income p/a	8432.28	12700
Tractor	Number of tractors owned in the	0.20	0

[1]A Garden is a piece of arable land adjacent to the homestead while a field is arable land which is normally larger than the garden but away from the homestead.

	household		
Car	Number of car/s owned in the household	0.82	4.24
Garden_size	Size of the garden (Ha)	2.85	3.22
Field_size	Size of the field in (Ha)	0.87	0
Maize_yield	Harvested Maize yield in 50kg bags/ha	16.65	19.88
potatoe_yield	Harvested Potato yield in 10kg bags/ha	24.37	45.89
Cabbage_yield	Cabbage yield in heads/50m^2	29.77	80.40
familylabour	Number family members worked in farming activities	2.22	1.31
externallabour	Number of hired labour used in farming activities	1.52	2.63
NetFarmIncome	Net farm income in Rands/annum	45823.67	44897.66
riskmoving	Risk associated with moving (from a scale of 1-10)	5.76	3.65
riskexpandagriprod	Risk in expanding production (from a scale of 1-10)	5.66	3.65
Land_demand	Land household requires in PPR in (Ha)	91.89	132.91
Independent variables (Non-continuous variables)			
			Percentage
Gender	Household head gender	Male Female	27 73
educhigh	Highest level of education of household head (categorical)	None Primary Secondary Passed matric Technical college University	6 35 30 11 8 10
Name_of_district_municipality	Name of district municipality where the household is located	ADM CHDM ORTDM	51 24 24
Will_Move	Willingness to move to the private property right (PPR) area	Yes No	68 32
ReasonForCropProd	Primary reasons for producing crops (categorical)	Income Food Livestock fodder	40 19 41
incomesource	Sources of income	Salaries Remittances Social grants Public works	18 37 10 12

4.2 Crop commercialisation

Table 2 below shows major crop activities as well as their CCI from a sample of households in the Eastern Cape. The results show that maize is the most produced crop followed by potatoes and cabbage. While maize is the most produced crop, it is the least commercialized crop followed by cabbage. Potatoes are the most commercialized crop. Maize is mostly produced, because it is a staple food which might contribute to its low commercialisation.

Table 2: Crop Commercialisation Indexes for major crop activities

Activity	Mean CCI	N
Maize	0.66	116
Potatoes	0.83	53
Cabbage	0.73	51

4.3 Results of econometric analysis

Table 2 below show the results of the Binary logistic regression for determining factors influencing maize commercialisation among emerging smallholder farming households. Out of the twenty-one independent variable that were hypothesized to have an influence on maize commercialisation, five were statistically significant at 5% (external labour, family labour, total garden size, maize yield and producing crops for income) while producing crops for food was significant at 10%.

The results show only one positively related variable among those which are statistically significant (hired external labour). Further, the odds ratio associated with this variable shows that an additional labour unit increases the chances of households to be commercialised by 1.78 times. While use of family labour showed a negative influence despite its significance. This suggests that farmers who rely on family labour are more subsistence orientated. Most variables which were expected to have appositive effect on maize commercialisation are unfortunately showing the opposite. Maize yield and the reasons for producing crops for example although it is significant but it has a negative influence. The possible explanation for this is that since maize is the mostly planted crop by emerging farm households and is the dominant staple food also used to feed livestock, most household regard it as a cultural and staple crop not as a cash crop. Further, the fact that maize commecialisation is positively influenced by the reason for producing crops for own household food consumption, suggest a subsistence orientation towards maize production. However although vegetable crops showed a high average commercialisation, but their influence is negative on maize commercialisation. This suggest that when maize is commercialized, vegetables are used for home consumption vice versa. Reasons for producing crops for income purposes showed a negative influence on maize commercialisation.

Table 3: Binary Logistic Regression estimates for the determinants of maize commercialisation

Variable	Coefficient	S.E.	Wald	Odd ratio	Sig.
Intercept	9,71	4,24	5,25		
Non-farm Income	0	0	0	1	0,95
Tractor	2,1	1,77	1,4	8,13	0,24
Car	-0,11	0,38	0,08	0,9	0,78
externallabour	0,57	0,27	4,63	1,78	0,03
familylabour	-0,67	0,34	3,86	0,51	0,05
riskexpandagriprod	0,1	0,13	0,6	1,11	0,44
risk moving	-0,14	0,13	1,09	0,87	0,3
Garden size	-0,34	0,15	5,13	0,71	0,02
Field size	-0,18	0,18	0,99	0,84	0,32
Maize yield	-0,05	0,02	4,43	0,95	0,04
potatoe_yield	-0,01	0,01	0,7	0,99	0,4
Cabbage yield	0	0	0,03	1	0,86
hh_Age	-0,07	0,06	1,28	0,93	0,26
NetFarmIncome	0	0	0,38	1	0,54
Land_demand	0,01	0	2,13	1,01	0,14
Educhigh	0,21	0,34	0,38	1,24	0,54
Name_of_district_municipality (ADM)	-0,16	0,52	0,09	1,2	0,77
Name_of_district_municipality (CHDM)	0,49	0,61	0,67	2,3	0,41
Wil_to_move	0,61	0,53	1,32	3,38	0,25
Income Source (salaries)	2,03	1,46	1,95	66,5	0,16
Income Source (other)	-0,59	0,78	0,56	4,85	0,45
Income Source (Remittances)	-0,07	0,69	0,01	8,13	0,92
Income Source (Social grants)	0,78	1,23	0,4	19,02	0,53
ReasonForCropProd (food)	1,43	0,81	3,12	5,33	0,08
ReasonForCropProd (income)	-1,18	0,59	4,05	0,39	0,04
Gender (female)	0,65	0,48	1,82	3,64	0,18
N=115					
R^2=0.25					

5. Conclusions and recommendations

This paper has sought to shed light on how commercial orientated emerging smallholders in the Eastern Cape are. It was found that maize, cabbage and potatoes are the most planted crops for sales by emerging farmers in the studied sample. The CCI has shown that vegetables, mainly potatoes and cabbage are planted for sales than maize. The degree of commercialization for maize was on average more than 60%, while for Cabbage and potatoes were more than 70% and 80% respectively. The Binary Logistic Regression results have shown that it is difficult for emerging farmers to be more commercialised on maize production in their current traits. It has become evident also that higher maize yield do not

necessarily translates to commercially orientation. Only hired labour increases the chances of emerging farmers to be commercialized on maize production. Policies who intended to increase commercialisation should focus more on other crops such as vegetable in the Eastern Cape.

Despite these findings provided by this paper, it would be interesting to replicate this study in other province with a larger sample. Other studies could focus on commercialisation of vegetables and see factors that influence their commercialisation

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