

Poverty Incidence among Smallholder Farmers in the Amathole District Municipality, Eastern Cape Province, South Africa

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ABSTRACT Strategies aimed at poverty alleviation need to identify factors that are strongly associated with poverty and are amenable to modification by policy. The study employed a household welfare function, approximated by household expenditure per adult equivalent to offer explanation for the incidence of poverty and its correlates. Data were collected from a household level survey of 150 smallholder farmers in the Amathole District Municipality, Eastern Cape Province of South Africa. The Foster, Greer, and Thorbecke (FGT) poverty index was used to analyse the extent and severity of poverty and the results revealed that about 44 percent of the sampled households live below poverty line with average poverty gap of 0.097, while results from the Tobit regression model showed that household head's gender, age, education, households' dependency ratio, occupation, security of land rights, credit availability, social capital and assets ownership are important determinants of smallholder farmers' poverty. Implications for smallholder farmers' poverty reduction were discussed.

INTRODUCTION

Poverty has remained topical in global development policy endeavours especially in developing countries (HSRC 2014) and is one of the key priorities for the government and various other sectors of South African society (Bhorat et al. 2012). While the global policy objective with respect to poverty is to half the proportion of people living in extreme poverty by 2015 (HSRC 2014) the percentage of the populace in South Africa still living in poverty has not changed significantly since the advent of democracy in 1994. The new government inherited a country marked by severe poverty and inequality, with a large proportion of the population living without access to basic services (Bhorat and van der Westhuizen 2013). Many South African households as a result live in poverty and are vulnerable to becoming poor. The national poverty headcount has basically remained unchanged between 1995 and 2005 and

was still at around 41% at US\$3 in 2005 (Duclos and Verdier-Chouchane 2011), with poverty rates of 54.2% and 67.7% for households and individuals in rural areas, respectively. These figures are more than double the corresponding rates of 21.9% and 32.7% in urban areas (Armstrong et al. 2008). South Africa, with a GDP of approximately \$10,700 per capita, is an upper-middle-income country, but its income and wealth distribution is the most unequal in the world, with a Gini-coefficient of 0.63 in 2009 (World Bank 2013). This figure is higher than the Gini coefficient of 0.58 in the mid-1990s. Most households still have little or no access to education, health care delivery, pipe-borne water and energy supply, this state of affairs will possibly affect the country's social and political stability, as well as its economic development and growth (May 1998).

Poverty, according to its primary meaning, implies a lack or deprivation of certain minimal income necessary to attain a decent standard of living (Haughton and Khandker 2009). There is a large body of evidence to suggest that income poverty is increasing. According to Leibbrandt et al. (2005) and Hoogeveen and Ozler (2006), between 1995 and 2000 the headcount index of poverty has increased from 32 to 34 percent nationally, or from 26 to 28 percent between 1996 and 2001 using a different dataset on a \$2 per day poverty line, where the average poor house-

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hold earned 11 percent below this line in 1995 and which by 2005 had increased to 13 percent (Hooegeven and Ozler 2006). South Africa population, according to the mid-2006 estimates from StatisticsSA is about 47.9 million people and of these, about half continue to live below the minimum living standard (Adelzadeh 2006).

Poverty is endemic in the rural areas of South Africa, particularly in the former homeland, about 65 percent of the poor are found in the rural areas and 78 percent of those vulnerable to being chronically poor are also those who dwell in rural areas (Leibbrandt and Woolard 2006). The poverty rate (defined as the proportion of people in a particular group or area falling below the poverty line, and which measures the prevalence of poverty) for rural areas in South Africa is 71 percent. Accordingly, the poverty gap (defined as the annual amount needed to uplift the poor to the poverty line by means of a perfectly-targeted transfer of money, and which measures the intensity of poverty) was also estimated to be R28 billion in 1995, and the rural areas accounted for 76 percent of this (May 1998).

Poverty is persistent in rural areas because of the contraction in the South African economy, and the erosion of the rural economic base due to expansion in population. The dearth of infrastructure and outright dispossession of assets especially land, which has resulted in many households finding themselves with neither income, nor assets from which to generate an adequate income. Another reason alluded to the persistence of poverty in the rural areas is what the Poverty and Inequality Report (PIR) termed 'poverty traps', which the report defined as "a lack of complementary assets and services resulting in 'poverty of opportunity', whereby individuals are unable to take full advantage of the few assets to which they have access" (May 1998).

With 57.1% of all poor households and 59.3% of poor individuals being rural dwellers (Armstrong et al. 2008), it is imperative for policy makers to understand the mechanisms through which poverty can be alleviated, as persistent poverty can affect the pace and spread of the economic growth that a nation experiences (Ravallion 2009) and the dissatisfaction due to poverty can lead to stifled growth through socio-political unrest that may ensue (Ngepah and Mhlaba 2013). This study seeks to examine the incidence and socio-economic dimensions of

poverty in the Eastern Cape with a view of informing the effectiveness of government's empowerment policy.

Empirical Evidence from Previous Poverty Studies in South Africa

Poverty has been generally accepted to mean significant deprivations in well-being (Houghton and Khandker 2009). Therefore, poverty reduction is a feasible critical priority for the government and other sectors of South African society, and by inference, of development policy (Datt et al. 1998; Borat et al. 2012). Studies related to profiling of poverty constitute an important element in the information kit of the policy maker. Poverty profile assesses the degree of poverty, its geographical distribution and the socio-economic domains and provides information on the characteristic of the poor as well as identifying empirical correlates of poverty.

In South Africa, empirical studies on smallholder farmers' poverty profile are at best very scanty. The available ones have been fairly descriptive and are mainly based on the poverty line approach, identifying the level of income and expenditure below which an individual or a household is considered to be poor; this is then used to determine the extent of poverty the country. Simkins (1984) used the Mcgrath's 1975 data sets in the analysis of poverty in South Africa. The results showed that 54 percent of all households live below the poverty line, while the Blacks, Coloured, Asians and Whites have 68, 52, 30 and 3 percent of their households respectively living below the poverty line. The results of the 1993 Living Standards and Development survey indicated that about 54, 25, 8 and 0.5 percent of the Blacks, Coloured, Asians and Whites respectively are below the poverty line. Furthermore, Whiteford and McGrath (1994) employing the 1991 census survey in their analysis of poverty, showed that 49 percent of all the households live below the poverty line, while 67, 38, 18 and 7 percent of black, coloured, Asians and white households respectively live below the poverty line.

In a study by May et al. (1995), a poverty line for South Africa was defined using an average adjusted household expenditure measure, which is compared with a poverty line (or a minimum income level) for poor households. For a rural household of 2 adults and 4 children,

Household Subsistence Level (HSL) measure is put at R723.05 or R236.95 adult equivalents per month while an urban family with 2 adults and 3 children will subsist on R825.1 or R267.21 adult equivalents per month. Their result revealed that about 37 and 49 percent of all the households and population in South Africa respectively are poor. They suggest that larger households tend to be poorer, as the headcount ratio for individuals living in poverty is larger than that of the households. Also they reported that the incidence of poverty is slightly higher among women than men. The explanation to this was that among the elderly who suffered from high poverty rates, women were the most predominant. The results also indicated that poverty is more concentrated among the blacks.

By measuring the frequency of the poor's observed characteristics relative to that of the whole population, the poorest group in South Africa was identified. The "poor" was defined as the poorest 40 percent of households which is equivalent to 50 percent of the population. These are households that subsist on below R301 per adult equivalent per month. The ultra-poor subsist on below R178 per month per adult equivalent per month, and they are the poorest 20 percent of households. There was an uneven distribution of poverty in the South Africa provinces, according to his identifications, where about two-thirds that is, 24 percent, 21 percent and 18 percent of the poor are found in the Eastern Cape, KwaZulu-Natal and the Northern provinces respectively (May 1998).

In a study by Carter and May (1999), they use a non-parametric regression to analyse poverty across class structure, exploring the different claiming systems and livelihood strategies available in the rural areas. They explained the incidence of poverty by decomposing the rural population into distinct livelihood strategy classes. The result showed that poverty is not only linked to having few assets, but also of constraints which hinders the effective use of those assets. Poor households access to assets and endowments are also found to be limited in most cases, their options for the use of these endowments are highly constrained, and they generate poor returns for those activities in which they are able to engage.

Leibbrandt and Woolard (1999) use the 1995 Income and Expenditure Survey (IES) to examine poverty prevalence across South Africa. The

result indicated that Eastern Cape Province had the highest incidence of poverty, while the poverty incidence is lowest in the Gauteng and Western Cape Provinces. However, with the same 1995 IES data set they are unable to determine a clear ranking for the Northern Province but only asserted that poverty is higher in the Northern Province, the Free State and in the Northwest than in Mpumalanga.

Gyekye et al. (2001) use the FGT measure and a poverty line of R259 in the analysis of poverty in the Northern Province of South Africa. He found that about 41 percent of the population are living in households with monthly adult equivalent expenditure less than the poverty line. The result also indicated that 24 and 47 percent of the urban and non-urban population respectively live below this poverty line.

MATERIAL AND METHODS

Study Area and Data Collection

This study was conducted in the Amathole district municipality of Eastern Cape Province of South Africa. It has seven local municipalities namely, Amahlathi, Nxuba, Nkonkobe, Ngqushwa, Great Kei, Mquma and Mhashe. The estimated population in 2010 is 892 637 people with a total of 252 252 households. According to the Amathole District Municipality Integrated development Plan (ADM 2012) about 54% of the population are living in poverty in 2010 with about 50.3% of the population earn between R500 and not more than R3500 a month. Social grant dependence is higher with about 66% of the population depending on social grants for sustenance. There is a lack of commitment and support by the banks and financial institutions for the small and emerging enterprises (ADM 2012).

Primary data were collected through the use of structured questionnaires from a cross section of the rural smallholder farming households. Data collected were collected on households' demographic and socio-economic characteristics, as well as income and expenditure variables. A multistage sampling technique was used to select representative households for the study. The first stage involved the selection of three local municipalities namely, Ngqushwa, Amahlathi and Nkokonbe from the Amathole District Municipality. In the second stage, six villages

(Peddie and Hamburg for Ngqushwa, Stutterheim and Keiskammahoek for Amahlathi and Alice and Seymour for Nkonkobe) were randomly selected within the local municipalities. In the third stage, twenty-five households were randomly selected from each of the six villages previously selected. A total of one hundred and fifty households were interviewed for the study.

Analytical Technique

Determination of Poverty Lines

Poverty line can be referred to as the level of welfare which distinguishes poor households from non-poor households. It is a pre-determined and well-defined measure of income or value of consumption (expenditure). Poverty lines are often drawn either in relative or in absolute terms. In the former, a proportion of the mean expenditure is taken as the poverty line, usually the one-third (which defines the core poverty line) and two-third (which defines the moderate poverty line) of mean expenditure have been commonly used. The absolute poverty line is based on a predetermined minimum food and non-food expenditure, below which a household is defined as poor if its consumption level is below the predetermined minimum. In other words, the poverty line is fixed in terms of the standard of living it commands over the domain of poverty measurement.

The choice of consumption-based rather than an income-based measure of household welfare is motivated by the fact that, income can be viewed as a measure of welfare opportunity or a measure of potential welfare, whereas consumption on the other hand can be interpreted as a realized welfare or a measure of welfare achievement (Hentschel and Lanjouw 1996; Atkinson 1989). Since realised rather than potential welfare is the concerned, consumption is arguably a more appropriate indicator. Hence, this study was based on relative poverty line approach. Relative poverty lines were constructed based on total household per capita consumption (expenditure) as the basic unit of household welfare; and the household's expenditure were corrected for household size and its demographic characteristics following Deaton and Muellbauer (1980) as follows;

(1)

where, E = Number of adult equivalents

A = Number of adults

K = Number of children

α = Fractional representation of children in adult equivalence that is, child cost ratio

Scale parameter

The adult equivalent conversion formulae of $E=(A+0.5 K)^{\theta}$ was adopted for the analysis, most poverty studies in South Africa have adopted the values of $\alpha = 0.5$ and $\theta=0.9$ (May et al. 1995; Baiyegunhi and Fraser 2011). The sensitivity of the poverty profile to changes in values of α (from $\alpha=0.5$ to $\alpha=0.8$) and θ (from $\theta=0.5$ to $\theta = 0.9$), was tested. It was found that the poverty lines were robust at $\alpha = 0.5$ and $\theta=1$.

The mean monthly per adult equivalent household expenditure (MPAEHE) of the sample respondents was determined by dividing the total per adult equivalent expenditure for all households by the total number of households sampled. Hence, extremely (core) poor, moderately poor and non-poor household were identified. Those households who spend less than one-third (1/3) of MPAEHE were classified as extremely poor, less than two-third (2/3) of the MPAEHE as moderately poor, while non-poor are those who spend two-third or more of MPAEHE. Total per capita expenditure was used as a proxy for the standard of living of the household in the study area. From the poverty lines, the poverty profile of different groups in the study area was analysed and measured through the FGT model.

The share of the population below poverty line provides a quick indication of the scope of the problem within a given setting. In this study, total monthly expenditure was expressed in per adult equivalent terms by adjusting for household size as each household size divides its total monthly expenditure.

Poverty Gap Index/Ratio

The analysis of poverty was based on the mathematical model developed by Foster, Greer and Thorbecke (1984), known as the FGT model of poverty decomposition. This was adopted to determine the incidence, depth and severity of poverty in the study area. The use of the FGT measures required the definition of a poverty line, which was calculated on the basis of aggregated data on household expenditure. The FGT measure, which is an approach to absolute poverty, is expressed as:

$$P_a = \frac{1}{n} \sum_{i=1}^m \left(\frac{z - y_i}{z} \right)^\alpha, \quad \alpha \geq 0 \quad (2)$$

where; z = Poverty line
 m = Number of households below poverty line
 n = Number of households in the reference population/total sampled population
 y_i = Per adult equivalent expenditure of household
 α = Poverty aversion parameter
 Poverty gap of the household
 $\frac{z - y_i}{z}$ = Poverty gap ratio

The headcount index is obtained by setting; $\alpha=0$; $\alpha=1$ gives the poverty gap index, and $\alpha=2$ gives the squared poverty gap index.

If $\alpha = 0$ in equation (1), the expression decomposes to:

$$P_0 = \frac{1}{n} (q) = \frac{q}{n} \quad (3)$$

This gives a measure of the incidence of poverty also known as the headcount ratio or headcount index (H) - the percentage of the population living in households with consumption per capita that is less than the poverty line, that is, the proportion of the poor in the total population.

When $\alpha = 1$ in equation (1) the expression becomes:

$$P_1 = \frac{1}{n} \sum_{i=1}^m \left(\frac{z - y_i}{z} \right) \quad (4)$$

Here the head count ratio is multiplied by the expenditure gap between the average poor person and the poverty line. This gives a measure of the depth of poverty or poverty gap index defined by the mean distance below the poverty line as a proportion of that line (where the mean is formed over the entire population, counting the non-poor as having zero poverty gaps).

When $\alpha = 2$ in equation (1) the expression is as below:

$$P_2 = \frac{1}{n} \sum_{i=1}^m \left(\frac{z - y_i}{z} \right)^2 \quad (5)$$

This gives a measure of the severity of poverty and an indication, when multiplied by 100, of the percentage by which a poor household's income should increase to move them out of poverty. It is the mean of the squared proportionate poverty gaps, this allows for concern about the poorest of the poor by attaching greater weight to the poverty of the poorest than of those just below the line, which provides an in-

tensity of poverty for different households. The poverty square index also satisfies the Sen-Transfer axiom, which requires that if expenditure is transferred from a poor to a poorer household, measured poverty decreases.

Determinant of Poverty

This analysis also employed the Tobit regression model, a hybrid of the discrete and continuous models, to determine the correlates of poverty. The Tobit model is an econometric model in which the dependent variable is censored; censoring occurs because the values below zero are not observed (Schneider 2005). The Latent variable W_i^* cannot always be observed while the independent variable X_i is observable. The model is expressed below, following McDonald and Mofitt (1980):

$$\begin{aligned} q_i &= W = \beta X_i + \varepsilon_i \text{ if } W_i^* > 0 \\ q_i &= 0 = \beta X_i + \varepsilon_i \text{ if } W_i^* \leq 0 \quad i = 1, 2, 3, \dots, 150 \end{aligned} \quad (6)$$

household

q_i is the dependent variable, it is discrete when the household is not poor and continuous when poor. The welfare indicator W_i^* is given as:

$$W_i^* = y_i - W_i = \frac{Z - Y_i}{Z} \quad (7)$$

where Z is the poverty line and Y_i is the consumption expenditure per adult equivalent. $W_i^* > 0$ implies that W is observed, while the reverse is the case when $W_i^* < 0$. The vectors of independent variables is denoted by, X_i , β^1 is the vector of unknown coefficients and ε_i is an independently distributed error term.

Selection of Explanatory Variables

The set of independent variables that are hypothesized to determine consumption and hence poverty includes demographic and household level characteristics. They key criterion for selecting potential determinants of consumption was exogeneity. Explanatory variables that are arguably exogenous to current consumption are selected as the goal of the model is to infer causality. The values of endogenous variables are assumed to be influenced by exogenous variables, but in return are not influence by those variables as no feedback relation between the endogenous and exogenous variables is assumed (Judge et al. 1985). As a result, explanatory variables whose values are determined outside of

the current economic system of household, but also determine the current level of household welfare were selected (Mukherjee and Benson 2003). The selection of these potential determinants is guided by results of the poverty profile of the PIR, as well as by those variables known to be of considerable interest to South Africa's policy makers. The selected set of explanatory variables selected as possible determinants of poverty in the study area are presented in Table 1.

RESULTS AND DISCUSSION

Incidence of Poverty among the Smallholder Households

This section examines the relative poverty status of the respondents in the study area by employing the three most commonly used indices of poverty measure, namely the incidence of poverty, the depth of poverty and the severity

of poverty. The analysis of poverty begins by defining the indicator of well-being, using consumption expenditure as a welfare measure, a poverty line was established.

A relative approach in which a household was defined as poor relative to others in the same society or economy, as specified in the methodology was used to define the poverty status and in classifying the households into poor and non-poor groups. The poverty line defined for the study area was R220.56 per adult equivalents per month. This is closer to the Household Subsistence Level (HSL) of R236.95 per adult equivalent defined for a rural household of 2 adults and 4 children by May et al. (1995) for South Africa, and a poverty line of R259.11 for the Northern Province (Agyapong et al. 2001). The core/extreme poverty threshold for the study area was estimated at R110.28.

The distribution of the households falling into mutually exclusive welfare groupings are presented in Table 2. Sixty-six (44%) of the

Table 1: Explanatory variable for the determinants of household poverty

<i>Variables</i>	<i>Measurement</i>	<i>A priori expectations</i>
<i>Age</i>	Completed years	Indeterminate
<i>Gender</i>	1 if male; 0 otherwise	Male headed households are expected to generate better welfare outcomes than female
<i>Education</i>	Number of years of schooling	Education is expected to lead to increase earning potential and consequently increase welfare
<i>Dependency Ratio</i>	This is measured as the number of dependants (aged 0-14 and over the age of 65) to the total household size, expressed as a percentage.	Dependency ratio is positively related to welfare. High dependency ratio exerts consumption stress on the household. Indeterminate
<i>Primary Occupation</i>	1 if farming; 0 otherwise	
<i>Security of Land Tenure</i>	1 if yes; 0 otherwise	Security of tenure is expected to increase household welfare
<i>Credit Availability</i>	1 if yes; 0 otherwise	Credit availability is expected to increase household welfare
<i>Social Capital</i>	Measured as the number of associations/groups belong to	It is expected to have a positive effect on poverty
<i>Remittance, Pension, Social Grants</i>	Measured as the amount received in Rands.	It is expected to boost household welfare
<i>Per Capita Income (PCI)</i>	Amount in Rands	This is expected to negatively influence poverty
<i>Assets Ownership (oxen, poultry, etc.)</i>	1 if \geq 75 th percentile among households who owned at least one of that type of livestock (In practice, the 75 th percentile was approximately equal to the mean for all types of livestock); 0 otherwise	This is expected to increase household welfare

Based on apriori expectations

households fall below the poverty line, while eighty-four (56%) of the households are classified as non-poor. Of the poor households, fifteen (10%) are ultra-poor, while fifty-one (34%) are moderately poor.

Table 2: Household poverty classification

Group	Amount (R)	Frequency	Percent
Extreme (ultra) poor	<110.28	15	10
Moderate poor	110.28 ≤ Z < 220.56	51	34
Non-poor	≥220.56	84	56
Total		150	100

Source: Calculated from field survey data

Decomposition of Poverty by Local Municipality

The incidence of poverty using the monthly household per capita expenditure by local municipality is presented in Table 3.

Table 3: Decomposition of poverty by local municipality

Local municipality	Head count index (P_0)	Poverty gap index (P_1)	Severity index (P_2)
Nkokonbe	0.24	0.10	0.043
Amahlathi	0.46	0.097	0.038
Ngqushwa	0.62	0.107	0.036
All households	0.44	0.097	0.039

Source: Calculated from field survey data

The headcount index showed that 44 percent of all the smallholder farmers are living below the poverty line. By decomposing across local municipalities, the incidence of poverty indicates that the share of households living in poverty is distinctly the highest in Ngqushwa, where 62 percent of households have a monthly expenditure that is less than R220.56. This municipality is followed by Amahlathi and Nkokonbe municipalities with 46 percent and 24 percent of their respective households, living below the poverty line.

The poverty gap reflects the total expenditure shortfall of the entire poor household in relation to the poverty line (Ravallion and Bidani 1994). It therefore, provides information regard-

ing how far off households are from the poverty line. This measure captures the average sum of the differences between the poverty line and actual consumption levels of all people living below that line. It also reflects the per capita cost of eradicating poverty, in other words, it gives the total resources that would be required to bring every poor person up to the poverty line. The survey results show that, the depth of poverty is higher in Ngqushwa followed by Amahlathi and Nkokonbe, indicating that more resources is required to bring the poor households exactly up to the poverty line in Ngqushwa than Amahlathi and Nkokonbe. An overall poverty depth (P_1) value of 0.097, it will require R21.39 (that is, 0.097 multiplied by R220.56) per individual per month to close the "poverty gap" in the province. In other words, if the province could mobilise resources equal to about 10 percent of poverty line for every individual and were appropriately distributed to the poor in the amount needed so as to bring each individual up to the poverty line, then poverty could be eradicated at least in theory. With the population of the poor in the province estimated at 4.6 million people (HSRC 2004), about R98, 394 million per month or about R1, 180,728 billion per annum would be the total minimum amount required to eliminate poverty at the poverty line. This estimated minimum resource requirement implies that redistribution on its own requires capital that is unlikely to be available in the provincial economy in the short term.

The severity of poverty (P_2), is a measure of a distributionally sensitive index that can detect the expenditure distribution among the poor. Its decomposability property allows for the investigation of the severity of poverty in more detail. This measure also satisfies most welfare axioms, namely, the monotonicity axiom (given other things, a drop in the income of a poor household must increase the poverty measure) and the transfer axiom (Given other things, a pure transfer of income from a poor to a less poor household must increase the poverty measure). The geographical concentration and average expenditure shortfall of the poor are presented in Table 4.

It can be inferred from the table that if suitable measures are taken to alleviate and eventually eliminate poverty in Ngqushwa, Amahlathi and Nkokonbe local municipalities, then the severity of poverty would be reduced by about 50,

Table 4: Geographical concentration and average expenditure shortfall of the poor

<i>Local municipality</i>	<i>Contribution to poverty (%)</i>	<i>Expenditure shortfall (%)</i>	<i>Concentration of the poor (%)</i>
Nkokonbe	19.96	36.14	18.18
Amahlathi	31.36	17.27	34.84
Ngqushwa	46.96	21.16	46.96
All households	-	22.06	-

Source: Calculated from field survey data

31 and 20 percent respectively. The result also reveals that poverty is not only most severe in Ngqushwa, but there is also a high geographical concentration of the poor in the municipality as about 50 percent of the poor households sample reside in this municipality.

Decomposition of Poverty by Socio-economic Characteristics

In this study the incidence of poverty was also decomposed by different socio-economic

characteristics of the households, focusing on nine key factors such as, the gender of the household head, marital status, age, education, dependency ratio, occupation, credit constraint status, land ownership and social capital. The decomposition of poverty by socio-economic characteristics is presented in Table 5.

The headcount index indicates that the incidence of poverty is higher for female headed households than for male headed households. Forty-six percent of the female headed households are poor while 41 percent of the male headed households are poor. Similarly, household head that are unmarried have higher incidence of poverty than married household head, the reason could be that married couples could pooled resources together to generate better welfare outcomes. Elderly household head are of special importance in terms of poverty especially if they have to fend for themselves and for their dependants. The incidence of poverty was found to be higher among household head aged between 60-69 years. Similarly, all household with dependen-

Table 5: Decomposition of poverty by socio-economic characteristics of the farmers

<i>Socio-economic characteristics</i>	<i>(n)</i>	<i>Head count index (P₀)</i>	<i>Poverty gap index (P₁)</i>	<i>Severity index (P₂)</i>
<i>Gender of Household Head</i>				
Male	54	0.41	0.11	0.047
Female	96	0.46	0.10	0.034
<i>Marital Status</i>				
Single	56	0.42	0.09	0.034
Married	94	0.36	0.13	0.087
<i>Age</i>				
28-39	61	0.62	0.31	0.19
40-59	75	0.24	0.15	0.08
60-69	14	0.71	0.39	0.15
<i>Education</i>				
No formal education	29	1.0	0.07	0.03
Primary (1-5 yrs schooling)	34	0.73	0.17	0.09
Middle (6-9 yrs schooling)	57	0.21	0.06	0.023
Matric and above (10+ yrs schooling)	30	0	0	0
<i>Occupation</i>				
Farming households	134	0.48	0.24	0.13
Others	16	0.12	0.29	0.11
<i>Dependency Ratio</i>				
0-100%	125	0.33	0.12	0.08
Above 100%	25	1.0	0.45	0.32
<i>Credit Constraint Status</i>				
Yes	122	0.54	0.29	0.16
No	28	0.00	0.00	0.00
<i>Land Ownership</i>				
No	140	0.60	0.23	0.10
Yes	10	1.0	0.08	0.03
<i>Social Capital</i>				
0	27	1.0	0.09	0.04
1-2	95	0.38	0.19	0.06
Above 2	28	0.11	0.08	0.04

Source: Calculated from field survey data

cy ratio higher than 100 percent are deemed poor, while 33 percent of the household with dependency ratio between 0-100 percent are poor.

Poverty incidence is markedly higher among the illiterate households and those that have about 1-5 years of schooling. There is no incidence of poverty among households with matriculation and above 10 years of schooling. However, higher incidence of poverty was observed among farming households than for non-farming households. The incidence of poverty is also higher among households who are constrained in their access to production resources such as credit and land. There is higher incidence of poverty among households who own no land for subsistence production and have no access to credit. Similarly, all household heads that do belong to any social group or organization are all poor, while the incidence of poverty for those that belong to two or more groups is lower.

The Determinants of Smallholder Household Poverty

The maximum likelihood estimates of the Tobit regression result of the determinants of smallholder households' poverty are presented in Table 6.

The results presented in Table 6 showed that Sigma is 0.2134 with a t-value of 14.732 and is statistically significant at 1 percent level. This implies that the model has a good fit to the data. According to the estimation results, rural poverty is strongly linked to household head's gen-

der, age, education, dependency ratio, occupation, land ownership, credit availability and assets ownership.

According to the estimation, the gender of the household head is statistically significant and has a negative relationship with the incidence of poverty. This implies that female-headed households are more likely to be poor compared to the male-headed households. This could be due to the fact that men are more in control of production resources than women. Again, most female-headed households are the so-called "granny households", that is, the female household head is the grandmother rather than the mother of the children in her care.

The coefficient of household heads' age is statistically significant and positively related to the incidence of poverty. This implies that the likelihood of a household remaining poor tends to increase with an increase in the age of the household head. This could be due to the fact many old people have to fend for themselves and in most cases do not have people on whom to rely on for support. Although many receive old-age grants but as demonstrated by Robert (2001), these grants are in no way sufficient to keep a household out of poverty. Thus, the degree to which a poor elderly person manages to escape poverty, would generally depend on changes in his household circumstances, for instance if a child secures a good job, a decline in dependency ratios accompanied by some relief of financial burdens or if his assets tend to increase with age.

Table 6: Tobit regression estimates of determinants of household poverty

<i>Variables</i>	<i>Coefficients</i>	<i>Standard errors</i>	<i>t- statistics</i>
Gender	-0.1460*	0.7672	-1.903
Age	0.1257*	0.0674	1.863
Education	-0.0176**	0.4170	-2.440
Income	-0.2890	0.2121	-1.362
Land ownership	0.2316	0.0768	3.012
Credit availability	-0.0368***	0.0141	-2.603
Occupation	0.1433*	0.0555	2.580
Remittance/pension	-0.0496	0.0448	-1.107
Dependency ratio	0.0682***	0.0176	3.850
Value of assets	0.3158**	0.1398	2.258
Social capital	-0.0245***	0.0134	-1.828
Constant	-0.0873**	0.0433	-2.016
Sigma (δ)	0.2134***	0.0144	14.732

***, **, and * denotes significance of coefficient at 1, 5, 10% level respectively

The coefficient of the number of years of formal education of household head has a statistically significant negative relationship to the incidence of poverty in a household. Thus implying that, the more educated a household head is, the less likely he is to remain poor. Education is expected to lead to increased earning potentials, thereby improving occupational and geographical mobility of labour (Bogale et al. 2005). In other words, higher levels of educational attainment will provide higher levels of welfare for the household. Higher educational attainment has been shown to reduce household vulnerability (Baiyegunhi and Fraser 2011). A study conducted in Malawi by Mukherjee and Benson (2003), showed that increasing the maximum level of educational attainment by one step (that is, from Standard 4 to 8, from Standard 8 to JCE, or JCE to MSCE), result in a commensurate increase in household per capita consumption on the average by 22, 19, 11.5 and 17 percent in southern rural, central rural, northern rural and urban centres respectively.

The coefficient of household dependency ratio is statistically significant and positively related to the incidence of poverty in a household. This implies that the larger the dependency ratio, the higher the incidence and intensity of poverty in the household. This could be as a result of much pressure exerted on the limited resources at the household level. Higher dependency ratio has been found to increase household's vulnerability to poverty (Baiyegunhi and Fraser 2011). The coefficient of household's head primary occupation is statistically significant and positively related to the incidence of poverty in a household, implying that household head engaging in other sectors of the economy are less likely to be poor as compared to those in the agricultural sector. The vast majority of the households are stuck in rural areas and are engaged in agriculture but do not own land and other resources to progress as farmers. These would lead one to expect that agriculture in these rural areas is unlikely to provide any notable welfare benefits (Aliber 2003).

Security of land rights has a statistically significant positive relationship with the incidence of poverty in a household. This could be attributed to the anomalous situation in South Africa presently, whereby many rural households are landless, some who do have access to land have very small or very poor land, or both; and many having access to land derive little or no eco-

nomie benefits from it, in terms of subsistence production (Aliber 2003). In most rural areas of South Africa, land is not owned by individuals but held in trust by the Ingonyama (King) who distributes it to district chiefs. It is usually the chiefs and their Indunas (headmen) who allocate land to household heads. The fear of losing land due to land redistribution gives farmer a sense of insecurity, which often discourages them from investing in fixed improvements on their land (Bekele and Drake 2003).

The coefficient of household asset holdings (mainly oxen, poultry, and livestock) is statistically significant and negatively related to the incidence of poverty in a household, thus implying the more assets a household owned, in form of oxen, poultry, and livestock, the less likely is for the household to be poor. This is because asset holdings are both an economic and source of social prestige. In rural areas livestock are store of wealth for the poor (Randolph et al. 2007).

The social capital coefficient is statistically significant and negatively related to the incidence of poverty in a household. This implies that the more association, groups and social networks a household head is a member the less likely the households will be poor. Many studies have reported the role of social capital in reducing poverty, sustaining human and economic development, and facilitating rural development through streams of benefits that may flow from an individual or a group's network of social ties (Yusuf 2008; Hayami 2009; Ishise and Sawada 2009; Imandoust 2011; Baiyegunhi 2013).

Credit availability coefficient is statistically significant and negatively related to the incidence of poverty in a household. Households with access to credit for production purposes are less likely to be poor. It has been documented that access to credit market enhances household welfare through the provision of investment credit to boost household income (Adugna and Heidhues 2000) as well as consumption-smoothing credit (Zeller et al. 1994), which could significantly influence a household's income by helping its members to tap economic opportunities, thereby assisting them to get out of poverty (Binswinger and Khandker 1995; Adugna and Heidhues 2000).

CONCLUSION

The aim of this study was to determine the factors influencing the incidence of poverty

among smallholder farmers in the Amathole district municipality of Eastern Cape Province of South Africa. The empirical results of this study reflect the severe poverty that continued to prevail in rural areas of the Eastern Cape of South Africa. Even though the head count ratio, depth and severity of poverty as revealed by the Foster, Greer, and Thorbecke (FGT) poverty index used for the analysis showed variations, all confirmed that poverty is a problem of foremost concern. The results Tobit regression model shows that household head's gender, age, education, households' dependency ratio, occupation, security of land rights, credit availability, social capital and assets ownership are important determinants of smallholder farmers' poverty.

POLICY RECOMMENDATIONS

Useful findings have emerged about the various poverty-generating factors and an insight on the pathways through which poverty among smallholder farmers can be alleviated. The study argued that targeting can an essential instrument to achieve a better impact of poverty alleviation measure. There is need for policy makers and the private sectors to target young farmers when promoting adoption of modern agricultural practices. Furthermore, policy makers and private sectors could channel poverty reduction programmes appropriately with a better understanding of the nature and objectives of the existing social groups/networks in rural areas and use them for project designs and delivery, especially in extension and microcredit services.

Educational attainment is also an important factor associated with the incidence of poverty and should be closely considered in implementing poverty alleviation strategies and programmes. Improvements in smallholder farmers' educational attainment and knowledge through better access to technical information, extension and training and sustainable agricultural practices would help in poverty alleviation. The result that female headed households are more likely to be poor than male headed households do suggest the need to develop more appropriate programmes that promote action that ensure women have greater access to assets, education and participation in decision making, this could improve intra-household resource allocation toward poverty reduction. An increase in the educational attainment of one individual in a

household may not only impact on that individual's productivity and earnings but consequently on those of others with whom he/she interacts.

The relatively high incidence of poverty among farming households reflect currently low levels of productivity in this sector. Therefore, raising agricultural productivity is crucial, by providing productivity-improving investment in irrigation and the use of modern inputs as well as improving smallholder farmer access to credit facilities. The results also suggest that insecurity of land rights in rural areas is associated with poverty. Land remains an important component of rural households' livelihood strategies for those who have it. It helps them avoid been impoverished, even though it may not help them to actually escape poverty. Secured land rights may motivate smallholder farmers to invest in fixed improvement on their farms which could increase productivity and hence reduce poverty.

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