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SOCIAL ECONOMICS, POLICY AND DEVELOPMENT

Working Paper No.52

**The Pattern of Livelihoods in a Typical
Rural Village Provides New Perspectives
on Botswana's Development**

by

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The Pattern of Livelihoods in a Typical Rural Village Provides New Perspectives on Botswana's Development

ABSTRACT

Botswana's average economic growth rate of about 8 per cent during 1985-2005 is one of highest in the world. A major contributor of this growth was mining which, in 2005/06, had a 41.4 per cent share of GDP. Various government welfare and empowerment programmes indicate that redistribution of the mineral wealth is widespread in Botswana. This article will show that the pattern of livelihoods in a typical rural village has changed and provide new perspectives on Botswana's development. In particular, the article will show that contrary to expectations, agriculture is no longer a major source of income to the rural economy but income transfers from out migrants members of rural based households. It will also be shown that the proportion of the rural population that depend on agriculture that is poor is smaller than the non-poor, as is that among the recipients of government transfers. There is no evidence that transfers to rural areas are invested in productive activities. They seemed to be used for consumption purposes. We demonstrate with sorghum crop productivity trend in traditional agriculture to show that no significant improvement in rural economic activities has been observed. During the period 1995-2002, the proportion of food, beverages and tobacco imports to total imports of principal commodities have remained the same at about 14 per cent, indicating that local production of food has not had an impact in reducing food imports. This article will highlight the need for Botswana to increase its agricultural productivity of products that have high potential and can introduce backward and forward linkages such as milk production.

The Pattern of Livelihoods in a Typical Rural Village Provides New Perspectives on Botswana's Development

1. Introduction

Botswana has experienced sustained high growth rates of about 8 per cent in the last two decades and a major source of GDP growth is mining, which had a GDP share of 41.4 per cent in 2005/06 (Bank of Botswana 2007). Mining industry in Botswana has limited input-output linkages with rural areas. The agriculture sector share in terms of GDP contribution of 1.7 per cent in 2005/06 (Bank of Botswana 2007) is relatively very small compared to the 26.4 per cent of the workforce that is employed in agricultural sector (Central Statistics Office 2006). In this article we present the results of the sources of income obtained from a survey of a village in the rural northeast Botswana and examine their relationship with the household poverty. In the analysis we demonstrate that households in this rural village show little engagement in agriculture and natural resources utilization as sources of livelihood. We note also that the village depends mainly on external aid in the form of government and private transfers and wage employment generated to a large extent by government expenditure extended to the rural economy. The organisation of this article will focus on empirical issues about the relationship between livelihood sources and rural poverty, communal resources and livelihoods, and the relationship between natural resource harvesting and deprivation, livestock sales and deprivation and crop sales and deprivation.

The main objective of this article is to show that the pattern of livelihoods in rural villages of Botswana no longer depends on the agriculture and natural resources as is generally assumed but substantially on transfer income that is made possible by Government of Botswana policies on redistribution of income from its 50 per cent share of diamond mining industry and the royalties generated from the mines. The analysis will focus on the association of both economic activities in rural areas and poverty, and the association between, both private and government transfers and poverty, and whether transfers favour the not poor or the poor in this rural areas. This analysis is based on a case study of Nshakazhogwe village in rural north east

Botswana completed during September-November 2005. This case study was purposively chosen as a representative cluster from a short list of 8 rural villages in the rural north east region of Botswana and a face-to-face personal interview of all heads of household in the case study village was used for data collection. The collected data about sources of income is qualitative and as a result, this data will be ranked into an ordinal scale. Some practical problems include that as this case study is cross-sectional, information is inadequate in terms of trend because it is about a specific time period and for that reason, the measurements of this data are at the micro-level.

2. Methodology

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. Although this is on the high side, it is close to the national average. In Nshakazhogwe, the proportion of heads of households with primary education or less is 80 percent which is comparable to the national rural proportion of heads of household with primary education or less of 83 percent (Central Statistics Office Botswana 2004).

Figure 1 Map of Botswana showing the location of Nshakazhogwe village



All the villages in the north east region use dry river bed systems for communal livestock water sources, and Nshakazhogwe is next to Shashe River which lies in the north of this village. Crop production and natural resource harvesting are traditionally known sources of village livelihood in the rural areas of Botswana (BIDPA 2001; Watson and Dlamini 1999). Nshakazhogwe was chosen from the eight villages in the north east region because it had typical characteristics of rural villages in the north east region. Its population was also large enough for statistical validity and budget considerations.

Timing of Study and Sample Selection

The case study survey was undertaken from September to November 2005 which is just before the annual seasonal rainfall and immediately after the harvest time. Therefore, most heads of households were expected to be available for interviews. A face to face personal interviews method was selected because this village had inadequate household lists. Mail questionnaires method was therefore not practical. A wide geographical area of north east Botswana region covering more than 150km by 90km area was wide, and one typical cluster as a case study could be chosen because of the limited funds and time for this research.

The population of Nshakashogwe village is 1700 (Central Statistics Office Botswana 2001). The household was a sampling unit and the head of household was the main

person interviewed. The village had an enumeration map which was used in the previous national census (Central Statistics Office Botswana 2001). We used that map to guide household interviews for this study. The map had six enumeration areas for this village and all households in one enumeration area were contacted before commencing interviews in the next enumeration area. A total of 330 households were contacted and interviewed out of 366 eligible households in the village. 34 vacant houses removed from the original because their owners were absent and could not be interviewed, and 1 questionnaire had missing information. A total of 29 institutional housing units at a secondary school and 10 housing units at the local primary school that were not contacted and interviewed as is the case in similar studies (Deaton 1997).

Limitations of the Interview Method

The interview method is very costly and given the budget considerations, only one village was selected which might raise questions about its representative-ness of rural Botswana. 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 the Botswana Central Statistics Office. Their ages ranged between 21 to 25 years and two were females and two were males. Two research assistants came from the area and their presence reduced the language barrier problems. The inclusion of locals in the research team also helped to increase the participation rate, the reliability and validity of information received. The principal researcher, who is the first author of this article, translated the questionnaire into Setswana, the national language, which was used for asking questions in the field. Enumerators were trained to translate and record answers in English. The principal researcher, who was present in the village throughout the survey period and also carried out household interviews, trained and supervised the enumerators. Any queries and clarifications were answered as they arose in the field. Given the above and that a uniform approach of asking questions between the enumerators was ensured and daily reviews of answered questionnaires was made, we believe that the collected data is reliable.

Research Permit and Ethical Standards

A study permit was secured from the Ministry of Finance and Development Planning, then responsible for rural development, and subsequently introductions to gate keepers were made. The main gatekeeper was the village Chief, who ensured that the community at large was informed of our study and the survey 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 once the respondent indicated that he or she accepted the interview. Such confirmations were confirmed by a signature of the respondent on the consent form provided by the enumerator.

Non-response

The problem of non-response was very minimal as 98 per cent of the target households responded. The main reasons for a small non-response rate include 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.

3. Frequency of Types of Income Sources

The main types of income sources in Nshakazhogwe village were found to be wage employment, especially from government generated employment and grocery shops and butcheries, private transfers from members of the rural households who had migrated to other places, especially non-rural areas for job opportunities and government welfare transfers for vulnerable groups such as a result of old age, terminal illness, drought and destitution. Other sources of income were livestock primarily beef cattle and goats, home businesses which are dominated by kiosks that sell convenience groceries and home made alcoholic brews, crop sales that is dominated by the sale of products from rain-fed agricultural products like sorghum and natural resource harvesting sales such as edible nuts, firewood, thatching grass and others. The most frequent reported type of income source for households in Nshakazhogwe is wage employment which was the source of income for 185 households who constitute 56 per cent of all households (Table 1).

Table 1 Frequency of Households by Type of Income Source

Type of Income Source	No of Households	% of All Households	Frequency of Poor by Income Source	% of Poor by Income Source
Wage employment	185	56%	43	23%
Private transfers	178	54%	37	21%
Government transfers	150	45%	27	18%
Livestock	87	26%	12	14%
Home business	48	15%	9	19%
Crops	29	9%	2	7%
Natural resource	27	8%	6	22%

Table 1 also shows that private transfers is the second most frequent source of income that was received by 178 households who represent 54 per cent of all households in the case study. Government transfers are the third most important source of income for households in Nshakazhogwe village. Table 1 indicates that 150 households, comprising 45 per cent of all households in the case study village, reported that they received government transfers as a source of their income. Livestock is a source of income to 26 per cent of households and home business provides income to 15 per cent of households (Table 1). Crops and natural resources were reported as a source of income to 9 per cent and 8 per cent of all households respectively. Therefore nearly a quarter or less of the rural households can be said to rely on agriculture as a source of income in Botswana, which means a majority of the rural population do not depend on agriculture or natural resources for their livelihoods.

A cost of basic needs (CBN) poverty line method that defines a specific consumption bundle or basket has been used to identify individuals in poverty in the study village. This method is also used in Botswana Central Statistics Office (CSO) to determine poverty rates (Central Statistics Office Botswana 2004). The CBN method is considered adequate for the basic consumption needs of an individual and is an estimate of the minimum cost of a basket of needs in a given time period for each group or household (Ravallion 2007). As indicated in Table 1 above, the highest proportion, 23 per cent, of the poor heads of household by source of income is among those in wage employment. This implies that these heads of household were employed in agriculture or home makers where minimum wages legislation was not applicable at the time of this survey. Poor heads of household also constitute 22 per cent of households that depend on natural resources and 21 per cent of those that receive private transfers. Therefore, poor heads of household are a small number in relation to the rest of the households that use natural resources, but a large number of heads of household that are poor depend on private transfers from members of their households who migrated to urban areas.

A relatively smaller proportion, 18 per cent of heads of household that receive government transfers are poor. Lower representations of poor among people who receive government assistance may indicate that the redistribution of government provided welfare has problems of target inefficiency. Poor heads of household are 14

per cent of households that use livestock sales for their livelihood and 7 per cent of household that use crop production sales. The low representations of these heads of household in these sectors indicate the high risk nature of this sector in Botswana, high costs involved in agricultural production and that these households have a choice outside traditional agriculture where they encounter lower risks and better returns. The proportion of heads of household that are poor and depend on home business is 19 per cent. These businesses are easy to start and require limited initial stock and funding as they are conducted in owner's homes.

4. Gender and Income Sources

Most households in rural areas of Botswana depend on multiple sources of income (BIDPA 2001; Wikan 2001) and in Nshakazhogwe village, 72 per cent of all households depend on two or more income sources (Table 2). Table 2 also shows that 25 per cent of all male heads of household compared to 29 per cent of all female heads of household depend on one source of income. However, 33 per cent of all male heads compared to 46 per cent of all female heads of household depend on two sources of income (Table 2). Households with 3 income sources comprise 22 per cent of all male headed households and 18 per cent of all female headed households. As income sources for a household increases to 4, the gender composition is 16 per cent of all male heads and 6 per cent of all female heads. Households with 5 or more income sources are characterised by 4 per cent of all male heads and 0 per cent of all female heads (Table 2). Even though most heads of household depend on multiple sources, female heads of household are most represented among households with 2 sources of income. As income sources increase beyond 2 sources, male heads of households are more represented and female heads of households' representation falls. Given the importance of multiple sources of income as a coping strategy against household risk of poverty because of uncertainty of income flows in rural Botswana, which is primarily a result of unreliable rainfall, female headed households in rural Botswana are likely to face a higher risk of poverty than male headed households.

Table 2 Actual Numbers of Households by Gender by Number of Income Sources

No of Income Sources	Male	Female	Total
1	28 (25%)	63 (29%)	91 (28%)
2	37 (33%)	101 (46%)	138 (42%)
3	25 (22%)	39 (18%)	64 (19%)
4	18 (16%)	14 (6%)	32 (10%)
5	4 (4%)	1 (0%)	5 (2%)
Total	112 (100%)	218 (100%)	330 (101%) ⁴

5. Extent of Dependence on Agricultural Pursuits (Livestock, Crops, and Natural Resources)

The dependence on agricultural pursuits in rural Botswana is relatively small. Dependence on livestock in terms of cattle, goats and donkeys is the most reported type of agricultural pursuit as a source of income in Nshakazhogwe where 26.4 per cent of all household heads said they used this source of income. Households that depend on livestock comprise 34 per cent of all male headed households compared to 22 per cent female headed households (Table 3). These results suggest that more male headed households relative to female headed households in Nshakazhogwe use livestock as a source of income. Households that use crops as a source of income comprise 9 per cent of the total households in the case study. Table 3 indicates that households that use crops as a source of income are comprised of male headed households that constitute 14.3 per cent of all male household heads and female headed households that represent 6 per cent of all female headed households in Nshakazhogwe village. Households that use natural resource harvesting as a source of income are 8.2 per cent of all households in the case study village. Of these households, there are 8.9 per cent of all male headed households compared to 7.8 per cent of all female headed households (Table 3).

⁴ Rounding error

Table 3 Frequency of Households by Type of Income Source

Type of Income	Male ⁵	Female ⁶	Total ⁷
Wage Employment	80 (71.4%)	105 (48%)	185 (56%)
Private Transfers	48 (42.9%)	130 (59.6%)	178 (53.9%)
Government Transfers	44 (39.3%)	106 (48.6%)	150 (45%)
Livestock	39 (34%)	48 (22%)	87 (26.4%)
Home Business	28 (25%)	20 (9.2%)	48 (14.5%)
Crops	16 (14.3%)	13 (6%)	29 (9%)
Natural resources	10 (8.9%)	17 (7.8%)	27 (8.2%)

6. Extent of Reliance on Multiple Sources of Income

Table 2 above also indicates the extent of reliance on multiple sources of income in Nshakazhogwe village. It shows that even though 72 per cent of households depend on two or more sources of income, most households, 42 per cent, depend on two sources of income. The results in Table 2 also show that 19 per cent of households depend on 3 sources of income and 12 per cent of all households depend on 4 or more sources of income. These findings indicate that overall, 61 per cent of all households rely on 2 or 3 sources of income.

7. Discussion

Botswana's rapid economic growth over the last two decade, about 8 per cent per annum (Bank of Botswana 2007), benefited from a large contribution to GDP from the mining sector which is positively related to increasing urbanisation from 18 per cent in 1981 to 54 per cent in 2001 (Central Statistics Office Botswana 2001). Mining revenue was first used to build and expand the education system in urban towns and villages, health facilities and services, land development in urban areas, electricity infrastructure and supply in urban towns and villages. As a result more civil service job opportunities were opened in urban areas than in rural areas. Therefore as higher

⁵ This is a per cent of all males household heads in the case study (112)

⁶ This is a per cent of total females household heads (218)

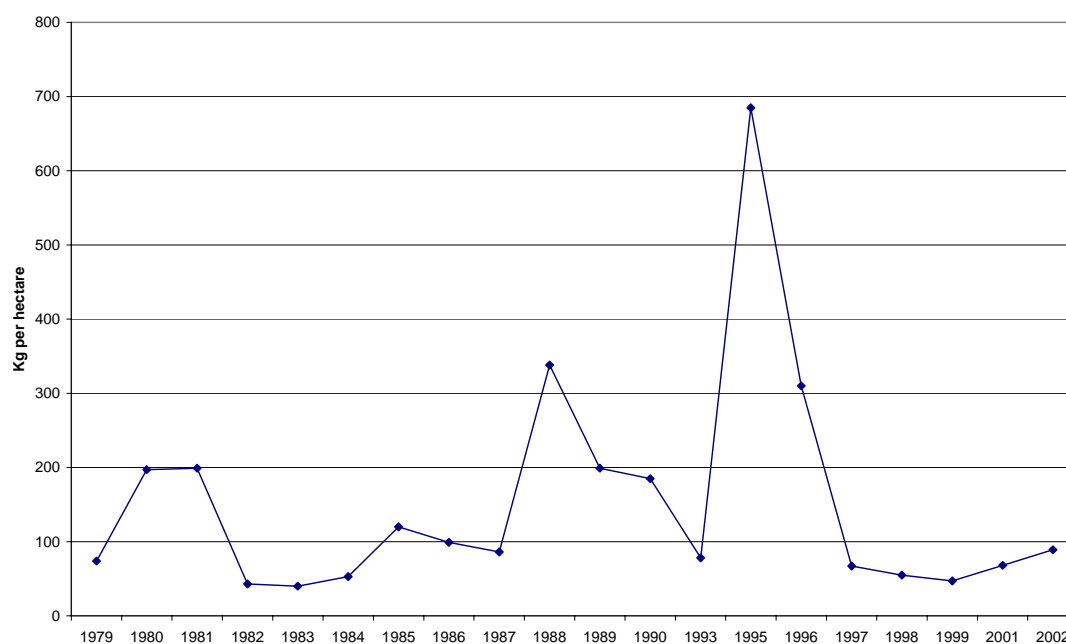
⁷ This is per cent of total households heads (330)

urban employment was created, this also increased the urban expected wage which induced more rural urban migration. Taylor and Martin (2001) have shown that, elsewhere, the lost agricultural product of the migrant who secures an urban job does not represent the full opportunity cost of rural out-migration if more than one rural worker is induced to migrate. In Botswana, it appears that the opportunity cost for the rural sector also includes the loss of agricultural production of out-migrants who are less fortunate to find urban employment.

In the case of Botswana where the urban sector attracts more educated rural out-migrants than those with low level education such as primary school leavers, migration can be considered as a loss of capital from the rural sector in the form of a brain drain or loss of human capital.

Sorghum is a traditional staple food in Botswana. Figure 2 shows that productivity, in terms of sorghum yield per hectare in the traditional arable sector, has not improved over the period 1991-2001. During that period, urbanisation increased from 18 per cent to 46 per cent (Central Statistics Office Botswana 2001). Such low levels of productivity trends in traditional farms are displayed despite an increase in national literacy rates from 67 per cent in 1994 to 81 per cent in 2005 (UNDP 2003; UNDP 2006). Despite efforts and policies of government, sorghum yields have failed to increase (Ministry of Finance and Development Planning 2002; Ministry of Finance and Development Planning 2003). In part, human capital flight from the rural sector to the urban sector, has contributed to declining sorghum yields.

Figure 2 Trend of Sorghum Yield (Kg/hectare) 1979 - 2002



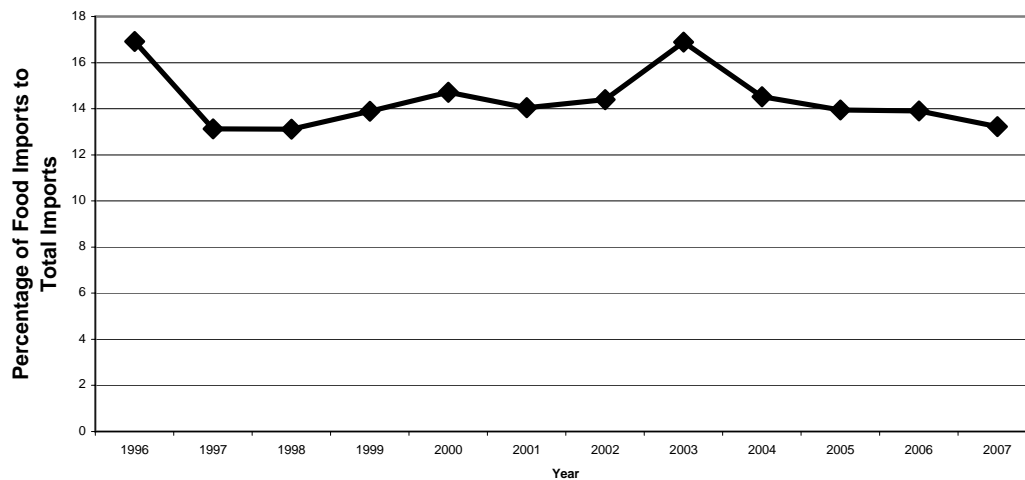
Sources: Central Statistics Office Botswana (2002) and Early Warning Technical Committee (2003)

Migrants in the non-rural sector of Botswana, complement limited and lack of adequate incomes from the agricultural sector in the rural areas with remittances that are in the form of private income transfers. The use of remittances to support rural incomes in Botswana dates back to the colonial and post independence period when migrant labour was exported to South Africa to provide cheap mining labour.

The shortfall of food production in Botswana has been compensated for by a heavy reliance on food imports. Figure 3 below shows that the trend of relative value of food, beverage and tobacco imports to total imports was stable around 13 to 14 per cent for most years between 1996 and 2007. Although the National Development Plans 8 and 9 that were implemented during this period also had a theme of economic diversification (Ministry of Finance and Development Planning 2003), the trend of food imports relative to total imports as indicated in Figure 2, reveal that there has been limited results of the diversification programme in the agriculture sector, especially in addressing the food self-sufficiency aspect. One explanation could that part of Botswana's response to recurring drought years in the 1980s and the relative peace that the region experienced, was to reduce focus on food production and increase reliance on food imports. This was based of neo-classical concerns that the

country had no comparative advantage in food production and could shift to trade to and reduce the costs of accessing food. However, recent security concerns due to instability in Zimbabwe and the global rise of food prices in 2008, suggest a re-think of a food strategy that relies on outside the country supply sources and the need to address problems of poverty and access to food.

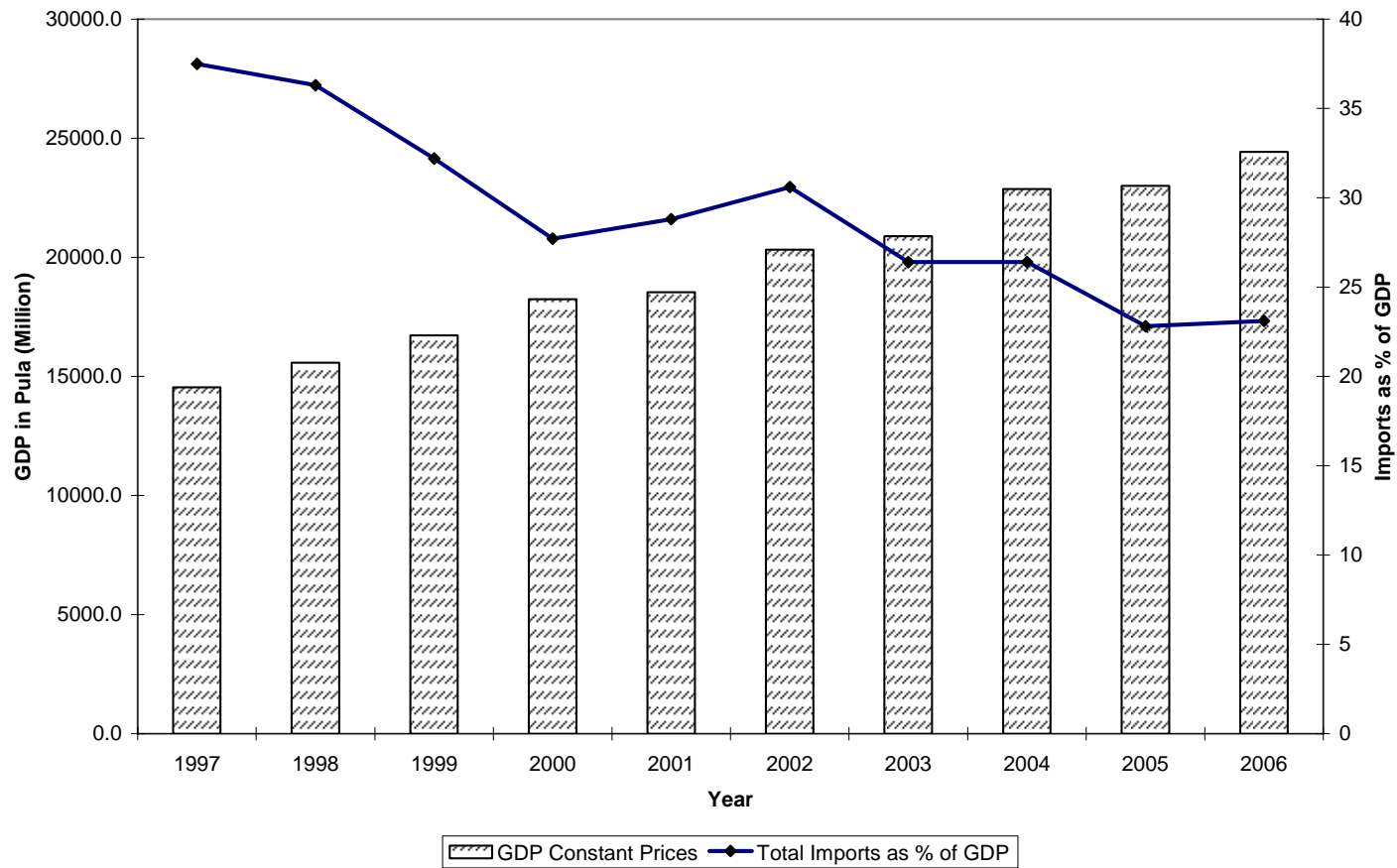
Figure 3: Trend of Relative Value of Food, Beverage and Tobacco Imports to Total Imports



Source: Central Statistics Office, 2007

If we use the percentage of total imports to Botswana's GDP over the period 1997 to 2006 as in Figure 4, to measure the dependence of the country on imports over time, it would appear that even though Botswana relies heavily on imports, the diversification programme is effective. However, this might not be true, because the relative decline in the share of total imports is related to increasing value of the total GDP over the same period (Figure 4). As the value of the GDP was increasing, the GDP share of mining was increasing and that of agriculture was declining. Moepeng (2003) had suggested that Botswana could introduce land markets to enable idle land held for speculative purposes in high potential areas for production to be leased to those who can use it productively. In addition, infrastructure development in farming areas could be undertaken to increase incentives for production. Although Botswana is drought prone, the increase in supply of treated waste water increases the potential for increased productivity in horticulture and local food production.

Figure 4: GDP at Constant Prices and Total Imports as Percentage of GDP 1997-2006



Source: Bank of Botswana 2007

8. Conclusion

Wage employment, mostly from government generated jobs providing rural services, is the most frequently reported type of income source for households in Nshakazhogwe village. More than half the population of heads of household reported that they depend on this source of income. Private transfers is the second most frequent source of income for all households in this case study village, and nearly half the number of heads of household reported that they received government transfers. Slightly less than a quarter of all the heads of household in the village further said they depend on agriculture as a source of income. This means that a majority of the households in this village do not depend on agriculture or natural resources for their livelihoods.

Poor heads of household were employed in agriculture or as home makers where minimum wages legislation was not applicable at the time of this survey (year 2005). In addition, poor heads of household were relatively smaller to the rest of the households that use natural resources. On the contrary, a larger proportion heads of household that are poor depend on private transfers from members of their households who migrated to urban areas. The results of this survey also revealed that a relatively smaller proportion, 18 per cent of heads of household that receive government transfers are poor. Lower representations of the poor among people who receive government assistance imply that the redistribution of government provided welfare has problems of target inefficiency.

Even though most heads of household depend on multiple sources, female heads of household are most represented among households with two sources of income. Given the importance of multiple source of income as a coping strategy against household risk of poverty in arid environments, observations of this study suggest that female headed households in rural Botswana are likely to face a higher risk of poverty than male headed households. Overall, this survey results indicate that dependence on agricultural pursuits in rural Botswana is relatively small. Regarding livestock dependence, these results suggest that more male headed households relative to female headed households in Nshakazhogwe use livestock as a source of income. Households that use crops as a source of income comprise 9 per cent of the total

households in the case study and this might reflect the low levels of rainfall, out migration of the able bodied to do farming, access to alternative sources of income and the high costs required of doing farming in Botswana.

Botswana's rapid economic growth is positively related to increasing urbanisation from 18 per cent in 1981 to 54 per cent in 2001 and creation of job opportunities in urban areas than in rural areas. It also appears that the opportunity cost for the rural sector also include the loss of agricultural production of out-migrants who are less fortunate to find urban employment. However, a food strategy that completely discourages own-production even where the country might have high potential could be a high risk strategy in the event regional stability is not guaranteed. In addition, during times of escalating food prices and instability in money markets, the poor are most likely to be affected. A country such as Botswana should concentrate its diversification strategy to agricultural pursuits where she has comparative advantage such as livestock farming and milk production. This development should be associated with value adding primary industries where modern sector jobs would be created.

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