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Poverty and Social Deprivation in Botswana: A Rural Case Study

Abstract

Poverty and social deprivation in Botswana are rising in rural areas while they are declining in urban towns and villages. Revenue from diamond mining is thought to have made a significant contribution to reducing poverty levels in cities and urban villages. However, the benefits from diamond revenue are perceived to have not reversed trends in rural poverty. In this study, contingency tables and chi-square tests are used to determine whether there is an association between the gender, educational status, and age of household heads and whether or not they believe their household is in the 20% of the least well-off households, in their selected rural village, Nshakashogwe. Such less well-off households if not in absolute poverty, are likely to be in comparative poverty. The results indicate that the gender of the household head is associated with household poverty in this village. Furthermore, the age of the household head is; the older is the household head, the less likely is the household to be in relative poverty. The relationship between the level of educational attainment of the household head and whether or not the head stated that their household is in the 20% least well-off in the village is almost the same for those with primary education or less and those who had completed secondary education but becomes significantly different when the household head has achieved tertiary education. Furthermore, household heads with higher levels of education compared to those with less education more frequently said that their economic situation had improved in the last ten years.

Poverty and Social Deprivation in Botswana: A Rural Case Study

1. Introduction

Poverty and social deprivation in Botswana are reported to be most prevalent in rural areas (BIDPA 1997, 2001a; 2004; Tumelo 2004). This paper looks at relative rural poverty in Botswana and investigates its relationship with family attributes, particularly that of the household head. As in many other developing countries, there are inadequate records of the cash income of heads of households in rural areas (Pradhan and Ravallion 1998). In this study, we will use the household head's perception of whether their household is amongst the 20% least well-off households in the village surveyed to indicate whether their household is in relative poverty.

Although inequality is not necessarily the same as poverty, knowledge of levels of inequality may be a useful indicator of comparative poverty. Ravallion and Bidani (1994) argue that most poverty measures depend entirely on relative inequalities. For instance, it is widely accepted that at relatively low levels of resources, many households are not able to enjoy a wide range of consumer goods, customs and activities but enjoy only a cheaper version of some goods, customs and activities (Townsend 2003). As the level of resources at the household level diminishes, social deprivation in terms of the household's inability to participate in the national style of living, or in this case, the village style of living may, increase disproportionately. As a result, poor households may find themselves alienated from the rest of society and this would deprive them of access to participation in activities in which average households engage.

Although HIV/AIDS in Botswana is a critical problem which may have relationships with poverty, the Tumelo (2004) Report on the status of HIV/AIDS suggests that the situation in Botswana has stabilised. The latest findings suggest that alarms of the HIV/AIDS tragedy (BIDPA 2000, 2001b) are receiving a positive response. Given the high profile response this problem has attracted from Government, this study notes efforts already made through the programmes currently in operation such as the Orphan Assistance Programme, the home-based care scheme, free anti-retroviral medicines to all who are HIV/AIDS positive, free HIV/AIDS testing services, and information distribution (Tumelo 2004) campaigns about the

prevention and management of HIV/AIDS. The scope of this study could not cover the impact of either the disease or the response because of lack of time and resource availability.

Social deprivation involves, among other things, personal feelings that since members of a household enjoy comparatively low levels of income they feel they have been excluded from opportunities that have become standard in their environment. Social deprivation of some households could lead to a breakdown of social cohesion and an increase in the number of people having styles of living that are not consistent with society's expectations. For example, even though crime is not mainly a result of poverty, social exclusion of some sections of society can contribute to high crime levels.

This paper presents the results of a rural poverty case study of Nshakazhogwe village in Botswana. The discussion begins with a general background of Botswana in terms of location and climate, poverty trends and economic development. Then the adopted methodology is outlined and the results are discussed. In conclusion, our preliminary results show that 40% of household heads stated that their households were amongst the 20% least well-off in the village. This higher than expected proportion of households stating that they were amongst the 20% least well-off households could be influenced by household heads speculation that by stating so, they could be eligible for social welfare in future. Although the age distribution of the head of the household is associated with poverty in this village, vulnerability to the incidence of household poverty declines as one gets older in this village. The educational level of the head of the household is not associated with whether or not the head stated his/her household to be among the 20% least well-off, unless the household head has tertiary education.

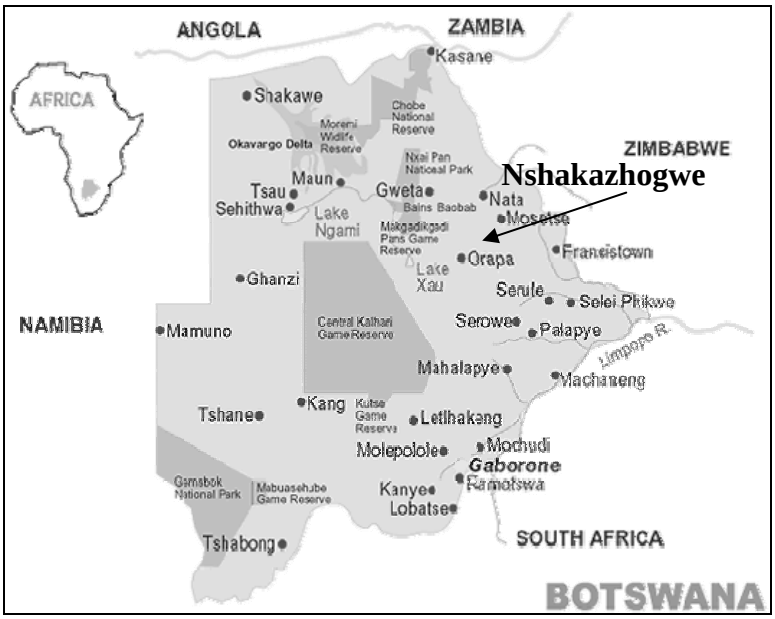
2. General Background

Location, Climate and Population

Botswana is landlocked in Southern Africa (see Figure 1) and is about the same size as Kenya and France (Ministry of Finance and Development Planning 2003). Being a landlocked country, it faces very high transport costs for its exports. It shares borders with South Africa in the south, Namibia in the west, Angola and Zambia in the north and Zimbabwe in the east. Botswana's trade in the region is mainly with South Africa and Zimbabwe. Botswana has serious illegal immigration problems with people from Zimbabwe (*Daily News* 2002, 2004). This contributes to policy challenges that have a direct linkage to the local poverty problem.

South African and Namibian ports are all more than 800 km from Gaborone, the capital of Botswana, where economic activity and population are concentrated. This long distance and associated high road transport costs reduce the country's competitiveness in international trade.

Figure 1 Map of Botswana showing the location of Nshakazhogwe village

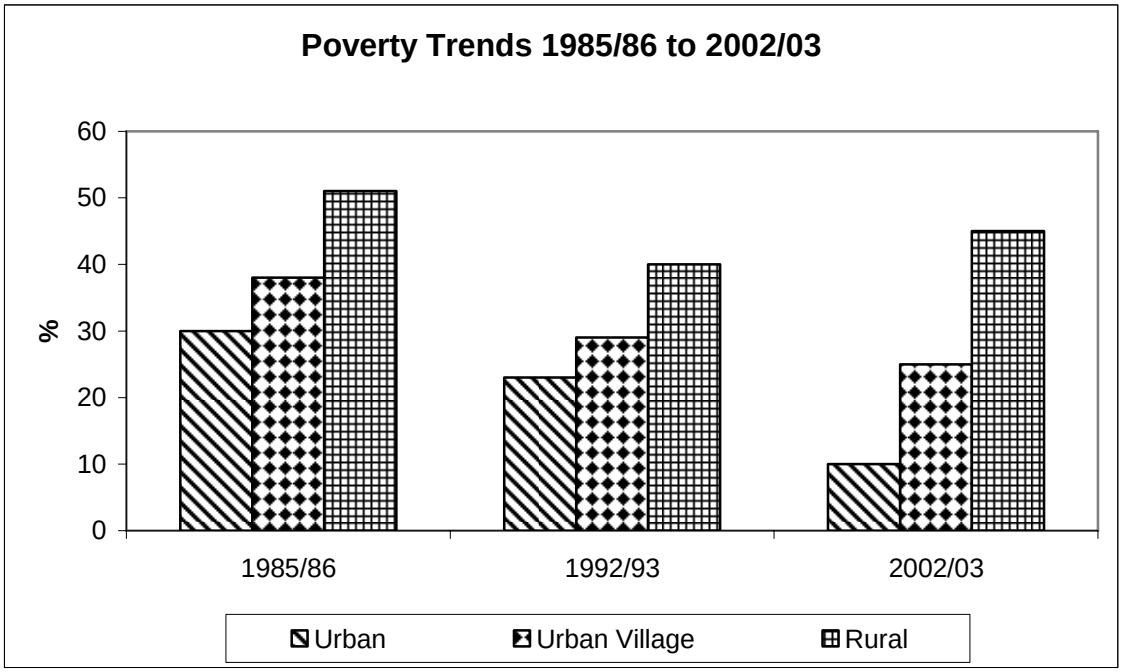


Two-thirds of the country is covered by the Kgalagadi Desert to the west and its physical environment of dry and poor soils is associated with the country's low population density. Most of Botswana's population is concentrated in its eastern region whose climatic conditions are less adverse than in the west (Central Statistics Office Botswana 2001). Its rivers are usually dry except during the rains. The annual average rainfall (200 to 500mm) is low and the average annual temperature (18 to 34^0C) is high (Atlapedia Online 2006). Botswana is more prone to drought than any other country in the southern African region, both in terms of its frequency and duration (Plessis and Rowntree 2003). In recent years, Botswana has seen critical shortages of water nationwide, as a result of a sharp rise in demand for water as a result of among other things rapid economic growth and development activity. Such negative shocks can transform what could be transient poverty into chronic poverty (Hulme and Shepherd 2003). Given the natural base of Botswana, structural poverty can happen even when the poor still own capital such as land.

The General Poverty Situation in Botswana

Botswana's poverty measures are based on the absolute poverty measurement approach (Buthali 1997). A major problem with this measure is that it does not account for the income variation among the poor, making it difficult to separate the poorest from the others (Atkinson 1987). The proportion of people below the official poverty line in the nation was 59 percent in 1985/86, 47 percent in 1993/94 and 30 percent in 2002/03 (Central Statistics Office Botswana 2004). A reduction in the poverty rates could be associated with the continuous growth rates that the economy experienced during this period (Bardhan and Udry 1999), but the income inequalities remain high because of limited employment opportunities and frequent droughts (Sarraf and Jiwanji 2001). Urban poverty declined by 13 percentage points between 1992/93 and 2002/2003 (Figure 2). Poverty in urban villages fell by 4 percentage points in the same period.

Figure 2 Disposable Cash Income Poverty Trends in Botswana 1985/96-2002/03.



Source: Central Statistics Office of Botswana, 2004

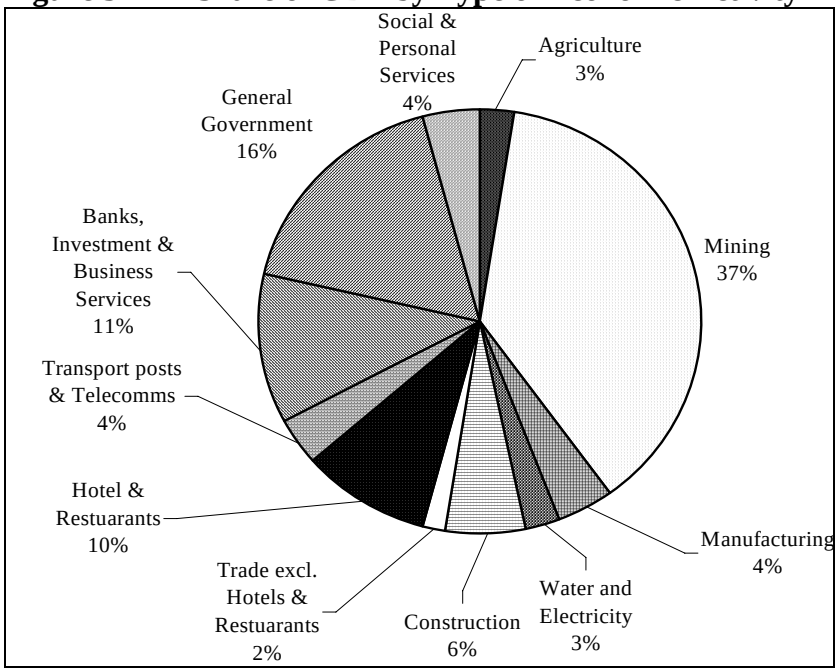
In contrast, rural poverty increased by 5 percentage points during that period. The reasons for these differences have not been fully explained. The rural sector is highly dependent on agriculture. The recurring droughts have gradually robbed the rural poor of their assets in terms of livestock mortality and crop failure and have resulted in a decline in the availability of natural resources. Economic activity and government spending are highest in urban areas.

Hence the benefits of high growth rates are seen in significant poverty reductions in urban areas. The urban villages' share of the high growth rates is also positive but low resulting in a reduction of 4 percentages points in poverty in these areas. The government planning system which focuses its development delivery in areas of high population concentration first could have disadvantaged rural villages where population concentration is low.

Economic Activity and the Widening of Rural Income Inequalities

Economic activity in Botswana is dominated by mining (see Figure 3) which accounted for 37 percent of Botswana's GDP in 2002/03 (Ministry of Finance and Development Planning 2003). The mining sector is highly capital intensive in Botswana and employed 4 percent of Botswana's total labour force in 2001 (Central Statistics Office Botswana 2002). Despite mining being highly capital intensive and having limited linkages with the rest of the domestic economy, it may not be considered to be enclave in Botswana.

Figure 3 Share of GDP by Type of Economic Activity in Botswana 2002/2003.



Source: Ministry of Finance and Development Planning of Botswana 2003

Mining's share of GDP dwarfs that of agriculture and manufacturing but mining has not provided a stimulus for their expansion. Although the mining sector may not have any significant direct backward and forward linkages with other sectors in Botswana's economy, mining revenue is a powerful agent for development and growth in Botswana (Gaolathe 2006). Most of the funds generated in this sector are re-invested in the country through a

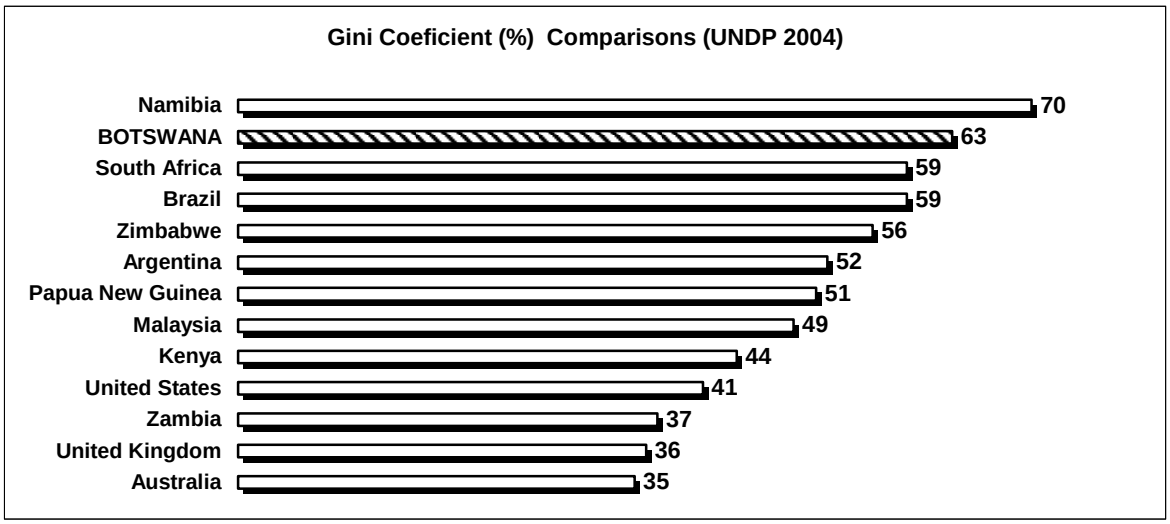
universal free education up to university level, wide-scale social security safety nets and infrastructure development. These activities address both immediate and structural poverty problems.

This is possible because the diamond mines in Botswana are owned 50 percent by the government and provide direct government income in the form of profits, taxes and royalties. Hence the government can create employment with these funds directly in the public service and by means of infrastructure development, and indirectly through outsourcing some services to the private sector. Therefore, in the case of Botswana, even though mining has not been associated with the development of major satellite industries (Hirschman 1958), the mining industry indirectly assists the growth of Botswana's economy.

Agriculture accounts for only 3 percent of GDP and this may be contributing to the high rural poverty rate. But a combined GDP share of 33 percent of general government, banks, investment and businesses, and construction, that are concentrated in urban areas, may help explain the significant urban poverty reductions that occurred over the last decade. Mining revenue finances a significant part of economic activity that is concentrated in cities, followed by urban villages. However, development programmes in rural villages appear to be the major targets of budget cuts during periods of economic downturns and disasters such as HIV/AIDS, drought, and others. Hence rising poverty levels occur in rural areas when in other areas, the trend is falling.

The nature of economic activity in Botswana and its natural environment has divided the wage structure such that those working in the mines and urban areas earn higher wages and those who rely on traditional rural agriculture earn lower wages. This occurs because most jobs in the dominant sectors of the Botswana economy require skilled labour. With a Gini coefficient of 63% (Figure 4), Botswana's income inequality is the second highest after Namibia, amongst the group of countries listed in Figure 4 (Tumelo 2004; UNDP 2004).

Figure 4 Gini Coefficient (%) Comparisons with Botswana



Source: UNDP 2004

Inequalities in Rural Areas and the Role of the Free Education System in Botswana

Tumelo (2004) has reported that inequalities in rural areas of Botswana have worsened in the last decade in terms of disposable cash incomes from a Gini coefficient of about 0.60 in 1993/94 to 0.62 in 2002/03 (Table 1). The inequality situation in rural areas, measured in terms of disposable income, also widened from 0.41 in 1993/94 to 0.52 in 2002/03.

Table 1 Gini Coefficients for Botswana

Region	Disposable Cash Income		Disposable Income	
	1993/94	2002/03	1993/94	2002/03
Cities/Town	0.548	0.513	0.539	0.503
Urban Villages	0.552	0.552	0.451	0.523
Rural	0.599	0.622	0.414	0.515
National	0.638	0.626	0.537	0.573

Source: Tumelo 2004

In terms of cash incomes, the rural areas were the worst affected because the job market did not favour the rural worker, possibly because of low levels of education as a result of which they face structural unemployment which is difficult to address, especially when people are getting older. Education for those already in the job market may not be easy. However, blanket coverage of free education may be a significant contributor to inequalities in rural areas and Botswana in general. For most people who come from poor families in rural areas, continuing with education to higher levels may pose very high opportunity costs given their need to support their families.

Therefore, children from richer families may be benefiting more from free education than those from poor families. In order to reduce high inequalities, people continuing with education should pay at least the minimum economic costs of sending their children to school based on a means test that is proactive towards children from poor households.

3. Procedure and Method of Analysis used for the Case Study

Description and Choice of Case Study

Nshakazhogwe village in the north east region of Botswana (Figure 1) was selected as a relevant cluster out of 8 villages in the region. Each of the eight villages had a population ranging from 1000 to 2000 and Nshakazhogwe's population of 1700 falls in this range (Central Statistics Office Botswana 2001). The national average age of the household head in rural areas is 49.1 years (Central Statistics Office Botswana 2004) and in Nshakazhogwe the average age of the household head of 56 years is close to the national average but somewhat higher. The national proportion of heads of household in rural areas with primary education or less is 83 percent (Central Statistics Office Botswana 2004) and in Nshakazhogwe, the proportion of heads of households with primary education or less is 80 percent. This is very close to the rural average.

All the villages in the north east region are located next to rivers. Rivers are commonly used by poor households to water livestock in this region. Nshakazhogwe is next to Shashe River and its economy relies on the river system for both human and livestock watering. Crop production and natural resource harvesting form part of the village livelihood systems in the rural areas of Botswana (BIDPA 2001a; Watson and Dlamini 1999). Nshakazhogwe community uses both crop farming and natural resource harvesting as part of their livelihood. Nshakazhogwe is a typical rural village in the north east region. Nshakazhogwe was chosen from the eight villages in the north east region and used as a case study because it had a population that was large enough for statistical validity of the results and because of budget considerations.

Timing of Study and Sample Selection

The case study survey was undertaken from September to November 2005. This period was favourable to the study because it enabled interviews to be done before the annual seasonal rainfall and after the harvest time. Therefore, most heads of households were available for interviews. A method of personal interviews was selected because there were inadequate

household lists for all these villages. Mail questionnaires in the area were therefore not practical. The geographical area of interest covering more than 150km by 90km area is wide, and the limited funds and time for this research allowed the choice of only one typical cluster in the region as a case study.

The official Census population of Nshakashogwe village is about 1700 (Central Statistics Office Botswana 2001). A village map, from the Central Statistics Office of Botswana, dividing the village into six enumeration areas was used to guide household interviews for this study. The household was the sampling unit. The head of household was the main person interviewed. All households in one enumeration area were contacted before commencing interviews in the next enumeration area.

330 households were contacted and interviewed out of 366 eligible households in the village. It was found that 34 houses were vacant and their owners could not be interviewed, and 1 questionnaire had missing information. There were 29 institutional housing units at a secondary school and 10 institutional housing units at the local primary school that were not contacted and interviewed. Households in institutional houses were not included because the researcher's introductory meetings with the school representatives indicated that most households in these institutions were from outside the village and spent most weekends in their own home villages and towns. In addition, most of them did not interact with the local economy as they bought most of their needs in Francistown. The sample consisted therefore of 330 households.

Limitations of the Interview Method

The interview method is very costly. As a result, the budget considerations enabled the selection of only one village from eastern Botswana which may raise questions about its representativeness. However, given that all the villages in north eastern Botswana have similar language, population sizes ranging between 1200 and 1900, similar infrastructure background and the same resource base and climate, the selection of one village can be considered adequately representative of the region. Except, for villages in western Botswana, all the characteristics of the selected village are similar to all the rural villages of Botswana making it a typical rural village.

Data Collection and Reliability

The study had four research assistants, three of whom had previously worked in a 2004 Agricultural Census project of the Central Statistics Office. They were between 21 to 25 years of age. Two were females and two were males. Two research assistants came from the area and this reduced the language barrier problems. The inclusion of locals in the research team increased the participation rate, and the reliability and validity of information received.

The principal researcher translated the questionnaire into Setswana, the national language, which was used for asking questions in the field. Enumerators translated and recorded answers in English. The principal researcher trained and supervised the enumerators. The principal researcher was present in the village throughout the survey period and also carried out household interviews. In addition, the principal researcher accompanied each enumerator at the beginning of the survey to ensure that questions were correctly asked and understood. Any queries and clarifications were answered as they arose in the field.

A uniform approach of asking questions between the enumerators was ensured. The principal researcher also reviewed all answered questionnaires each day and gave feedback to enumerators in the morning before starting interviews the next day. The principal researcher was also responsible for approaching and interviewing the most difficult and hard to convince respondents after unsuccessful attempts by enumerators.

Research Permit and Ethical Standards

The letter of introduction of this study from the Coordinator of the Economics Postgraduate Research at the University of Queensland was very useful for a study permit to be secured from the Ministry of Finance and Development Planning which is responsible for rural development issues in Botswana. With a research permit, the introduction of the study to the village Chief, and the community at large was easily accepted. Interviewers assured respondents of the anonymity (confidentiality) of their answers before interviews commenced. Interviewers also asked for the consent of the respondent if he or she accepted the interview, which had to be confirmed by a signature of the respondent on the consent form provided by the enumerator.

Non-response

Prior to the full scale study, a 3 day pilot study was carried out in Makaleng village in the North East administrative district. Feedback from the pilot study helped to improve questionnaire design, indicated that the subject of the questionnaire was attractive to respondents, and how to reduce non-response.

Close to the end of the interviews, heads of 3 households who were neighbours, in Nshakazhogwe and had refused to respond, came forward at the end requesting to be interviewed. Hence, the problem of non response during this study was zero. The main reasons for zero non-response were an attractive and easy to understand questionnaire, the timing of the study before the rainy season, the use of experienced enumerators, paying visits to respondents 7 days of the week, including weekends and the role of various relevant gatekeepers.

Coding, Data Entry and Storage

Coding commenced immediately after the interviews were completed in the field. First, all answered questionnaires were randomly assigned serial numbers from number 1. This was performed to uniquely identify the questionnaire for editing purposes. Then a coding sheet was developed according to each section of the questionnaire providing both a code for the answer and a label. Where the answer was not stated, a Code 9 or 99 was assigned.

Interpreting the Implications of the Data Obtained

The interpretation of the interview results depends upon whether:

i) the households in Nshakazhogwe village are regarded as the relevant population or whether

ii) households in Nshakazhogwe village are considered to be a random cluster sample of a larger population; namely all households in rural eastern Botswana.

If the first interpretation is adopted, the study can be regarded as a case study of a particular village which has been selected so that it is reasonably representative of rural villages in Botswana. In this case, because there has been complete enumeration of households in Nshakazhogwe, statistical sampling inferences do not apply.

On the other hand, if the second interpretation is adopted, theories of statistical inference do apply because one is using the whole village as a sample of all villages in rural eastern Botswana. In this study we consider both interpretations.

Analysis

Data entry and storage were done in the field immediately after coding, using a Census and Survey Processing System (CSPro) software package. A data processing consultant provided two days training for both the principal researcher and the project research assistants about how to use this software during data entry and storage. The data was later imported and stored in SPSS software for analysis.

In this paper, we consider the significance of the hypotheses that there is no association between a head of household's perception that the household belongs to the bottom 20% least well-off level in the study village and attributes of heads of households such as their gender composition, educational status, age and marital status. The occurrence of a household in the bottom 20% of least well-off households is based on the self-assessment method. During the survey, heads of household were asked whether they considered their households to be amongst the 20% of the least well off households in their village.

The perception of the head of household about whether or not their household belonged to this category is the basis for categorising a household as being in relative poverty. This approach has been used by others (Amiel and Cowell 1992; Bellido et al. 1999; Firdausy and Tisdell 1992; Roy and Tisdell 1996; Tisdell, Roy and Regmi 2001). Income in rural areas (and other parts of cities) of developing countries is not well defined and hence there are difficulties in setting the poverty line. Pradhan and Ravallion (1998) have used a subjective-welfare measurement of poverty in Jamaica and Nepal and the results were encouraging.

The results of this survey will be summarised by cross tabulating these. A chi-square goodness of fit was chosen to test the significance of an association between the attributes of household heads and whether they belong to the group with the 20 % least well-off households as assessed by household heads themselves. This test is relevant because the case study sample size of 330 is large and results are reliable because all the expected frequencies were more than five. Where this assumption was not met, the categories were collapsed to meet the test's requirements. Given the hypothesis of this paper, a random variable associated

with a cross tabulation of n households assuming a selected attribute of household head, in an r by k contingency table has a chi-square distribution with (r-1)(k-1) degrees of freedom. The null hypothesis of no association is rejected for large absolute discrepancies between observed and expected numbers (Newbold 1995). The SPSS and Microsoft Excel software packages were used to carry out the analysis.

3. Results of the Nshakashogwe Case Study

A total of 40.3% of all heads of households interviewed reported that their households were amongst the 20% of least well-off households in the village. This result is in excess of 20%. A possible reason for this discrepancy could be that household heads withheld information because they felt it could be used in future to deny them access to a wide welfare programme that is currently implemented by the Botswana Government. Many households considered that by stating that they belonged to the least 20% well-off households was providing a potential to make them eligible to benefit from future government assistance programmes.

Households could state that they belonged to the 20% least well-off because of their lack of knowledge of the income structure. In some cases, many may feel that their style of living was equivalent to the lowest 20% least well-off in the village or little different from this. This is possible because in Botswana, about 50% of the rural population are reported to live below the poverty datum line (Central Statistics Office Botswana 2001).

People in rural areas of Botswana have a long standing tradition of under reporting their economic status. It is believed that rich individuals gain societal respect when their actual economic status is stated by other people than themselves. In that way, each rich person may avoid ridicule from society in the event their current wealth disappears because of the high risks of losing their current stock of agricultural wealth, especially in a drought-prone environment of Botswana. This tradition could have had an effect in the over stating of households in the 20% least well-off group.

Human Capital Investments and Social Deprivation

Human capital investment can reduce poverty through improvement of individual skills and competencies both in the short-run and long-run (Karoly 2001). The survey of Nshakazhogwe village in Tutume Sub-District revealed that, on average, household heads in the village have low levels of education. 80% had only primary level education or less,

almost 16% had achieved education at secondary level but not beyond and just 4% had obtained tertiary education (Table 2). The level of education of household heads in rural Botswana appears to be low.

Table 2 Education Level of Household Heads in Nshakashogwe in 2005

Education Level	Frequency	Percent	Cumulative Percent
Primary and less	264	80.0	80.0
Secondary	53	16.1	96.1
Tertiary	13	3.9	100.0
Total	330	100.0	

We can infer from the data that the relationship between the level of education received by household heads and whether or not they state that their household belongs to the 20% least well-off households in Nshakazhogwe. Table 3 reveals that the relative frequency with which households heads state that their family is in the 20% least well-off group in the village is almost the same for those with only primary education or less compared to those who completed secondary education but not beyond. It is 41.7% compared to 41.5%. It is however; markedly lower for those who have completed tertiary education, namely 7.7%. On the basis of this, the amount of education of the household head in the village seems to make little difference to the prospects of households being located amongst the least well-off households, unless the household head attains tertiary education.

Table 3 Relationship between the Household Head's level of Education and whether or not they state their household belongs to the 20% least well-off in Nshakazhogwe

Education Level		Whether or not Household Falls in least 20% Well-off		Total
		No	Yes	
Primary and Below	Count	154	110	264
	% within Education Level	58.3%	41.7%	100.0%
Secondary	Count	31	22	53
	% within Education Level	58.5%	41.5%	100.0%
Tertiary	Count	12	1	13
	% within Education Level	92.3%	7.7%	100.0%
Total	Total Count	197	133	330
	%	59.7%	40.3%	100.0%

The cause and effect relationship between the household head's level of education and the economic status of their household is unclear. Those who have higher education may come from families that were already better-off and well endowed with resources, and therefore able to afford a higher level of education for their children. Again, the level of education obtained by the head of household is just one of the factors likely to influence the economic status of the household. As considered below, the age of the household head is, for example, another factor of influence.

If the sample from the village of Nshakazhogwe is considered as a representative sample from the rural economic sector of Botswana, then the chi-square test can be applied to consider whether or not there is a significant statistical association between the level of education of household heads and whether they state that their households belong to the 20% least well-off households in the rural villages. Applying the Pearson Chi-square Test to the data (Table 4), the null hypothesis can be rejected at the 5% level of statistical significance (P = 0.05) that there is no association between the level of education of the household head and whether or not their household is stated to belong to the least well-off households. In coming to this conclusion there is a 5% chance of a type I error, which is rejecting the null hypothesis when it is true.

Table 4 Chi-Square Tests; Ho: Whether or not household heads state that their household belongs to the 20% least well-off is independent of the household head education

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	5.982(a)	2	.050
N of Valid Cases	330		

Note a 0 cells (.0%) have expected count less than 5. The minimum expected count is 5.24

It seems that for those who stay in the village of Nshakazhogwe, there is little difference between the prospects of households being amongst the least well-off households if their household head has only primary education or less, or has just completed secondary education. This may be because of lack of opportunities for using formal education productively in the village when it is less than at a tertiary level. It is also possible that opportunities in the village for those with tertiary level education are limited but they may find it easier to migrate to urban areas. In fact it was found that those with tertiary education in the village were retirees who had returned to the village on retirement after having worked elsewhere in Botswana.

Gender, Poverty and Social Deprivation

The study also enables us to consider if there is an association between the gender of the household head and the economic status of the household. Women are often deprived of equal access to social and economic opportunities and this locks them into poverty in many parts of the world (Bardhan and Udry 1999; Mehta and Shah 2003). In some countries, female children are considered last for educational opportunities given the family budget, and for health care. This often relegates them to poverty once they are adults, because they have a low level of human capital. Usually female headed households are found on average to be less well-off than male headed households.

Table 5 indicates that in Nshakazhogwe village 43% of female headed households are stated to be amongst the 20% of the lease well-off households compared to 34% of male-headed households. This is in accord with the general view that female-headed households are more likely to be in poverty than male-headed households. In Nshakazhogwe village almost three quarters (73%) of all households said to be amongst the 20% least well-off were headed by females. Nevertheless, if one regards Nshakazhogwe village as providing a random sample from rural east Botswana, the hypothesis cannot be rejected at the 5% level of confidence (P

= 0.128)* that whether or not a household belongs to the 20% of the least well-off households is independent of the gender of the household head.

Table 5 Relationship between the Household Head's gender and whether or not heads state their household belong to the 20% least well-off households in Nshakazhogwe

Gender of Household Head		Whether or not Household Falls in least 20% Well-off		Total
		No	Yes	
Male	Count	69	36	105
	% within Sex	65.7%	34.3%	100.0%
Female	Count	128	97	225
	% within Sex	56.9%	43.1%	100.0%
Total	Count	197	133	330
	%	59.7%	40.3%	100.0%

Age Structure, Poverty and Social Exclusion

Evidence from household surveys in several developing countries suggests that the relationship between age and poverty displays a higher incidence of poverty among younger and older groups (Barrientos, Gorman and Heslop 2003; Mehta and Shah 2003). In rural Botswana, there is also a significant statistical association between the age of the head of the household and whether the household is among the 20% least well-off households, but the pattern is different from that observed in many other developing countries.

It can be seen from Table 6 that only a minority of household heads in Nshakazhogwe is under 41 years of age (15.5%) and most (52.4%) fall in the age group 41-64 years of age. However, a substantial proportion, almost one-third, are 65 years of age and older. It can be observed from Table 7 that the relative frequency with which households heads state their household to be amongst the least well-off 20% in the village declines as the age of the household head increases. For household heads of less than 41 years of age, 56.9% stated that their household is in the 20% least well-off group, for those aged 41 to 64 years it is 40.5%, and for household heads of 65 years and over it is 32%. If one considers Nshakazhogwe village to provide a random sample of the rural households in eastern Botswana, the hypothesis can be rejected at its 5% level of significance (P = 0.012) using a Chi-square test

that age is not associated with whether or not a household is stated to belong to the group of 20% least well-off households.

Table 6 Age Group Distribution of Household Heads in Nshakazhogwe, 2005

Age Group	Frequency	Percent	Cumulative Percent
<41	51	15.5	15.5
41-64	173	52.4	67.9
65+	106	32.1	100.0
Total	330	100.0	

Table 7 Relationship between the Household Head's age group and whether or not heads state their household belong to the 20% least well-off in Nshakazhogwe

Age Group		Whether or not Household Falls in least 20% Well-off		Total
		No	Yes	
<41 years	Count	22	29	51
	% within Age Group	43.1%	56.9%	100.0%
41-64 years	Count	103	70	173
	% within Age Group	59.5%	40.5%	100.0%
65+ years	Count	72	34	106
	% within Age Group	67.9%	32.1%	100.0%
Total	Count	197	133	330
	%	59.7%	40.3%	100.0%

The results contrast with evidence from many other developing countries that there is a rise in poverty and vulnerability in later life (Barrientos, Gorman and Heslop 2003). Several reasons could explain the peculiar situation in rural Botswana. In Botswana, health services are free for all and are within 15km range from one another, making access to health care by older people easy and unrestricted. Health care is an important dimension for the elderly because of their vulnerability to ill health (Hulme and Shepherd 2003). In many countries, health care requires a substantial proportion of household income which is not easily affordable at old age.

Older people in Botswana, especially pensioners, have access to a blanket coverage non-contributory government funded monthly old age pension scheme. This scheme makes a

significant contribution to their monthly food needs and basic health needs. In addition, healthy elderly people can be employed in, almost annual, drought relief labour-based projects to earn an income. Those who are considered very vulnerable are registered in the Destitute Policy Programme and are eligible for monthly food rations and about US$9.00 monthly pocket allowance (BIDPA 2000). Hence, policy response to old-age issues of poverty may have positively contributed to this result. This is one of the examples where one could give credit to the role of diamond mining in addressing poverty in Botswana. If it was not for this mining and its ownership structure, these funds, like in many other developing countries could be diverted to other purposes.

Educational level of household head and poverty trends perception

The results of this indicate that household heads perception of the poverty trend in the last 10 years may have worsened for those with primary education or less and improved for those with secondary and tertiary education (Table 8). Overall, about 73% of all heads of households in Nshakazhogwe village believe that the poverty situation in their village had worsened in the last 10 years. Amongst those with primary education or less, 77% of them stated that the poverty trend in their village worsened. However, 66% of those with secondary education stated their poverty situation has worsened in the last 10 years. Whereas, only 30.8% of those with tertiary education stated that the poverty trend had worsened in the last ten years.

Table 8 Relationship of whether or not the household head stated poverty trends in the last 10 years have worsened and the educational level of the household head, Nshakazhogwe

Education Level of household head		Household Head's perception of Poverty Trend in last 10 years		Total
		Improved	Worsened	
Primary and below	Count	61	203	264
	% within Education Level	23.1%	76.9%	100.0%
Secondary	Count	18	35	53
	% within Education Level	34.0%	66.0%	100.0%
Tertiary	Count	9	4	13
	% within Education Level	69.2%	30.8%	100.0%
Total	Count	88	242	330
	%	26.7%	73.3%	100.0%

If one considers Nshakazhogwe village to provide a random sample of the rural households in eastern Botswana, the hypothesis can be rejected at its 5% level of significance (P = 0.001) using a Chi-square test that the educational level of the household head is not associated with whether or not a household head stated that the poverty trend has worsened in the last 10 years.

4. Conclusions

The incidence of rural poverty and social deprivation in Botswana is reported by the Central Statistics Office of Botswana to have risen recently while poverty rates in urban cities and urban villages are declining though at different rates. Economic inequality in Botswana is high in terms of international comparisons. The domination of economic activity by highly capital-intensive diamond mining and Botswana's poor natural base for agriculture contribute to the difficulties of stimulating economic development in rural areas. Although diamond mining has not had strong direct linkages to Botswana economy, it plays a significant role in addressing poverty in Botswana. This study has found that Botswana may have made significant progress in addressing problems of poverty and poverty as a result of old age. Government income from mining has made it possible to provide social welfare for the elderly. The role of education in ensuring that individuals in rural villages are not amongst

the least well-off groups is unclear. In Nshakazhogwe village, the relative frequency with which those with only primary education or less were said to be in this group was almost equal to most with secondary education. This suggests that villagers obtaining more education than others gain little benefit from it, in most cases, if they remain in their village. It is also found in Nshakazhogwe that female-headed households were more frequently stated to be amongst the least well-off households than male-headed households. This seems to be a widespread phenomenon. Further studies of the poverty situation in Nshakazhogwe using more objective income measurements need to be carried out to find out more information about the poverty situation in the selected village and which independent variables are significant sources of the poverty problem and how these could be influenced to address the problem.

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