CHAPTER 5
RESEACH DESIGN

5.1   INTRODUCTION

The data used for this research originated from a household survey conducted during 1999-2000 in Limpopo in South Africa. This study was initially designed as a full component of a much broader study commissioned by the 4th European Union Research Programme (EU), the aim of which was to investigate how the amount and distribution of farmland and other rural resources affect decisions about fertility and migration within a household and through the results of such decisions and otherwise, determine how far land, water and vegetative resources have been depleted and polluted or maintained or restored. The EU study was largely a comparative study of studies carried out in Botswana and India and South Africa among small-scale farmers in the dry-land areas of these countries.

Section 5.2 describes the area in which the survey for this study was done and the sample design. This is followed by an elaborate discussion of the sample frame in section 5.3. The survey design for both the village and household surveys are presented in section 5.4. Typology of the variables that will be empirically analysed later is presented in section 5.5 (Table 5.1), and section 5.7 summarises how the analysis will proceed, the chapter ends with a summary

5.2   THE STUDY AREA AND SAMPLE DESIGN

5.2.1   Selection of the Study Area

Limpopo was purposively selected as the study area, because, as indicated in Chapters 1 and 2, this province is semi arid with a large proportion of its population living in the rural areas and it is one of the poorest provinces in South Africa with a sizeable proportion of its population involved in migration. Small-scale farmers of black African origin, practising dry-land farming, inhabit all the areas that were selected for the study. Since inequality is much more profound between race groups (due to the

apartheid legacy) and the wealthiest South Africans are mostly whites, living outside the former "homelands" areas, the selection of the areas ensured a focused approach towards investigating inequality among black rural households. Thus, the inequality between the races of South Africa is not the subject of this study.

5.2.2 Location and size of Limpopo

Limpopo is situated at the north-eastern corner of South Africa (see Figure Map 1) shares international borders with three countries: Botswana to the west and northwest, Zimbabwe to the north and Mozambique to the east. The province is adjacent to the North West, Gauteng and Mpumalanga provinces; thus the province is placed at the centre of the vortex of developing markets. Figure 1.1 indicates the districts of Limpopo and the study sites.

The old Transvaal ((old) Limpopo Province) consisted of six administrative regions, namely Northern, Lowveld, Central, Southern, Western and Bushveld regions. After transformation, which was finalized in 2001(after the survey had been done), the Province was renamed Limpopo and it is now divided into four regions: Capricorn, Bushveld, Soutpansberg and Valley of the Olifants regions. This thesis is based on three of the six former administrative regions (Central, Southern and Western regions).

The Lowveld region of Limpopo includes some of the more fertile and productive areas of South Africa while the Bushveld region consists mainly of large-scale extensive farms occupied by white commercial farmers. Therefore, it was decided to exclude these two regions as well as the Northern region (which is mainly sub-tropical and humid) from the study area. The remaining three regions (Central, Southern and Western regions) are generally classified as arid or semi-arid in terms of their rainfall and vegetation, and therefore, form the core focus of the study.

Of the estimated surface area of 12 million hectares in the province, 67% (8 million hectare) is used as agricultural land. Of this 8 million hectares of farmland, 10,6% (0.85 million hectare) is used as arable land, 67.5% (5.4 million hectare) as natural

grazing, 18.8% (1.5 million hectare) for nature conservation, 1.1% (0.088 million hectare) for forestry and 2% (0.16 million hectare) for other purposes. About 76% of arable land (0.61 million hectare) is allocated to dry-land cultivation of staple foods and vegetables which are the most important crops of cultivated in the Limpopo.

MAP 1. THE DISTRICTS AND SITES IN THE STUDY AREA
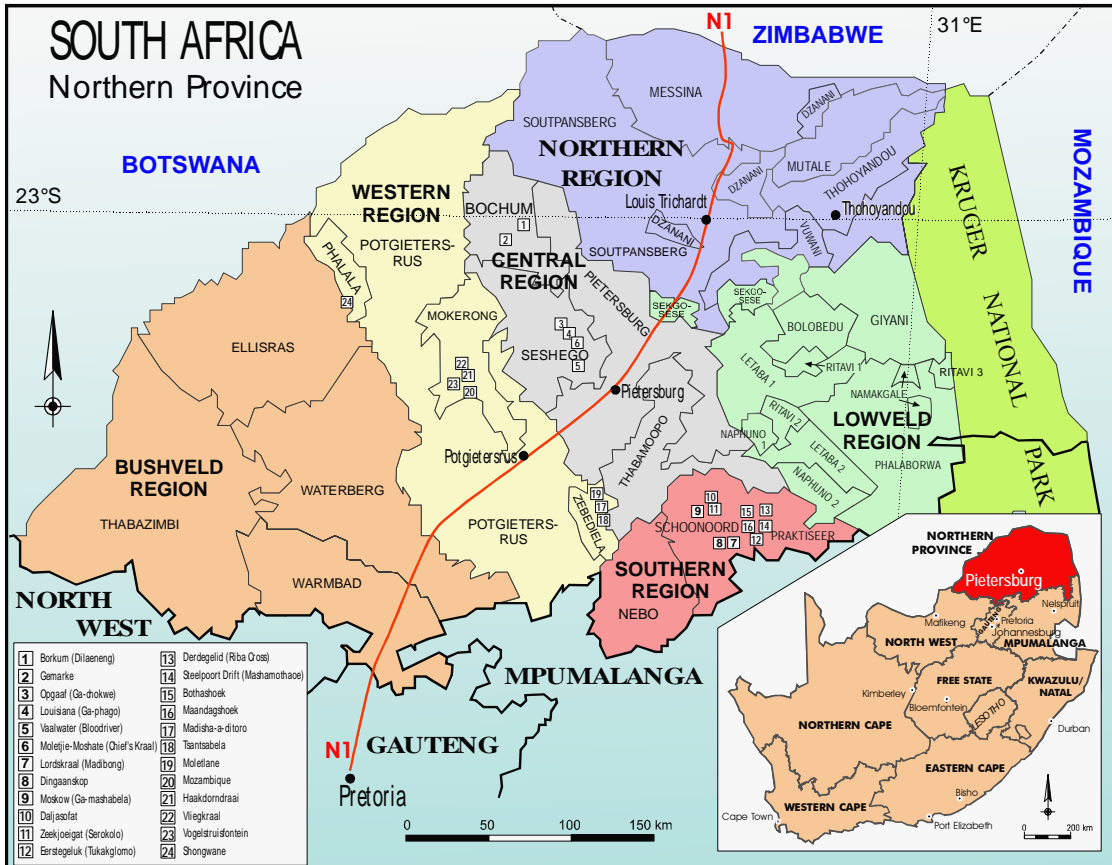
Source: Statistic South Africa, Map Division

Figure 5.1:   The districts and sites in the study area

5.3   SAMPLING FRAME AND SURVEY DESIGN

The sample selection was done in three distinct stages:

- First stage, a choice of the study regions in Limpopo that are arid and semi arid with a large number of small scale producers
- Second stage, selection of villages, considered to be the primary sampling units (PSUs)

- Third stage, selection of households in the selected villages.

The over all sample size (total number of households to be in the sample) for this study was decided, guided by the principle that the larger the population in each stratum, the smaller the percentage of that population the sample needs to be. Several other factors were considered: the budget implications, the time requirement within which the survey was to be completed, the required precision of the estimates to be produced, the total population (number of households involved in agriculture), variability of the key variables from stratum to stratum, and the field logistics. We also considered the representativeness of the sample (i.e. representing the same characteristics as the population) in order to allow generalization of the findings to the larger population and minimise the sampling error.

5.3.1 Sampling of villages

The sampling frame for the survey was a list of villages in the three arid and semi arid regions of Limpopo (Central, Southern and Western Regions) with small scale farmers. These regions were selected using the cluster sampling method to meet the agriculture, arid and semi arid characteristics. All the villages surveyed are typically rural, isolated, remote and with low levels of development. Specifically, the villages (sampling units), were selected from the following magisterial districts in Limpopo: in the Western region: Mokerong, (consisting of Phalala, Mokerong and Zebediela locations or sub-districts); in the Southern region, Sekhukhuneland (with Praktiseer and Schoonoord as sub-districts); in the Central region, Bochum and Seshego. This choice of survey areas was guided by the prevalence of arid and semi-arid lands occupied by African households, a predominant small-scale farming sector and substantial poverty. District agricultural maps were used to ascertain the locations and the climatic situations in the areas.

A total of 24 villages were selected out of the rural and deep rural areas of the districts mentioned above. Three of the villages were *purposefully* pre-selected and extensively surveyed, by sampling 75 households from each village. The district of Bochum is well known for having a high rate of migration of able-bodied men and

women. The Derdegelid area was intensively surveyed with regard to fertility and Shongwane with regard to economic activities. For the remaining 21 villages *disproportionate random sampling* method was used in view of the scattered nature of the former homelands and the villages therein. This method was found to be appropriate in view of the widely dispersed nature of the villages in Limpopo and also to fit the other criterion for selection that agriculture, including animal husbandry, is a fairly significant activity in the villages sampled. At the same time all the different areas were adequately represented in the sample, even though the number of households sampled from most of the villages was small (17 households).

According to Webb, 1992, disproportionate random sampling is suitable if there is great variability within a stratum as is the case with the regions studied, also when the proportion of the characteristics that the study is interested in possessed by the population is not reflected to the same extent in the proportion of the sample. The Central, Southern and Western regions are quite variable in the population and geographical areas. In summary, the population for the survey was considered to be composed of all the small scale agricultural households in the Western, Southern and Central regions of Limpopo, some of whom with migrant members and others without.

5.3.2   Households Sampling strategy and size

The survey element for the study was a household, represented by the head or spouse or his / her representative. A list of households in each selected village was obtained from the tribal office or the extension officer in the particular tribal ward. Names of selected households were drawn randomly from the village lists (sampling frames). Sampling was done in such a way that the number of households sampled from each village varied depending on the population size and the character of the village, we divide the total sample size disproportionally to the strata. This method was adopted for selecting the households to ensure that variability in the different segments of the population were represented in the sample, as far as possible, in the same proportions as they occur in the population under study.

Owing to the small number of sampled households per village, it was necessary to re-group the villages in the different magisterial districts to perform meaningful analyses. This is statistically allowed to validate the sample size. Phalala and Mokerong, for example, were grouped to form Western sub-region but Zebediela was kept separate since it has a different farming system and it is also some distance away from the other villages in the Western Administrative region. In Sekhukhuneland magisterial district, villages around Schoonoord and Praktiseer respectively were grouped together due to their similar conditions. Some of the analyses were thus done for six survey "sub-regions", i.e. Schoonoord, Praktiseer, Zebediela, Bochum, Western and Seshego, while others were done on three regions of Western(Phalala-Mokerong I and II) Southern (Schoornord, Practtiseer and Zebediela) and Central (Bochum and Seshego)

Initially, a total of 585 households were selectedto be interviewed in the 24 villages. This sample represented a total of 4 338 persons or 5.16% of the total population in the 24 villages. However, 12 of the households had to be dropped later after failing to interview the migrants from these households, even after two re-visits. The final sample size used for this study was 573 households (5.05% of the sample frame). The villages and the distribution of households interviewed per village is presented in Appendix 4. This sample size is reasonably large but justified, because it takes care of: i) the high variability in the different segments of the population, ii) size of the potential sampling error is reduced, iii) it is large enough to allow a valid analysis of any regions or sub-regions, iv) inferential statistics, which allow the demonstration that the probability that the results deriving from a sample are likely to be found in the population from which the sample was taken (Bryman & Cramer, 2001), and v) high precision (confidence level), precision for large populations is independent of the sample size.

5.3.3 Representativeness

The sample frame had to be designed to meet the objectives of the study, but it had also to adhere to the statistical specifications for accuracy and representativity (Vaughan & Vaughan, 1998; Webb, 1992; Bohrnstedt & Knoke, 1994). A total of 24 villages were *randomly* selected from the list of villages in the identified four

magisterial districts (obtained from the list of villages surveyed during the 1996 census). Given the widely dispersed nature of the villages in rural Limpopo, it was necessary to use the multi-stage sampling technique and to select the sample from a large number of villages to ensure representativity.

5.4   QUESTIONNAIRE DESIGN AND DATA COLECTION

It was necessary to obtain socio-economic and environmental information about the general wellbeing of the communities from which the households were selected, in addition to the focus information on households. The main methods of collecting the primary data were observation, and personal interviews with the household head or his/her spouse or representative, to obtain information on each surveyed household using a structured household questionnaires.

5.4.1   Questionnaire Design

The household questionnaire was designed to facilitate personal interviews to provide information on household characteristics, household income and assets, land, environmental issues, fertility, and migration decisions issues with all the necessary questions to respond to the stated objectives, the questionnaire is presented in as Appendix 1. The household head or his/her deputy responded to a major part of the questionnaire. The main sections of the questionnaire included:

5.4.2   Questionnaire pre-testing

The first version of the questionnaire was piloted / tested on 20 households in the autumn of 1998. The results of the preliminary analysis of data from the pilot household questionnaires were used to revise the household questionnaire. The following problems were highlighted by the pilot results and solved:

- The questionnaire was too long and had to be reduced.
- Some questions were considered too personal.
- As the questionnaire was too long, the interviews were continually interrupted and

disturbed as people had to continue with their household chores.

- Ways of recalling dates and amounts of money were required to assist older members of households to recall dates (e.g. by using important village events).

The questionnaire was modified and finalised during April – July, 1999.

The household interviews started on 16 August 1999. A significant number of non-residents were not available to be interviewed the first time. A large number of households had to be revisited twice to complete the migrant section by the migrant himself or herself. Still, in a few cases, non-residents were not interviewed due to their unavailability; for such households responses regarding migration were obtained from the household head or his wife or his or her deputy.

5.4.3   The Survey

Two structured questionnaires were administered on household and village samples, respectively. The household survey provided information on household characteristics, household income and assets, land, environmental issues, migration, fertility, contraception, autonomy of women in the household and their perceived value of children. The household head or his/her deputy responded to a major part of the questionnaire.

Qualitative information about the villages was collected using a the second structured survey instrument, which was a village questionnaire, covering all topics pertaining to population, infrastructure and resources in the villages. The first section of the questionnaire looked at institutional arrangements and the previous major events that were used to remind the respondents about the dates of major events with regard to their state of living. The second section looked at the physical resources like roads, electricity, telephones, schools, and the credit and financial institutions like cooperatives and banks, while the third and last section looked at the status of natural resources like rivers, lands, vegetation, etc.

For the village level survey key informants in the village were interviewed, such as, extension workers, teachers and principals, health workers, chiefs of the villages and indunas or chiefs. Different representatives were interviewed with respect to the different components of the questionnaire; the agricultural extension officer, for example, was interviewed related to issues on the environment while health and community workers were interviewed with regard to health issues.

5.5 CATEGORIES OF THE MAIN VARIABLES

The main categories of variables and the research questions answered in the study are summarised in Table 5.1. They relate to the distribution of assets that households own whether unequal distribution of assets has any influence on household decisions regarding migration; migration income sources and the impact of remittances.

Table 5.1:   Main categories of variables in the study

OBJECTIVE	RESEARCH QUESTIONS	VARIABLES TO BE CONSIDERED
1. Determine the relationship between unequal distribution of household land and other productive assets on household behaviour regarding migration from the rural areas of Limpopo, South Africa.	• Is the association between migration and households with small land holdings different from that with households with comparatively bigger land holdings? • What is the relationship between the size and distribution of household land-holdings and migration? • Does little access to other farm and non-farm productive assets affect household behaviour regarding migration? • Which individual, household and community-level characteristics influence or are influenced by migration	• Household income and assets (farm-including livestock and non-farm) • Households with & without migrants • Income and asset groups (classes) of households • Individual, household and community – level characteristics and variables
2. Establish whether remittances received by migrant-households, in cash	Do remittances: • -Fully compensate for loss of labour effects by adding to income in migration sending	• -Household income from different sources • -Different uses of

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or in kind, received by migrant-sending households decrease or increase rural inequality in the migrant-sending areas	households? • -Ease capital constraints? • -Stimulate investments? • -Increase or decrease asset inequality?	remittances • -Characteristics of migrants • -Value of total assets • -Value of household wealth

Information on migration was handled in sections 2 and 6 of the questionnaire. While the household head or his or her deputy responded to section 2, the migrants were personally interviewed for section 6. This ensured that most of the information was cross-checked, especially information pertaining to remittances, their use and whether they increase or decrease asset inequality among the households and the community at large.

5.6 FRAMEWORK FOR DATA PREPARATION AND ANALYSIS

5.6.1 Data reception, editing and organisation

The questionnaire had a built in mechanism to check and crosscheck responses by 'probing' responses to sensitive questions. This was followed by manual data editing by rotating from village to village to oversee the survey and manually check questionnaires with the interviewers. Manual editing on site helped rectify mistakes made by the interviewers, either during questioning due to misunderstanding of the questions or due to wrong recording, it also eliminated data faking by the enumerators. One of the interviewers was discharged for making up data and the village he had covered was redone. Thus, the questionnaires were received on site at the villages and were recorded as they were received by giving each questionnaire a number within the village sample and the date it was received.

5.6.2 Data capturing (punching) and cleaning

The Statistical Package for Social Scientist (SPSS)-based framework for data capturing was developed and was used for data capturing. Since a pre-coded questionnaire was used it eliminated errors due to coding, except in a few cases were

respondents gave answers that had not been anticipated. Supplementary information obtained from each village questionnaire (for each village there was only one questionnaire) was used to clear up glaring inconsistencies by households on issues of a general nature

The households whose migrants were not available for interview during the first visit were revisited. This process (of revisiting) went on for some time to try and obtain responses from all the migrants. However, the migrants of 12 households were never available for interviews.

5.6.3 Validity and reliability of data

Error in the collected data may arise from sampling, non-response and interviewer bias, inability or unwillingness of respondents to answer, ignore, or give wrong misleading answers, which lead to problems of validity and reliability. *Validity* is the extent to which a measure or set of measures correctly represents the concept of the study, free from any systematic or non-random error. Inevitably, validity problems usually arise when dealing with small scale farmers in developing countries. It is an open secret that the majority of such farmers do not keep records and when they do they are either incomplete or outdated and even unreliable. At the same time, there are issues that people do not easily talk about, including issues related to marriage, fertility, death, income and a variety of household decisions. This means that the data obtained by asking an individual may not be completely valid or reliable.

Reliability relates to the extent to which a variable or set of variables is consistent in what it is intended to measure (Hair Jr. *et al*., 1998). Questionnaire pre-testing and modification at a workshop contributed to ensuring that the questions would be asked during the surveys and that all the measures would be valid. As part of the validation exercise, using the SPSS programme, the number of cases for each variable on the file created using the frame, was checked to see if it agreed with the totals and all the codes within the specified range. In a few cases where more responses were given than the allowable codes, more codes were added to accommodate such responses. The data was mainly computed using the SPSS package at 95% confidence level

Sampling errors were taken care of as explained in section 5.3. One of the problematic non-sampling errors in the data was due to non-responses which were taken care of on a case-by-case basis. In some cases, substitution was used where a case with similar characteristics to the missing one was selected at random and duplicated as a substitute. In other cases, where the majority of the respondents had not given a response, a zero was used to replace the blanks. However, as Kish (1965) states, "no method of substitution is generally free of disadvantages, but one should choose the method with least disadvantages for a specific situation."

5.7   DATA ANALYSIS METHODS

The data obtained from the survey were used to establish differences between the households with and without migrants from the same village and in between villages and regions. Analysis of data also allowed us to detect any specific and/or peculiar patterns of variables around cases or households. Both exploratory and confirmatory data management techniques were used at different stages of the study.

5.7.1   Exploratory analysis

Exploratory analysis was used to present distribution characteristics of the study data. The exploratory methods included the descriptive statistics; including frequency, means and cross-tabulations for describing the spread, the study looked at the mean and the standard deviation. The T-Test for Equality of Means, which is a special type of the analysis of variance (ANOVA), was used as part of the exploratory analysis to assess the statistical significance of the difference between the sample means of households with migrants and households without migrants; the results are presented in Chapter 6. The t statistic is the ratio of the difference between the sample means to their standard error; the latter is an estimate of the difference between the means to be expected because sampling error, rather than real difference between means.

In Chapter 7 the findings from the correlation analysis were used to test whether the variables that are said to influence household in their decision making regarding migration are correlated with migration, and with each other.

5.7.2   Confirmative analysis

The two main research objectives and thus the hypotheses testing of the study are dealt with in chapters six, seven and eight. For each objective an empirical analytical model is specified, estimation techniques are employed and empirical results are discussed. Since the survey involved a large number of cases (573 households) it was necessary to make use of the analysis of interdependence techniques. First the Gini coefficient and Lorenz curves were used to measure inequality. The technique was also used to analyse the composition of income inequality in order to establish the impact of migration remittances upon income inequalities. Secondly, Factor Analysis techniques were used to define the underlying structure in the data matrix. It also helped to address the problem of analyzing the structure of the interrelationships or correlations among the large number of variables by defining a set of underlying dimensions known as factors; variables with characteristics which go together constitute a *factor*. Using the factor analysis techniques relationships between various variables were examined and the extent to which they compare with the study hypothesis. Thirdly regression analysis, namely, Logistic Regression was found to be an appropriate technique because in this study the dependent variable (presence or absence of migration) is a non-metric, dichotomous (binary) variable. These techniques are explained further below.

5.7.2.1 Inequality measure using the Gini coefficient

The Gini coefficient was used to measure inequality of income and productive assets among rural households in the study areas. The Gini coefficient is considered to be the most common statistical index of diversity on inequality in social sciences (Kendall & Stuart, 1969, Allison, 1978). It is widely used in econometrics as a standard measure of inter - individual or inter - household income or wealth inequality (Atkinson, 1970 and 1980; Sen, 1973; Anand, 1983) due to its convenient Lorenz

curve interpretation. Lorenz curves have also been used to study inequality in the distribution of land (Todaro, 2003) in education, health and in other assets. The determination and decomposition of inequality by the different income sources to determine the effect of remittances on inequality also depends on the Gini coeffient techniques, which were discussed at length in Chapter 4.

5.7.2.2 Factor analysis

The decision to migrate is a human behaviour caused by a number of different reasons which, if together they contribute to the decision to migrate, we would expect them to be correlated. Factor analysis helps in assessing the degree to which the different variables or items are tapping the same concept. It tells the extent to which the different aspects measure the same concepts or underlying construct; for example the tendency or propensity to migrate or as a household, make a decision for one or more members of the household to migrate is a hard to measure construct; factor analysis provides a score that weights the highly correlated responses. Secondly, the general purpose of factor analytic techniques is to find a way to condense or summarise the information contained in a number of original variables into a smaller set of new composite dimensions or variates known as factors, with minimum loss of information. Since the data set used was based on a large sample size (573 households) and a large number of variables, factor analysis was deemed appropriate for data reduction. SPSS was used to compute and assigns a score for each factor, which stands in as parsimonious descriptor for many variables.

There are critical conceptual assumptions underlying factor analysis, namely that:

- The data correlation matrix must have sufficient correlations greater than 0.30, otherwise factor analysis is inappropriate.
- The observed Kaiser-Meyer-Olkin (KMO) also provides a guide as to the appropriateness of using factor analysis; 0.70-0.80 is acceptable, beyond that it is great, but below 0.70 it is mild while below 0.50 it is unacceptable.
- The Bartlett test of sphericity, a statistical test for the presence of correlations among variables, should be significant, tending towards 0.00; the further away

from .000 the less significant it will be, for example, 0.05 to 0.10 is acceptable, but beyond 0.10 it should be rejected. At least two of the three conditions must be satisfied for factor analysis to be considered appropriate.

All the above assumptions underlying factor analysis were satisfied by the data set used in the study.

There are two most widely used forms of factor analysis, namely, *principal components* and *principal-axis factoring* (or *common factor in SPSS*). The two forms are collectively called Factor Analysis. According to the *SPSS Base 10.0 Applications Guide,* the two procedures can be used on the same data and both produce similar results. However, their difference lies in the way they handle the individual unique variance. In principal –components analysis all the variance of a variable is analysed, including the unique variance and it is set at 1. With the Principal-axis factoring, on the other hand, only the variance which is common to or shared by the tests is analysed; that is, it attempts to exclude the unique variance from the analysis and thus varies between 0 and 1. Principal components technique was preferred for the analysis in this study to avoid the complications inherent with common factor analysis. According to Hair, *et al* (1998) common factor analysis suffers from factor indeterminancy, so that for any individual respondent, several different factor scores can be calculated from the factor model results; thus there is no single unique solution as found in component analysis. Also the communalities computed from the common factor analysis may sometimes be invalid (for example, with values greater than 1 or less than 0). The complications of common factor analysis are said to have contributed to the wide-spread use of component analysis. At the same time there remains considerable debate over which factor model is more appropriate and empirical research has demonstrated similar results from both techniques. In this study the results of the variance of the test to be explained, known as the *communality,* from both techniques did not show major difference, but the results of the rotated factors from the principal component analysis provided better and clearer loadings of the variables than the one from the common factor analysis, thus the choice of principal component analysis.

The total variance presented by the *Eigenvalue* is used as a measure of variability of the factors. The selection of the factors to be retained is usually based on the

Eigenvalues and their respective factor loadings; the higher the factor loading the more the item contributes to the total score of that factor. The factor loadings express the correlation between the factors and the original variables and the factors with the *Eigenvalue* (normally ≥1.0) are retained while factors with smaller *Eigenvalue* (normally <1.0) are excluded. Selection also depend on the relative factor loading of the variable, a factor loading of at least 0.4 is used to indicate a fairly strong relationship between the variables.

5.7.2.3 Logistic regression model

In statistics, logistic regression is a model used for prediction of the probability of occurrence of an event. Binomial Logistic regression (BLR) is used. Most aggregate economic models usually try to explain continuous phenomena for which the ordinary least square (OLS) regression methods are common econometric approaches, (Boger, 2001). However, when we want to investigate individual or family decision behaviour, it often involves decision between discrete alternatives through a two-stage process. In this study, individuals and households are investigated for the probability of a decision *to migrate* (or not to *migrate*) by some of the members of the household. Equally, some qualitative variables like gender, education or quantitative response (QR) models (Kennedy, 2000), have been developed. All models have in common that their dependent variables take only discrete values and the independent variables determine the probability of an individual to choose one alternative from a choice set.

There are numerous types of QR models that are applicable in different situations. A distinction has been made by Boger, (2001) between; a) their functional form (logit versus probit models), b) the number of alternatives in the set of choice (binary versus multinomial choices), c) the type of choice variable (unordered or ordered), and d) the assumption made in the model (e.g. if a choice is independent of irrelevant alternatives).

In view of the rich variety of QR models, logistic models; - binomial (binary) logistic (BLR) has been adopted for this study based on Boger (2001). Binomial logistic model is characterised by the fact that the exogenous variable (dependent) takes two values (dichotomy) and the independent variables maybe continuous, categorical or

both. For instance, one can consider the probability that the event will occur (**y=1**) or not (**y=0**). Thus when we state the vector of explanatory variables with their estimate parameters as $\beta' x$, the dependent variable y^* can be expressed as follows:

$$y^* = \beta' x + \varepsilon \quad \dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots(5.4)$$

What is observable in the model above is a dummy variable (y^*) interpreted as the probability of presence (*or absence*) of migrant(s) in the household as the dependent variable; then variables such as land ownership (or no land owned), assets or no assets, etc., were included in the analysis. According to Kennedy (2000), the heteroskedastic nature of the error term can easily be derived by noting that if a household has certain assets (probability $\chi\beta$) the error term takes the value (1- $\chi\beta$) and if the household does not have that particular asset (probability 1- $\chi\beta$) the error term takes the value of $\chi\beta$

The logistic function is given as $f(\theta) = \varepsilon^\theta / (1 + \varepsilon^\theta)$. It varies from zero to one as θ varies from $-\infty$ to $+\infty$, and look very much like the cumulative normal distribution. Therefore, if θ is replaced with index $\chi\beta$, for example, denoting a linear function of several characteristics of households who have access to certain assets, then the logistic model specifies that the probability owning is given by:

$$Ow(owning) = \frac{e^{\chi\beta}}{1 + e^{\chi\beta}} \quad \dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots(5.5)$$

This in turn implies that the probability of not owning a particular asset is:

$$Ow(not..owning) = 1\text{-}Ow(Owning) = \frac{1}{1 + e^{\chi\beta}} \quad \dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots(5.6)$$

The subsequent likelihood function is thus given by:

$$L = \prod_i \frac{e^{\chi i\beta}}{1 + e^{\chi i\beta}} \prod_j \frac{1}{1 + e^{\chi j\beta}} \quad \dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots(5.7)$$

where *i* refers to those who own the assets and *j* refers to those who do not have the assets in question or do not undertake the activity referred to.

Maximising this likelihood with respect to the vector β produce Maximum Likelihood Estimate (MLE) of β. For the nth household, then the probability of owning a particular type of asset is estimated as:

$$\frac{e^{\chi_n \beta^{mle}}}{1 + e^{\chi_n \beta^{mle}}} \quad \text{...(5.8)}$$

The above formula (5.8) for the logit model, implies that:

$$\frac{Ow(owning)}{Ow(not...owning)} = e^{\chi\beta} \quad \text{...(5.9)}$$

Subsequently the log-odd ratio is given by:

$$In\left[\frac{Ow(Owning)}{Ow(not..owning)}\right] = \chi\beta \quad \text{...(5.10)}$$

Based on this observation, the probability of occurrence of an event that the household has presence of migrant(s) (alternative *j* is chosen) depends on the vector of independent variable **x** and a vector of unknown parameter β when underlying distribution is symmetric (Mukherjee *et. al.*, 1998). Equation 5.9 expresses that the probability is a non-linear function of the explanatory variables. Since our interest is to estimate the unknown coefficients $\beta_i (i = 1,...,m)$, then once the estimates are obtained we can predict the probability of **y** $y_i = 1$ for given **x** values.

The measure used in our analysis is called the odds ratio, which is defined as the ratio of the odds of an event occurring in one group to the odds of it occurring in another group, or to a sample-based estimate of that ratio. If the probabilities of the event in each of the groups are *p* (first group) and *q* (second group), then the odds ratio is:

$$\frac{p/(1-p)}{q/(1-q)} = \frac{p(1-q)}{q(1-p)}.$$

An odds ratio of 1 indicates that the condition or event under study is equally likely in both groups. An odds ratio greater than 1 indicates that the condition or event is more likely in the first group. And an odds ratio less than 1 indicates that the condition or event is less likely in the first group. The odds ratio must be greater than or equal to zero. As the odds of the first group approaches zero, the odds ratio approaches zero. As the odds of the second group approaches zero, the odds ratio approaches positive infinity.

Logistic regression has been adopted in this study, partly because of its popularity among social researchers, and also because it enables the researcher / author to overcome many of the restrictive assumptions of OLS regression (Newton, 2000). For instance, logistic regression does not assume linearity of relationship between the independent variables and the dependent, does not require normally distributed variables, does not assume homoscedasticity, does not require that the independents be interval, and does not require that the independents be unbounded. Thus logistic regression was thought to be an appropriate analytical method for this study.

5.8   SUMMARY

This chapter outlines the research strategy and design. However, the process presented here is a summarised and simplified version of an elaborate and intricate undertaking, especially the household survey in a rural setting. The aim is to obtain results that respond to the objectives and which are representative enough to make inferences about the relevant population regarding the effect of inequality on migration in the Limpopo, South Africa. In order to ensure that the study is confined rigidly to facts and figures, statistical procedures for data collection preparation and processing have followed the recommendations of experts, such as Casley and Lury, (1981); Hair Jr. et al., (1998); Mukherjee *et al*, (1998) and Bohrnstedt and Knoke, (1994) among others. The chapter also describes the various methods used for data analysis and explains why such procedures were found suitable.

CHAPTER 6

CHARACTERISTICS AND IMPACT OF RURAL MIGRATION UNDER DIFFERENT ASSET DISTRIBUTION - A CASE STUDY OF LIMPOPO

6.1   INTRODUCTION

In Chapters 1 to 3, literature showed that some members of rural households migrate as a consequence of differential access to assets. Findings of some empirical studies, mainly conducted in Asia (Adger et al. 2001; Stark & Wang, 2000; Sampath, 1990) have lead researchers to conclude that some migrant-sending households and some individual migrants are influenced by the difference in asset distribution. This is not necessarily opposed to the more orthodox view of migration being a function of economic opportunity. After all, the existence of early discriminatory measures in South Africa aimed at, and having the effect of, extracting labour from the land cannot be denied (Low, 1986).

The objective of Chapter 6 is to empirically establish the characteristics of the survey areas in general, and the sample households, in particular from an asset ownership and migration perspective and the relationship between asset inequality and rural out-migration. The level of unequal asset distribution in the six sub-regions of the study area and the entire survey area is estimated to use the information used in Chapter 7 in the model to show that the existence of asset inequality impacts on migration. The first part of section 6.2 presents the findings of the descriptive analysis of the village and the household surveys undertaken in Limpopo. Twenty-four villages, which were surveyed, were clustered into six sub-regions and further into three regions. The infrastructure and natural resource base profiles of the villages are presented in a summary form in Appendix 5. Section 6.2 outlines the socio-economic characteristics while Section 6.3 briefly describes the infrastructure and environmental characteristics of the surveyed villages within which the migration process takes place. Both village and household characteristics are analysed in Sections 6.4 and in the second part of the chapter, they are related to asset size, structure and distribution as well as their effect on migration, in Sections 6.5 specific deterministic relationships

between assets and migration, the existence of asset inequality and its impact on migration are analysed.

Section 6.6 provides an in-depth analysis of rural out-migration in the surveyed areas and empirically assesses the characteristics of migrant-sending households, migrants and the consequences of migration on farm and family level as well as beyond the farm. The chapter ends with a summary in section 6.7

6.2   SOCIO-ECONOMIC CHARACTERISTICS OF THE SURVEY AREA

The total population of the villages surveyed is 83 955 people (in 1996), which is 1.7% of the total population in Limpopo. A detailed composition of the total population by villages according to the 1996 census is presented in Appendix 6. Out of 24 villages a sample of 585 households, totalling 4 332 persons, was surveyed, making up 5.2% of the total population of the villages surveyed. More than 94% were single ethnic households, mainly of the BaPedi (Northern MoSotho) ethnic group.

The surveyed villages can be classified as rural, isolated and remote with low levels of development and deprived of access to basic infrastructure (good roads, electricity and water). However, since 1994 most villages have been experiencing some improvement, which came about as part of the implementation of, first, the Reconstruction and Development Programme (RDP) and later the Growth, Employment and Redistribution Strategy (GEAR). These two programmes have been the principal instruments to realise the policy objectives of poverty alleviation and inequality redress in South Africa by addressing structural weaknesses inhibiting economic growth and empowerment.

On average each household occupies a stand of 100 to 200 square meters, plus a plot (field) in the arable area, averaging two to four morgen (1.6 – 3 ha) per household. Natural landscape guides the residents in classifying their vegetation; for instance, those villages that have a river passing through had a good reference point, with which they can divide their land for different uses, for example, sites, which are next to the river, are mostly reserved for crop cultivation, as they are relatively fertile with some deposits of humus, iron and ferrous rock sediments, and people can irrigate

during the dry season. Since most residents do not cultivate during winter, these areas are also used for grazing. Bushes which are far from the river contain perennial wood trees that dry-out and die during winter, and are used as construction poles and fuel wood.

6.3   INFRASTRUCTURE AND NATURAL RESOURCE BASE

The key finding from the infrastructure aspect of the survey is that a large number of households have not yet attained adequate levels of basic services and facilities. Most households do not have access to ground water for irrigation purposes and only 22% of households have access to a borehole, which they can use for irrigating crops.

The information regarding rural infrastructure, basic services and environmental problems faced by the villages is summarised in Appendix 5. This information was obtained from village informants including, but not limited to, chiefs and their herdsmen, agricultural officers, teachers, health officers and other village spokespersons. Even though the information is qualitative, and to some extent subjective, it provides a good indication of the current access to basic infrastructure and services by the rural communities and the state of the natural resource base.

A common observation is that the villages in the surveyed area are not well endowed with natural resources. Each village spokesperson gave his or her view of the condition of the vegetation in the immediate area of the village and available facilities and services for the common good; their responses are summarised in Appendix 5.

6.4   HOUSEHOLD CHARACTERISTICS

By definition a private household may consist of one or several persons; a one-person household is a person living alone and catering for her or himself. A multi-person household contains two or more individuals (mainly relatives but also could be non-relatives), who live together and have common catering arrangements. Each household that participated in the survey was asked to provide information relating to age, sex, education and employment status. Educational characteristics were solicited

only from the resident members of the households. The head of individual households or their representatives reported on household asset endowments and cash incomes from various sources.

6.4.1 Demographic characteristics

Under normal circumstances, the demographic composition of a household influences its behaviour, livelihoods and its socio-economic characteristics. The structure of the surveyed households is discussed below. The following striking features are noted:

6.4.1.1 Age composition

Children form a sizeable proportion of the population in the communities, as indicated in Table 6.1 and Figure 6.1. Thirty-six percent of the surveyed population is below 15 years of age, while the 1996 census data reflect that 42.2% of the population in Limpopo is below that age. The proportion of children below 15 years does not differ much across the surveyed sub-regions and villages but Praktiseer sub-region has the highest proportion (43%) of the population below 15 years.
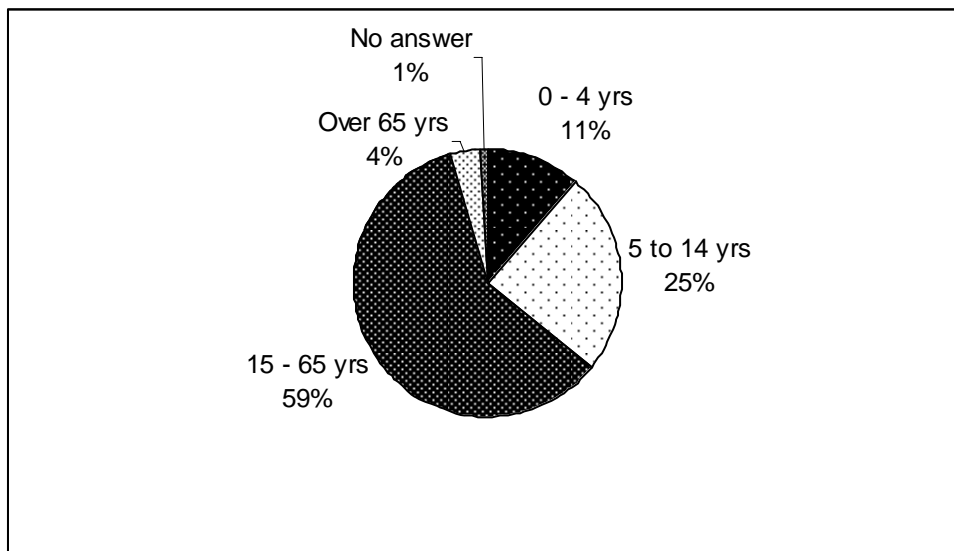
Figure 6.1:   Age composition of sample members

Table 6.1:   Distribution of household members by age and sub-regions

	Sub- Regions						
Age (yrs)	Bochum	Seshego	Schoonoord	Praktiseer	Zebediela	Western	Total
0 - 4	75 (10.8)	43 (9.9)	90 (12.2)	126 (13.8)	41 (10.1)	115 (10.0)	490 (11.3)
5-14	178 (25.7)	96 (22.2)	166 (22.5)	268 (29.3)	105 (25.8)	251 (21.9)	1065 (24.6)
15 - 65	407 (58.8)	253 (58.4)	451 (61.1)	499 (54.6)	242 (59.5)	733 (63.8)	2585 (59.7)
>65	31 (4.6)	16 (3.7)	27 (3.7)	16 (1.8)	6 (3.9)	47 (4.1)	152 (3.5)
No answer	1 (0.1)	25 (5.8)	4 (0.5)	5 (0.5)	3 (0.7)	2 (0.2)	40 (0.9)
Total	692 (100)	433 (100)	738 (100)	914 (100)	407 (100)	1148 (100)	4332

However, the economically active population (15 - 65 years) constitutes almost 60% of the sample population (including non-residents), the figure includes including school and college-going youths. The proportions of retired senior citizens ($\geq$ 65 years) in the sub-region are similar, with the exception of Praktiseer, whose retired senior citizen is less than the average 3.5%.

6.4.1.2 Gender

The male to female ratio is almost the same but there are slightly more females than males; 52.2% of the population surveyed are female while 47.8% are male. These results confirm the perceptions that there are more females in rural areas than males; this is true even when the non-resident members (migrants) in communities are considered. The 1996 and 2001 census results and the General Household Surveys 2002& 2003 for the villages surveyed reflect, on the average, an almost similar distribution (55% = female and 45% = male); this phenomenon is exacerbated by the rural out-migration.

The proportion of households with de jure female heads is as high as 26.5%, while 11% of the households have de facto female heads; males head the remaining 62.5% of the households (Figure 6.2). The type of head of household influences household behaviour and decisions with regard to migration; most likely the woman will either be looking after children or grand children and not able to move out of home easily. Gender also has a significant bearing on household asset endowment. The mean age of household heads is 60.3, male and female; this clearly points to the fact that

resident male households are elderly and probably retired from active productive life, while the younger males migrate from their places of birth. As a matter of fact, as we went around conducting the surveys we encountered more elderly men and women heading households with young children / grand children. In an African setup, the head of a household has a number of important responsibilities to fulfil. He or she has to make most of the important decisions that may affect the livelihood and welfare of the household and he or she has to co-ordinate the

household activities and provide leadership and guidance to the other members of the household. The ability of the household head to perform his or her duties is influenced by attributes such as gender, age, education, and in the case of women household heads, marital status. De facto female heads suffer from lack of allocative authority, especially when it comes to decisions regarding household assets such as land and livestock, which are normally owned by males. When de facto female heads were asked to indicate who makes decisions, for instance, regarding asset disposal, taking a new loan or changing the pattern of household spending, women gave different responses. In the case of taking a new loan, the responses were: decisions are made jointly, (26 per cent), mainly the man makes the decision (24 per cent) or mainly the woman but also men (7.6 per cent)
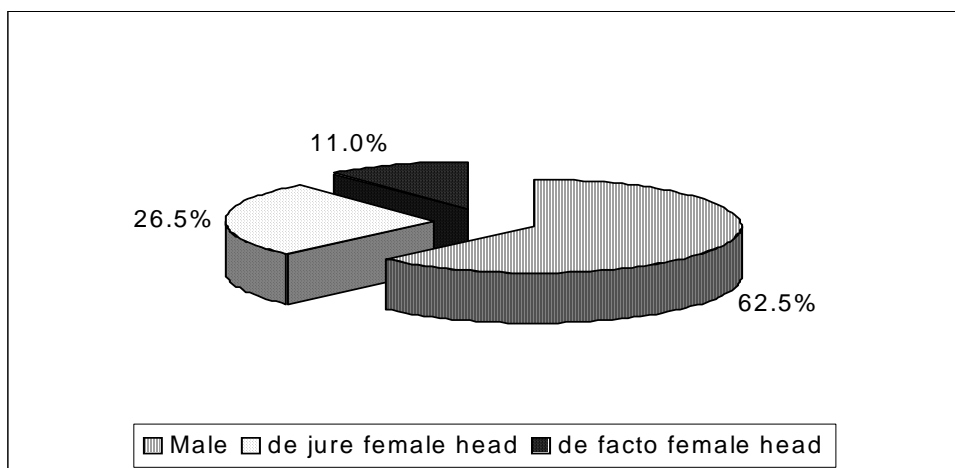
Figure 6.2:   Gender of household head

Among the *de facto* female heads of households, 37.1% had never gone to school, 41.5% had primary education, 13.8% had secondary education and only 3.5% had either diploma or degree level of education. In comparison, among the male heads of

household, 18.7% had no education, 45.5% had primary education, 24.3% had secondary education and 4.2% had education higher than secondary level. These results are consistent with expectations, that men in the rural areas have had a better change to go to school than women. Overall, the majority (53.8%) of resident household members attained a secondary school education, only 3.1% of the members went beyond that level. The difference in the level of education between men and women is statistically significant especially secondary level education and at the beginning, those who have not gone to school at all. The problem of dropping out of school for girls (after falling pregnant, etc) is quite serious.

6.4.1.3 Marital status

The proportion of the people who are either married or living together with their partners is smaller than anticipated; only 21% of the household members interviewed were in some form of marriage or communion. It is probable that some of the couples living together did not like to reveal that kind of relationship. The marital status of household members who are 15 years old or older is summarised in Table 6.2

Table 6.2:   **Marital status of household members**

|	Male		Female		Total	
Marital Status	Number	%	Number	%	Number	%
Children < 15	836	40.4	826	36.5	1662	38.4
Single	758	36.6	788	34.8	1546	35.7
Civil marriage	205	9.9	206	9.1	411	9.5
Customary marriage	166	8	161	7.1	327	7.5
Divorced/Separated	4	0.2	17	0.8	21	0.5
Widowed not married	14	0.7	18	0.8	32	0.7
Living together	9	0.4	162	7.2	171	3.9
In process to marry	61	2.9	65	2.9	126	3.0
Civil and customary*	3	0.1	3	0.1	6	0.1
No answer	14	0.7	16	0.7	30	0.7
Total	2 070	100	2 262	100	4 332	100

6.4.1.4 Vocational status

According to the DBSA (2000:193), unemployment is fairly high in the communities surveyed. While the 1996 census estimated about 5.7% of the population in the villages to be formally employed, our household survey results show that only 3.9% of household members hold a position in the formal sector. Among the resident members, the percentage of household members who are not gainfully employed (including housewives, pensionable–retired people, disabled persons and children) is as high as 85.4%. The main sectors of economic activities for the surveyed population are indicated in Figure 6.3, with tertiary or service sector as the leading sector. Agriculture takes third position after the industrial sector. However, the agricultural sector in South Africa is strongly linked to the industrial sector and other sectors. The main vocational status of household members (excluding migrants) is summarised in Table 6.3 and Figure 6.3.

Table 6.3:   **Main vocational Status of household members (mainly residents)**

Vocational Status	Freq. (n = 3 467)	%
Baby pre-school or crèche	478	13.2
Scholar or student	1 295	35.7
Retired – not working	228	6.3
Disabled not seeking work	46	1.3
Housewife unpaid work	234	6.4
Unemployed seeking work	723	19.9
Unemployed not seeking work	72	2
Employed – mainly informal	82	2.3
Employed – formal	141	3.9
Self-employed - formal sector	8	0.2
Self-employed - informal sector	129	3.6
Unemployed – self-employed	2	0.1
Employed formal & self-employed	4	0.1
Retired and self-employed	3	0.1
No answer	22	0.6
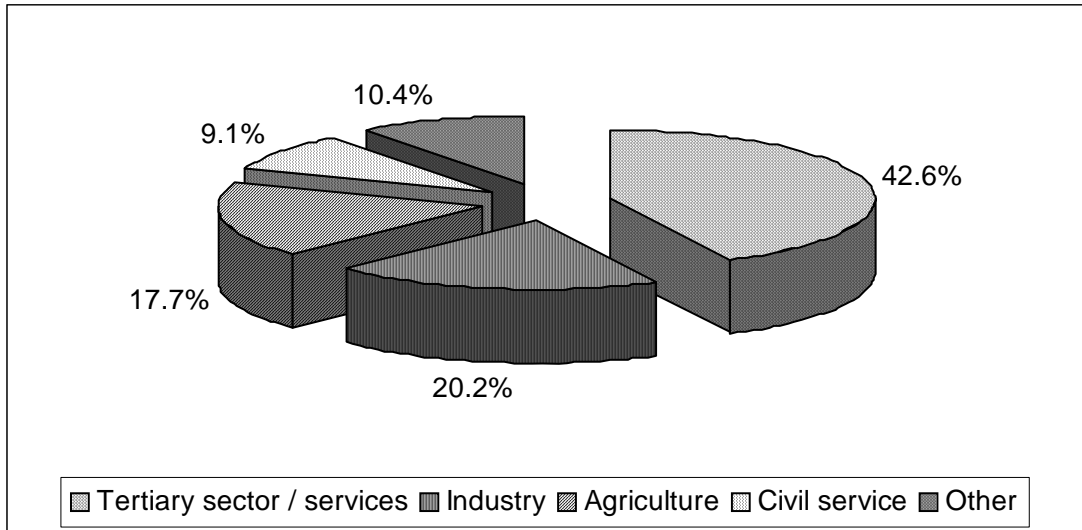
Figure 6.3:   **Sectors of economic activities for sample population**

Source: Survey results, 2000-1

6.4.1.5 Household size

The average household size is 7.4 members (std.= 3.02) but differs across income groups and villages. The average household size for the poorest 25% of the households is much higher (9.0 members) compared to the overall average. Among the six sub-regions, Zebediela has the highest average household size (8.1 people). The number of children in a household for 573 sample households ranges from 0 (no children) to 9 children, with an average of 2.85 children and a standard deviation of 1.92.

For purposes of model specification (in Chapter 4), the household size has been adjusted to the adult equivalent (AE) [17] to distinguish dependent members of the household from members who are gainfully employed or potential earners. Table 6.4 indicates the mean adult equivalent size for households by regions. The mean household size for the entire sample (573 households) is about five AE members. The lowest size is 1.0 AE member and the highest is 10.8 AE members, while the median is 5.0 AE members. Using the AE size of the households, the means of the six sub-regions are compared in Table 6.5.

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[17]   *According to Chayanov (1986), AE male = 0.8 AE female = 0.6 AE child.*

Table 6.4   **Average household size by income group**

Income group of Household**	Average household size (number of people)	CAR*	Average number of Migrants
Poorest 25% of hh	9.0	0.9	1.0
2nd poorest group	7.8	0.8	1.0
2nd richest group	7.1	0.6	1.2
Richest 25% of hh	5.9	0.5	0.9
Overall	7.4	0.7	1.0

Source: Survey results, 2000
*CAR = Child Adult Ratio
**Income quartiles of households were set using the income per AE

Table 6.5:   **Average household size by subregions**

Sub-regions	n	Average household size	AE Size	AE migrants in household
Bochum	93	7.5	4.9	0.7
Seshego	62	6.4	4.4	0.7
Schoonoord	84	7.5	5.1	1.3
Praktiseer	137	7.1	4.6	0.6
Zebediela	54	8.1	5.1	1.3
Western	143	7.5	5.5	1.3

Table 6.4 and 6.5 shows that a typical sample of household in the areas surveyed has about five AE members. However, in three of the sub-regions (49% of the survey area), household sizes are bigger than 5.0 AE. Seshego records the lowest mean household size of about 4 AE members, while Western has the highest mean household size of 5.5 AE members. Zebediela, which has the highest mean household size in terms of the numbers of household members (8 members), has an AE of 5 members; at the same time it has the lowest child: adult ratio (0.6); [this may imply a high proportion of females in that community since the computation of AE considers female AE to be 0.8 of male AE.

The implications of the results in Table 6.5 could be that the (relatively) bigger households (in AE size) are able to send out slightly more members as migrants than smaller families. However, the pattern of migration from the different income

quartiles is not quite distinct; the second relatively richer group of households seems to be able to afford to send out more migrants while the (relatively) richest quartile is sending less; this may be because they have other lucrative businesses to take care of at home. The AE size of household seems to correlate positively to the AE migration in the household so that the sub-regions that have bigger AE size households are sending out a higher number of AE migrants.

In terms of income the results are consistence with what is normally observed in society, that the poorest strata (25%) of society, in this case of the households, have the highest child adult ratio and larger family sizes compared to the richest 25% of the households.

6.5   ASSET DISTRIBUTION

6.5.1   Land-holdings

In most African rural villages, land is considered to be the most important asset for a household. In recognition of the critical role land plays in agricultural production and in income distribution in the rural areas, South Africa is currently pursuing land redistribution programme to promote equity in land ownership. In this section, land-holding is assessed together with the other agricultural assets. However, due to the nature of the land tenure system in the survey area, it is only possible to determine the size of the plots of arable land allocated to individual households. It was not possible to estimate and evaluate the area of grazing land which is communally owned in the rural areas of the Limpopo Province. Regardless of the size of the herd of livestock that the household have, their animals graze communally with the rest of the livestock in the village.

The survey results confirm that only 320 (55.8%) of the households (out of 573) surveyed own or occupy[19] a piece of arable farmland, which include a kitchen garden and/or main field plot. Among the landed households, 17 households own less than 0.05 hectare, which is very small even for a kitchen garden. Another six households own plots bigger than 0.05 hectare, but smaller than 0.5 ha. These two categories of households (totalling 23 households) have the least landholding. Table 6.5 presents a summary of all land categories for individual households of the study sample. For conveniences sake they are categorised according to a 2 hectare range, except for case below one hectare. The average plot size is 2.4 hectare per household, with a median size of 1.66 hectare and the maximum reported land size of 10 hectare.

The proportion of landless households, amounting to 44.1% (253 households), is quite substantial. When the households cultivating less than 500 m2 (0.05 hectare) are also considered to be landless, then the figures for landless households rise (253+17) to 270 (47.1%) and the number of land-owning households decreases from 320 (55.8%) to only 306 households (52.9%). Of the 320 landed households, 50.6% (162 households, i.e. categories 1 to 4) own less than two hectares of land; these small plots are commonly referred to as kitchen gardens. Among 51 of households, these gardens are located within the perimeters of their homestead and occupy only a few square meters.

Apart from the kitchen gardens, most households only have one main field where staple food crops are grown. Only 17% of the landed households have access to a second field. Land remains the most constraining resource facing households in Limpopo, and indeed, in most of the rural areas in South Africa.

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[19]   *Although the concept of "own" and "ownership" is used in this study there are no cases where households have freehold tenure. All land is tribal land and households have usufruct rights, usually granted by "Permission to Occupy" by the traditional leader. Ownership in the context of this study therefore refers to occupation of tribal land.*

Table 6.6: **Land categories 1 to 8 for all households (N=573)**

Land category in Hectares	Frequency	% Hh
No land	253	44.1
<0.05	17	3.0
1) 0 to <0.05	270	47.1
2) 0.05<=land<0.5	6	1.0
3) 0.5<=land<1	56	9.9
4) 1<=land<2	83	14.5
5) 2<=land<4	107	18.8
6) 4<=land<6	36	6.3
7) 6<=land<8	9	1.6
8) 8<=land	6	1.0
Mean: 2.43		
Std Deviation: 2.399		
Total	573	100.0

Source: Survey results, 2000

In the absence of a land market, changes in land-holdings are not very common. This is particularly true in the rural areas of South Africa, and indeed, most of rural Sub-Saharan Africa, where land is communally owned. Under these circumstances, land size can only be used as a proxy to examine people with a particular set of asset distribution and their behaviour regarding migration. Out of the total 295 households with migrants, 35.6% have no arable land and 5.8% own less than 0.05 hectare, which makes them functionally landless. The two categories of landless and near landless households, together, make up 41.4% of migrant households; most of them are located in the Southern Region. It is also interesting to note that over half of the households with land are spread almost evenly over the land categories ranging from 0.5 hectare to 4 hectare.

The economic differences between the households with access to arable land and those without land are summarised in Table 6.7. The main features of Table 6.7 are that the mean household income per annum for the landed households is higher (R24 662) than for the landless (R20 369) but the mean total (cash + kind) remittances per household (R16 481) and per person (R2 603) is higher among the landless households than among the landed households and individuals (R14 144 and R1 814), respectively. This implies that the landless households receive a relatively high proportion of migrant contributions in kind, such as food, and in cash. The mean

household in kind remittances among the landless is R 3 831 while for the landed it is only R2 470; it is easier for households with land to grow the food items they need. The mean remittance per capita is also higher among the households without land than among landed households.

Table 6.7:   Characteristics of households with and without access to land

	Households with land (N = 320)	Households without land (N = 253)
Mean household income per annum	R24 662	R20 369
Mean income per person per annum	R3 048	R3 146
Mean household size	7.6	7.1
Mean number of migrants	2.0	1.8
Mean households cash remittances	11 674	12 650
Mean household in kind remittances	2 470	3 831
Mean household total remittances	14 144	16 481
Mean (total) remittance per person	R1 814	R2 603

Source: Survey results, 2000

This could mean that the migrants from landless households go out for search of work to compensate for lack of livelihood from the farm. It may also mean that there is higher propensity to migrate fro work among the landless and little-landed households than among the landed. This is a good sign because it means that the landless has something to fall back to for livelihood. Lower remittances for landed households could also imply that the migrants from these households may have migrated for reasons other than work, such as going to better schools away from the rural areas were the family lives.

6.5.1.1 Regional and sub-regional land distribution

There are regional and sub-regional differences regarding land distribution as shown in Tables 6.8 and 6.9. The differences are more pronounced in Central and Southern regions, with acute extremes of no land at all for the majority of the households and relatively large plots of land for very few households.

Table 6.8:   Land categories (ha) for households by Regions

Region	Land Categories (in ha) and percentage owning									
	No land	<0.05	0.05-0.5	0.5-1	1-2	2-4	4-6	6-8	8<	Total
Central	43.2%	9%	3.9%	16.1%	5.2%	14.2%	2.6%	2.6%	3.2%	100.0%
Southern	61.5%	1.1%		6.2%	5.1%	14.8%	9.5%	1.5%	.4%	100.0%
Western	11.9%	0%		9.8%	42.7%	30.8%	4.2%	.7%		100.0%
Mean						2.43 ha				
Std. Dev.						2.4				

Source: Survey results, 2000

By disaggregating the households further to the sub-regional level (Table 6.9), it is establish that the majority of households in Praktiseer (83.2%) and Zebediela (64.8%), both in the Southern Region, have no land at all; they are followed by Bochum (44.1%) and Seshego (41.9%) in the Central Region. If the near landless households, cultivating less than 0.05 hectares are considered with the landless, the resulting figures increase for Zebediela to 70.4%, Bochum to 53.8% and Seshego to 50%. This scenario demonstrates the seriousness of landlessness in rural Limpopo, especially in the Central and Southern regions. It is in these areas that there are serious push reasons to encourage some members of the households to migrate in search of alternative means of livelihood. On the other hand, in the Western sub-region nearly 90% of the households own farmland. It is also important to point out that land ownership in the Western region is more evenly distributed, with 73.5% of the landed households owning between two and four hectares.

Is it possible that households are landless because they have migrants? Not in the Lebowa context; families were removed from some other places and planted in the former homeland of Lebowa. They were arbitrarily allocated land, on the average each household occupies a stand of 100 to 200 meter squares. Over time some households have out-grown the original size of plots, as sons got married and were given their own small slices of the original plot. Fragmentation took over up to a point when it was no longer feasible to sub-divide the plots any more and overcrowding is a permanent feature in the former homeland.

Table 6.9:   **Land categories by six sub-regions (count and percent)**

Land Category (in hectares)	Subregions						Total
	Bochum	Seshego	Schoonoord	Praktiseer	Zebediela	Western	
0	41	26	20	114	35	17	253
(%)	(44.1)	(41.9)	(23.8)	(83.2)	(64.8)	(11.9)	(44.2)
0 to 0.05	9	5	0	0	3	0	17
(%)	(9.7)	(8.1)	(0.0)	(0.0)	(5.6)	(0.0)	(3.0)
0.05 to 0.5	6						6
(%)	(6.5)						(1.0)
0.5 to 1	11	14	3	3	11	14	56
(%)	(11.8)	(22.6)	(3.6)	(2.2)	(20.4)	(9.8)	(9.8)
1 to 2	3	5	7	3	4	61	83
(%)	(3.2)	8.1%	(8.3)	(2.2)	(7.4)	(42.7)	(14.5)
2 to 4	13	9	26	14	1	44	107
(%)	(14.0)	(14.5)	(31.0)	(10.2)	(1.9)	(30.8)	(18.7)
4 to 6	3	1	24	2		6	36
(%)	(3.2)	(1.6)	(28.6)	(1.5)		(4.2)	(6.3)
6 to 8	2	2	4	0	0	1	9
(%)	(2.2)	(3.2)	(4.8)	(0.0)	(0.0)	(0.7)	(1.6)
Over 8	5	0	0	1	0	0	6
(%)	(5.4)	(0.0)	(0.0)	(1.37)	(0.0)	(0.0)	(1.0)
Total	**93**	**62**	**84**	**137**	**54**	**143**	**573**

Source: Computed from data set

Of 155 households surveyed in the Central region (i.e., Bochum and Seshego), 67 households (43.2%) are landless, while 29% of the households own less than a hectare of land. Ironically, it is in this region where five of the six households that own over eight hectares of land live; five are in the Bochum sub-region. This is a clear indication of the inequality of land distribution in the Central region. Similarly, the majority of households (61.5%) in the Southern Region (Schoonord, Practisseer & Zebediela) are landless, while one household, in the Praktiseer sub-region, stands out, with over eight hectares. The Western region has a high proportion of households with land. Only 11.9% of the households in this region are landless and all the landed households own more than 0.5 hectare. Figure 6.1.5 shows the proportion of landed to landless by the regions.

6.5.1.2 Land-holding and migration

Out of the total of 270 (Table 6.9) landless plus near landless households (with up to 0.05 hectare), over 45% (122 households) have migrants; this also constitutes 41.4%

of all the households with migrants. The remaining 58.6% of the households with migrants have access to arable land. However, there is no specific pattern of distribution of households with migrants to the different land categories. There is a higher proportion of landlessness (61.5%) and near landless (1.1 per cent) of the households with migrants in the Southern Region compared to the other two regions (43.2% in Central and 1.1% and for Western regions only 11.9 per cent who are landless.

Another interesting observation from Tables 6.9 and 6.10 is that among the landless households and those with less than 0.05 hectare of land, in the Southern and Central regions where the land problem is more acute, 45.3% and 38.2% respectively of the landless and near landless people migrated, whereas from the Western region, 76.5% of the landless people migrated. This could be interpreted in two ways, either the prospective migrants in Western region have access to more information than in the other two regions or the landless households in this region can better afford the costs of migration than those in the other two regions. People may be lacking information, contacts or financial means to facilitate migration in the deep rural areas of the Southern and Central regions. Also the Western region is closer to town, Polokwane, than the other two regions.

It can be deduced that the 122 landless and near landless households have resorted to migration as an alternative for survival in the absence of agricultural production and other means of livelihood. Even though the remaining number of migrants is almost evenly spread between the households of different land categories, the rate of migration is highest among households with between one and two hectares of land than the other land categories, (except for the special category of landless and near landless (122 households with migrants) were most of them have opted to migrate.

Another interesting fact is that 62% of all migrants in the sample originated from households with access to some arable land. The region contributing most to this statistic are the villages in the Zebediela region, which is the region with the lowest arable land size per person of 0.17 hectares. This implies a high propensity to migrate from this area due to lack of adequate local resourced to make a living. What is puzzling however, is the high number of migrants from Schoonoord despite the fact

that it is the region of villages which recorded the highest mean land size per household and second highest land per person figures. This area is known for its extremely risky and variable agricultural conditions, which probably contribute to an increased dependence on migration income. The confirmatory analysis for correlation between landholding and migration is discussed in Chapter 7 sections 7.2.2 and 7.3.4.

Table 6.10: **Households with migrants by land category and by surveyed regions**

Item	Regions			Total
	Central	Southern	Western	
Total Hh WITH migrants	63 (40.6% of n Central)	139 (50.5% of n Southern)	93 (65.% of n Western)	295 (51.5% of N)
Households with migrants and no land	17	75	13	105
Households. with migrants and some land: <0.05[20]	14	3	0	17
0.05 to 0.5 ha	1 (3.1%)	0	0	1 (0.6%)
0.5 to 1 ha	14 (43.8%)	11 (18.0%)	10 (12.5%)	35 (20.2%)
1 to 2 ha	5 (15.6%)	9 (14.8%)	34 (42.5%)	48 (27.8%)
2 to 4 ha	7 (21.9%)	26 (42.62%)	32 (40.0%)	65 (37.6%)
4 to 6 ha	1 (3.1%)	13 (21.3%)	4 (5.0%)	18 (10.4%)
6 to 8 ha	2 (6.25%)	1 (1.64%)	0	3 (1.7%)
> 8 ha	2 (6.25%)	1 (1.64%)	0	3 (1.7%)
Total (number of Households with migrant and land ≥0.05ha)	32 (20.6%)	78 (28.4%)	13 (9.1%)	173 (100%)

Source: Research data-set, 2000
Figures in parentheses show percentage of households with migrants in each land category.

6.5.2 Livestock ownership

In most African rural communities, livestock is considered an important asset for several reasons (Sibisi, 1980). Traditionally, livestock in general and cattle in particular, are seen as a store of wealth and a sign of prosperity; they also have an important role in cultural and social customs, such as payment of bride price and for

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[20] *This land category is also considered to be for landless or near landless households, but is composed of 253 households who have no land at all [44.2% of total sample population including non-migrant households, plus 17 households (3.0%), who own some land <0.05 ha, making that category to be as big as 270 households (47.2% of the sample population].*

slaughter at special ceremonies. Most families keep a small number of livestock, especially small stock (goats, sheep, pigs and poultry) for social or cultural motivations rather than for economic or business reasons. According to Sibisi (1980), owners of large quantities of livestock in general and cattle in particular form the core of the African aristocrats and the well-to-do families. Usually, they are a small proportion of the community and stand out for their wealth. Households who rear livestock as a business consider it an insurance economic activity, especially in the drier areas were most crops do not do well. Moreover, the income-poor households in the rural areas prefer to keep small stock rather than large stock as a means of enhancing their liquidity and divisibility.

Small stock subsistence farming (goats, sheep, pigs and poultry) is considered ideal in a province prone to drought like Limpopo, which also suffers from inadequate water supply (The Limpopo Province Integrated Rural Development Framework, 2000). A higher proportion of households (60.6%) keep small stock than large stock (39.4%). This is characteristic of the income-poor households, which have productive assets structured towards liquidity and divisibility to allow easy and fast access for emergencies. Pigs are the least popular type of small stock; this could be because most people cannot keep them due to their religious affiliations[21]. Table 6.11 presents the different types of livestock owned and the proportion of the surveyed households owning them; needless to say, Limpopo is not well endowed with big livestock such as cattle. Owing to small numbers of livestock per region, and even smaller per sub-region, it was not statistically feasible to disaggregate ownership for the different areas.

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[21]*Zionist Christian and Apostolic churches do not allow their followers to handle pigs.*

Table 6.11:   Livestock ownership

Type of stock	Number (and %) of 573 households	Mean herd size	Maximum	Std. Deviation
Calves	64 (11)	5.6	33	5.5
Heifers	13 (2.2)	2.7	10	2.4
Cows (>3yrs)	74 (12.6)	18.2	150	24.6
Oxen (>3 yrs)	16 (2.3)	4.7	12	3.7
Bulls (>3 yrs)	44 (7.5)	3.6	12	2.9
Donkeys	31 (5.3)	4.9	21	4.5
Goats	133 (22.7)	9.8	30	6.7
Sheep	27 (4.6)	12.7	42	10.2
Pigs	10 (1.7)	2.8	11	3.0
Chickens	148 (25.3)	18.2	1000	81.8
Other*	37 (6.3)			

Source: Survey results, 2000
*Includes: geese, chicks, doves, dogs and cats

6.5.3   Farm assets other than land and livestock

Differences in agricultural production are not only affected by land and livestock endowments but also by other farm (and even non-farm) assets (some of which are shown in Table 6.12). McKinley (1993), in his study of the China's agrarian transformation, concludes that the ownership of fixed productive assets, such as machinery, may have a significant effect on the level of household income.

Table 6.12:   Ownership and value of farm assets other than land and livestock

Farm Asset	Number (and %) of households owning (n=573)	Mean value* Rand	Std
Motor vehicle/bakkies	17 (2.9)	21 666.0	14 969.8
Tractor	23 (3.9)	29 195.0	20 310.2
Trailer/cart	27 (4.6)	662.5	287.9
Shop/workshop	2 (0.3)	90 666.0	65 736.8
Plough	21 (3.6)	868.0	1568.6
Ridger	5 (0.9)	380.0	192.4
Harrower	7 (1.2)	885.1	1381.3
Generator	3 (0.5)	15899.0	19 941.1
Other	113 (19.7)	49.7	135.1

Source: Survey results, 2000
* Mean value calculated for households owning a particular asset

The striking feature of the ownership of agricultural assets (in Table 6.11) is that very few households own these assets, the highest proportion is 4.6% of households, who own farm trailers or carts. This clearly shows that the majority of the rural households are asset poor; the mean value of total farm assets per household is only R2 275 with a high Standard Deviation of 13 566.8. Farm assets are unequally distributed; almost all the farm assets belong to 10% of the households. This is not surprising, given the fact almost 50% of the households own very little or no agricultural land and do not carry out any agricultural economic activities as a source of livelihood.

6.5.4 Non–farm assets

Dwellings or homesteads in the rural areas are not easy to valuate given the nature of tenure arrangements in the villages. Nevertheless, the results obtained from the survey, which are considered to be reasonably consistent, are summarised in Appendix 8, which presents the overall picture of the adult equivalent ownership of asset base. The figures therein exhibit unequal distribution of assets among the farming households of the surveyed areas and probably of all of rural Limpopo. Appendix 8 also provides good comparison of the importance of the different sources of income (in adult equivalent) for different percentile groups. For the poorest 25 % of the sample population, the adult equivalent income excluding remittances is only R51, while it is R1316 when remittances are included. The values of household assets (such as furniture and appliances) and the household dwellings are included to determine the value of the total assets the households own and the household wealth, but they are not analysed in any detail beyond that.

About 94% (537 households) of the surveyed households own some form of non-farm assets (or assets inside the house). This is the highest proportion of asset owners out of all the asset categories, indicating that many more households own non-farm assets for house use than farm assets for farm use.

The overall picture of the value of movable household assets (farm, livestock and house assets) characterises the survey area as one with very few "relatively well-to-do" households and a majority of poor households. The results show that 80% of the

households own less than R20 000 worth of assets. The ten richest households (1.8% of the survey sample) own 27.2% of the total value of movable household assets (farm, house and livestock), while the poorest 50% of households own less than a percent of the total asset base, emphasising inequality in asset distribution. Combining the values for land, dwellings and livestock to estimate total wealth improves the situation slightly. The mean value of total assets (or wealth) is R56 588 per household or R9 010 per capita with 70% of the households with a total wealth holding of less than R64 000. It seems from these estimates that total wealth ownership is more equal than the movable assets of the households.

6.5.5   Household income

In order to complete the picture of the economic standing of the households this section presents the various income sources of the areas and the households surveyed. The main household sources of income are local salaries and wages, pensions, farm income and remittances; each source is discussed. Appendix 9 provides a summary of sources of household income and their distribution

According to Eastwood et al, (2006), most households in the study areas rely, to a great extent on just one of the three main income sources, namely, local salaries and wages, remittances or pension, which they term 'a three way split of income source specialisation of livelihood. The team, working with the same data on which this thesis is based, found out that while 32 per cent of household dependent solely on migrant remittances (in cash and in kind), 27 percent of households are dependent on pension and 39 per cent are dependent on income generated locally from either salaries and wages or from the sale of farm produce. Similarly, the results of this study indicate that for each region and sub region there is a dominant source of income; for example, 54.6 per cent of households in Western region receive agricultural income of varying amounts, while in the Central region about 15 per cent of the household receive income from pension.   However, household income is reasonably diversified.

6.5.5.1 Salaries and Wages

Almost half, (48.3%) of the households, receive a contribution from resident household members who earn a salary or wage. Many of these commuting residents work in the mines or farms located close to the different villages. The mean contribution received by individual recipient households is R17 227 (Std Deviation = 31 607.54) per annum. There are a number of respondents who reported annual salaries of R336 000, which is partly responsible for the high standard deviation. In 71% of the households, only one member of the household made cash contributions to the household[22]..

6.5.5.2 Pensions

Contributions to the household income also come from resident pensioners. There are 217 (37.9%) households that receive contributions from the pensioners who, in most cases, get a monthly pension amount of R550 (in 1999). The average annual contribution of pensions per household (in 1999) was R7 701 with a standard deviation of 336.95. Moreover, 13% of the households received contributions from both wage earnings and pensions. Taking the two sources of income flows into consideration, 73% of the households received a contribution from either a resident wage earner or a pensioner amounting to an annual average of R15 324. This equates to an average of R203.50 per person per month or roughly $100 (purchasing parity dollars) per person per month ($3/day). This presents only cash contributions to the households from wages and pensions and excludes other non-cash incomes such as own consumption of agricultural produce and those proportions of the wage or pension income that were not added to the household's income pool.

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[22] *The survey also shows that 62 households (22%) receive contributions from 2 wage earning household members while 12 households had 3 contributing members, 2 households have 4 and one household is privileged to have 5 members contributing part of their cash income to the household.*

6.5.5.3 Farm income (agricultural produce sales and other farm sources)

Besides the contribution from the resident pensioners and wage employees, the households also earn income from other sources, such as selling agricultural and livestock produce and renting out equipment and accommodation. Income from agricultural activities is very limited as Table 6.13 clearly illustrates. Only 16.4% of households earn an income through the sales of crops and another 17.1% sold either live animals or animal products. However, an additional 34.2% of the households produced food crops for subsistence purposes. This again confirms the limited contribution of agriculture to the cash income of these households; this is not surprising given the harsh circumstances and poor support services under which rural smallholders try to farm. However, one would expect that household income would be supplemented by own consumption of staple foods, as is usually the case in smallholder farming.

Table 6.13:   Farm-based sources of household income

Source	% of households	Minimum contribution	Maximum contribution	Mean income/year/hh#	Std Dev
	(n = 573)	R	R		
Crop sales	16.10%	100	15 000	R930	1706
Renting out oxen, plough and equipment	2.80%	200	7 000	R3 418	1 995.4
Sale of manure or compost	0.70%	104	240	R146	63.1
Sale of livestock	16.10%	80	24 000	R3 454	4 446.7
Sale of livestock products	0.70%	60	500	R290	197.7
Subsistence production	33.60%	0	2 570	R 532	363.7
Overall from farm	38.50%	107	30 476	R2 621	4 277.6

Source: Survey results, 2000
Mean of those households earning income from the source.

It is surprising that the survey findings indicate that almost 57.2% of the households interviewed in the 24 villages did not grow any crops, including staple crops such as maize. Only five (0.8%) households indicated that they had grown enough food staple crops with a surplus for sale. Some 42% of households managed to grow food crops to satisfy only part of their household staple food needs ranging from more than half

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to very little. This implies dependency on external sources for food and household food security. In their findings in a rural household food security study in some selected districts of Limpopo, Mekuria and Moletsane (1996) conclude that food security in that province is highly dependent on salaries, wages, pensions and remittances.

6.5.5.4 Remittances from migrant members [23]

Another very important source of household income is remittances from non-resident migrant members of the households. More details on household remittances and their relationship with inequality are discussed Chapter 8 but, for purposes of presenting a complete household income structure, it is necessary to include the income contributed by the migrant household members to the total household income. Remittances, both in cash and in kind, make a difference to the total household income.

A total of 295 households (51.5%) reported to have migrant members older than 15 years; 27.2% of the households had one migrant each, while 24.3% had two or more migrants contributing on average R7 389 in cash per year. Many of the migrant workers also brought home goods ranging from R74 to as much as R26 000 per annum. Taking the in-kind contribution into consideration, total migrant remittances are, on average, valued at R14 342 per annum per household. The cash contribution ranges from R200 to R73 600 per annum. These are quite substantial amounts, especially to households who have little or no income from other sources. There are 278 (48.5%) of the households who do not have any migrants. A summary of the migrants' contribution to the household income is presented in Table 6.14.

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[23] *In 12 households several attempts to interview the migrants failed, thus those 12 households were dropped out of the sample. For consistency the sample size (n) was reduced from 585 to 573 households for whom most usable income data from all sources were recorded.*

Table 6. 14   Migrants' contributions to household income (N=573)

# of households with income contribution from migrants	295 (51.4% of N)
Mean cash contribution (annual)	R7 389
# of households with one migrant worker	156 (27.2% of N)
# of households with two migrant workers	70 (12.2% of N)
# of households with three migrant workers	43 (7.5% of N)
# of households with more than three migrant workers	26 (4.6% of N)
Value of goods brought home by migrant workers (annual)	R74 – R26 000
Mean total migrant remittances (including 'in-kind' contributions) annually	R14 156
Mean per capita total remittances (annual)	R2 125
Range of mean per capita total remittances	R38 – R19 730
% of hh which receive > R800 per resident per annum	25%
% of hh which receive > R2600 per resident per annum	75%
Standard Deviation of average per capita total remittances	2337.008

Source: Survey results, 2000

The overall average share of remittances in household income among households with migrants is 25.64%. The contribution of remittances to households income first increases with increasing land holdings, reaches a maximum (27.6%) at land holding between 2-4 hectares then starts to fall; it reaches a minimum of 3.4 per cent at the landholding of over 8 hectares; as indicated in Table 6.14. These findings strongly suggest an inverse U relationship for landed households between land per household and the remittance share in income as shown in Figure 6.4. Households with 0.5 - 4 hectare land-holding have the highest share of remittances in household income. Surprisingly, the 23 households who have the least land (less than 0.5 hectare, 17 households of whom own only up to 0.05hectare), also have low percentage share of remittances in household income (11%), probably received in kind rather than in cash remittances. It is possible that some of the landless households probably can not afford the cost of migration and depend mainly on pensions; consequently, they are among the very poor households with very little income.

The share of remittances in household income becomes lower at highest land holdings; it drops to a mere 3.4% for households with more than 8 hectares. At the same time, it is surprising that the households in the highest landholding bracket have the lowest share (1.25%) of agricultural income in household income, which implies that they are dependent on other income sources, most probably, salaries and wages

and or non farm enterprises. Table 6.15 shows that there is an inverse U relationship for landed households between land per household and remittance share in household income. no clear cut relationship between household land-holding and the share of remittances in the household income.

Table 6.15: **Distribution of land ownership and share of remittance in household income (N 320 = landed households)**

Land size category (ha)	# of Household in category (frequency)	Percentage in category (%)	Cumulative percentage (%)	Average land size in category (ha)	Share of remittances in household income (%)	Share of agric. income in household income (%)
< 0.5	23	7.19	7.19	0.17	11.0	0.60
0.5 to 1	49	17.5	24.69	0.83	25.60	6.58
1 to 2	83	25.94	50.63	1.58	25.44	11.09
2 to 4	107	33.44	84.07	2.82	27.64	7.55
4 to 6	36	11.25	95.32	4.32	14.12	3.54
6 to 8	9	2.81	98.13	6.28	14.81	10.40
> 8	6	1.87	100	9.97	3.4	1.25
Grand Total	320	100		average 2.24	25.64	

In value terms, the landless households in all the three regions receive higher remittances than the landed households. There are several ways of interpreting this finding:

- If landless people are among the poorer income levels, then remittances may smoothen out income inequality in the villages or areas where the recipients of remittances are located.

- If recipients of remittances will spend remittance cash on goods and services made with low unskilled wage earners and or labour intensive produced commodities, multiplier spending may further lower inequality within the communities where they are spent.

- Recipients of remittances may be able to invest some of the remittance income into some form of small business or utilise some of the in-kind remittances (such as sewing machine, baking oven, etc) generate more some income; this is another way of spreading the multiplier effect in the communities they are located in as
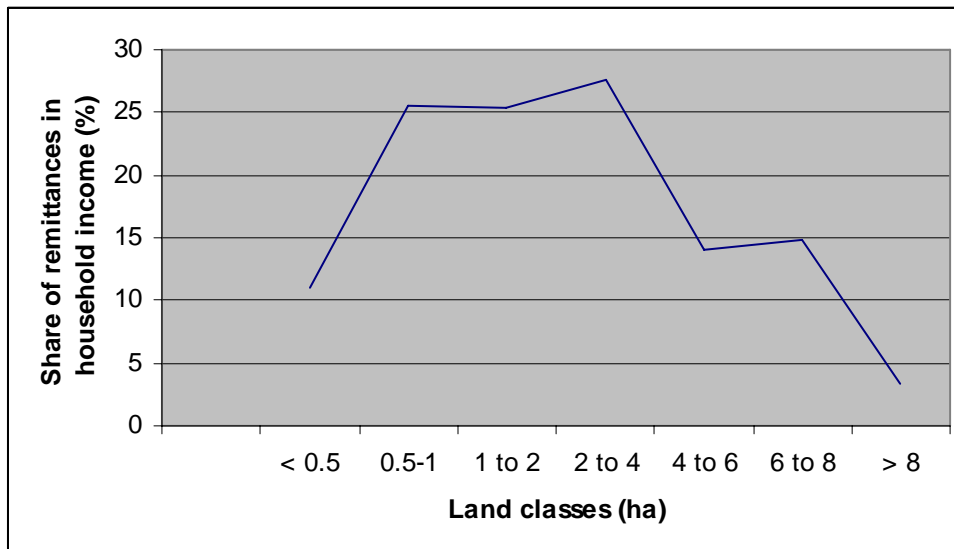
Source: Survey results, 2000

Figure 6.4:   **Share of remittances in household income and land per household**

they may be able to employ casual labour, for instance for sewing school uniforms.

- On the negative note, if recipients of remittances are too old, too young, too sickly or simply too lazy to use the remittance income productively, chances are that remittance income may lead to land abandonment, reducing the benefits to recipients.

- If remittances would lead to a reduction in rural inequality would that lead to more migration? Most likely yes; the good experiences by the recipients will be shared throughout the community. This may be associated with more able bodied persons leaving the community in search of opportunities away from home. Such actions may lead to depletion of agricultural labour in the rural areas. During the survey, a number of households had only elderly members taking care of grand children, the old and the sick. In such circumstances household choirs which need strong manpower (such as bush clearing, ploughing, etc) sometimes lag behind because of lack of appropriate manpower.

6.5.5.5 Total household income

The aggregate of all the sources of household income gives a picture of the total household income. Figure 6.5 and Tables 6.16 and 6.17 present a summary of the different sources of household income by sub-regions and for the entire surveyed area and their contributions to the total household income. On average, agriculture (including subsistence production) contributes a mere R3 322 to total household income while local wage and salary income amounts to a substantial average per annum of almost R17 289, which is by far the dominant source of income followed by the migrant remittances (cash and goods), which average R14 156 per annum. Pension is another very important source of income to 38% of the households. Figure 6.5 shows the percentage contribution by income sources.
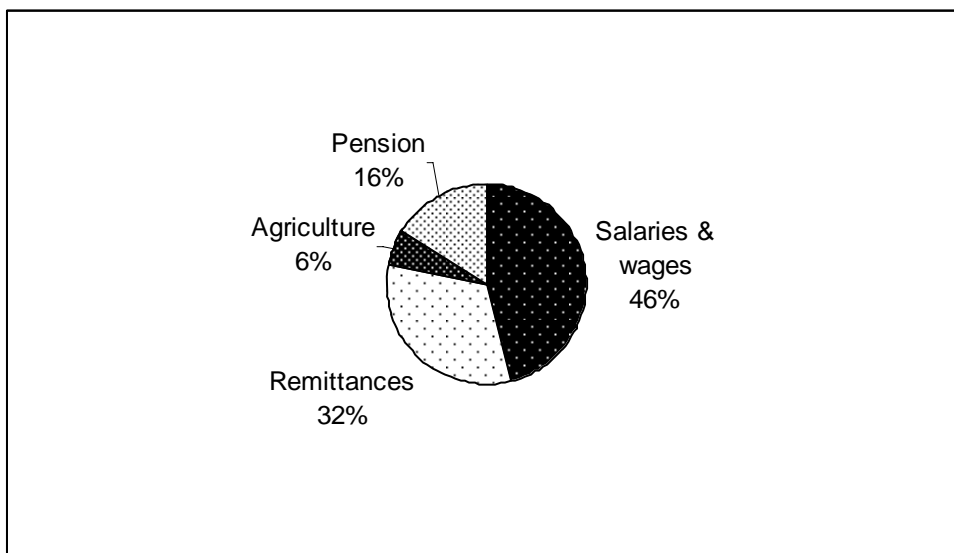
Figure 6. 5:   Contribution of different sources of income to total Household income

The disaggregated annual household income by the surveyed sub-regions shows the importance of the different sources of income in each sub-region. For all income sources, the highest percentage of households receiving income is in the Western sub-region. The sub-region includes Shongwane village, which was intensively surveyed for its economic activities because of the high prevalence of agriculture and other non-farming activities. On the basis of actual values of the different sources of household income, salaries and wages (R17 289 per annum), followed by remittances

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(R14 156 per annum), are the two main sources of household income. The highest remittance contribution (in Rand terms) is received in three sub-regions, namely, Praktiseer (R21 408 per annum), Schoonord (R19 092 per annum) and Western (R12 265 per annum). Praktiseer also has the highest proportion of landless households. Therefore, it is true that more migrants come from areas with either no land or those with small landholdings. This, however, does not necessarily mean that the area experiences less inequality than the other areas, unless the migrants are from the bottom deciles of the population.

Table 6. 16:   Annual household income in surveyed sub-regions

Income Averages	Sub-Region						Average for Sample population.
	Bochum	Praktiseer	Schoonoord	Seshego	Zebediela	Western	
Agricultural income	1,423	1,685	944	4,675	1,250	4,847	3,322
Value of subsistence income	-	410.06	449.81	611.98	271.91	575.09	532.66
Contributions by residents	15,870	17,078	21,745	17,432	19,463	16,343	17,289
Contributions by migrants	8,181	21,408	19,092	7,881	11,195	12,265	14,156
Pensions	7,887	7,294	7,897	7,777	8,539	7,448	7,701
Agric income per capita	176.61	299.09	133.57	283.93	125.00	759.52	487.54
Mean annual Household income	13,282	20,648	20,750	15,988	15,490	25,004	21,133
Household income per capita	1,769.81	2,265.24	2,193.93	2,288.82	1,401.74	2,590.16	2,203.06

Source: Calculated from survey data

Bochum has more households receiving pension income (19.8%) and salaries and wages (11.2%) than those receiving remittances (10.5%). The picture is made clearer by looking at the percentage of households in the different sub-regions receiving income from the different sources. A summary of the number and percentage of households receiving income from the different sources for the six sub- regions surveyed is presented in Table 6.17.

The figures in Table 6.17 imply that 24% of households in Zebediela and almost 20% in Seshego have no income at all (or did not report having any). The Western sub-region has the highest proportion (37.3%) of households receiving migrant cash remittances but the majority (54.6%) of the households in the Western region receive income from agricultural production followed by 23.3% of households in

Schoonoord. The other sub-region with a substantial proportion of households receiving remittances is Praktiseer (18.4%). Seshego has the lowest proportion (7.9%) of households receiving remittances. Another important observation is that a high proportion of households in the Central region, in Bochum and Seshego, depend on pensions. In each sub-region household income is diversified even though there is a dominant income source from which a significant number of the households their receive income.

Table 6. 17:   Households reporting income from source by sub-regions

Sources of income	Sub-Region						Total N=513
	Bochum (n=93)	Seshego (n=62)	Schoonoord (n=84)	Praktiseer (n=137)	Zebediela (n=54)	Western (n=143)	
Salaries & wages	31 (11.2%)	25 (9.0%)	29 (10.5%)	80 (28.9)	11 (4.0%)	101 (36.5%)	**277**
Cash remittances	24 (10.6)	18 (8.0%)	35 (15.5%)	42 (18.6%)	23 (10.2)	84 (37.2%)	**226**
Remittances in kind	22 (10.3%)	15 (7.0%)	32 (15.0%)	40 (18.8%)	22 (10.3%)	82 (10.3%)	**213**
Remittances (cash + goods)	**24 (10.5%)**	**18 (7.9%)**	**36 (15.8%)**	**42 (18.4%)**	**23 (10.1%)**	**85 (37.3%)**	**228**
Pension contributions	43 (19.8%)	22 (10.1%)	33 (15.2%)	39 (18.0%)	19 (8.8%)	61 (28.1%)	**217**
Agricultural income incl. subsistence	6 (2.6%)	17 (7.5%)	53 (23.3%)	25 (11.0%)	2 (0.9%)	124 (54.6%)	**227**
Total number of households reporting income*	78 (15.2)	50 (9.7%)	77 (15.0%)	126 (24.6%)	41 (8.0%)	141 (27.5%)	**513 (100%)**
% of total Hh. sampled	**83.9%**	**80.6%**	**91.7%**	**92.0%**	**75.9%**	**98.6%**	
% of total Hh. sampled without income	16.1%	19.4%	9%	8%	24.1%	1.4%	**10.5%**

Total count and percentages for sub-regions are against 513 total households, who reported having income. The percentages (in brackets) are against the total number of households in each sub-region.

6.6   EXTENT OF MIGRATION IN LIMPOPO

In order to identify migration, the household questionnaire asked the respondent, usually the head of the household, whether anybody in the household had migrated. Migrants were defined in a broad sense, as persons considered to be members of the household but not usually in residence; persons supporting the household who are in regular contact with it but who currently live, work and/or study away from home. This implies that migration, as defined, did not cover activities and income by commuters (but their activities are registered within the overall household income). In cases where the migrant(s) was not at home, the researchers went back to interview the migrant(s) at a later stage when he or she had returned. In twelve migrant households the migrants were not available to be interviewed even during revisits; these households are left out of the migration analysis. There were no significant

differences in the replies obtained from the head of the households and those from the migrants themselves (except on questions relating to the impact of remittances, as discussed later in Chapter 8).

6.6.1 Extent of migration by sub-regions and regions

Only 551 persons, nearly 13% of the total population covered in the survey, are migrants. A total of 295 households (51.5%) reported that they have non-residents members; the Western sub-region has the highest proportion of it households reporting migrants (65%) followed by Zebediela (61.1%). The proportion of households with migrants in the Bochum sub-region, which was initially thought to have higher incidences of migration than the other sub-regions, is only 40.9%, which is on the lower side. The distribution of migrants by the six sub regions and three regions is presented in Table 6.18.

Table 6.18: Households with migrant by sub-regions and regions

Sub-regions	Households without migrants: count & (%)	Households with migrants: count & (%)	n
Bochum	55 (59.1)	38 (40.9)	93
Seshego	37 (59.7)	25 (40.3)	62
Schoonoord	36 (42.9)	48 (57.1)	84
Prakttiseer	79 (57.7)	58 (42.3)	137
Zebediela	21 (38.9)	33 (61.1)	54
Western	50 (35.0)	93 (65.0)	143
Total	278 (48.5)	295 (51.5)	573
Regions			
Central	92 (59.4)	63 (40.6)	155
Southern	136 (49.5)	139 (50.5)	275
Western	50 (35.0)	93 (65.0)	143
Total	**278(48.5)**	**295 (51.5)**	**573**

In most villages, migrants were available at home and were interviewed during the first visit, which was around Christmas and shortly after New Year, 1999. A follow up visit was done at Easter time, 2000 to capture information from migrants. Still there were 12 households whose migrant members were not available even after a third visit. These were omitted from the analysis for this study. The number of migrants each household has is different, but over half (53%) of the migrant

households have one migrant member, while 38.3% of migrant households have two or three migrants.

6.6.2   Characteristics of migrants

Migrants in Limpopo have similar characteristics as described in the literature review (section 2.2.2.1): predominantly young men moving primarily to find jobs. However, push factors like unproductive land, scarcity of resources and education are also given as motivation for migration. The majority of non-residents move away from home in search of work. The first period of migration took place between the ages of 15 – 30; the mean age of first migration is 23.8 years and a mode of 20 years. Of the 286 migrants who indicated their age, 250 (87.4%) were in the 15 – 30 years age group, 3.1 per cent were below 15 years (mainly migrating for education purposes) and 9.4 per cent were above 30 years of age.

Since the survey did not obtain information on individual migrants, maximum and minimum education levels of the migrant households were compared (as a proxy for migrant education levels) to the sampled population. The results show that the majority (70.7%) of the households in the total sample attained secondary school but only 67.5% of the migrant households attained the same level. Almost a similar proportion (6.1% and 6.3% respectively) obtained diploma level education and 9.1% of the sample households and 10.4% of migrant households do not have formal education but had undergone practical skills training. These findings do not necessarily dispute the experiences from the literature, but imply that education attainment among the surveyed population is almost homogeneous, regardless of the presence or absence of migration in households.

6.6.3   Migration decisions

The heads of the households as well as the migrants themselves were asked to indicate the reasons for migration in addition to seeking for employment. The list included looking for better job opportunities, staying with a family member who has a job in

the city and some times work and education were combined; the reasons are summarised in Table 6.19.

Table 6.19:   Reasons for migration

Reasons for migration	
Reason	**% of non-residents**
Work	51.2%
Education	34.5%
Mix(work, education & other)	14.3%

In line with the new economics of labour migration (NELM, discussed in Chapter 3, section 3.5.3) the decision to migrate is in many cases made by the household for the benefit of the household rather than by and for the migrant(s) alone (Stark and Bloom, 1985; Singh et al. 1986; Stark, 1991). However, this does not imply that the migrant is forced to migrate; in most cases the migrant may take the lead in such decisions, especially if he or she is the head of the household.

The results from Limpopo survey indicate that the majority (63.4%) of non-residents make the decision to migrate; for the remaining 36.6% parents, husbands, wives or partners and other relatives influence the decision or they take the decision jointly.

6.6.3.1 Period of absence

During the period 1995 to 1999, the majority of the non-residents were involved in long-term migration. However, the percentage decreased from 92.0% in 1995 to 74.1% in 1999, with an average of 85.3% over the five years. This could mean that employers, such as the mine houses and commercial farms, have improved working conditions for the migrant workers to go home after shorter periods of time. It could also mean that more migrant workers are either self-employed or they are in the formal sector where employees take leave at least once a year. The second most common type of migration was school attendance, the percentage of which increased over the years from 1.6% in 1995 to 11.7% in 1999. The availability of better education opportunities in the towns and cities are likely to continue to attract young people from the rural areas. The third type of migration was the occasional activities

that do not occur each year. The percentage is more or less the same over the five-year period at 4.1%.

6.6.3.2 Affinity of migrant to households left behind

The migration pattern tends to be 'circular'. Most migrants (96.9%) maintain close links with the areas from which they migrated, intend to return and usually maintain their assets and rights to use assets, in line with the NELM theory. Three-quarters of migrants from Limpopo do not intend to settle permanently elsewhere other than home (the majority hoped to resettle in the village).[24]

Most migration movements involved activities throughout the year. The period of the most recent migration of non-residents was fairly long. The mean period of absence is 9.4 months, with a median and mode at 10 months and a maximum of 12 months. The majority (32.7%) of non-residents were away from home for between 10 - 11 months but the time period of 8 -10 months absence of non-residents was also common. Responses about periods of absence five years before 1999 were very weak since most indicated periods of 10 - 11 months for all migrants. However, most non-residents usually stay away from home for ten months and return home only for the long summer (Christmas) holidays and short Easter break.

Despite the caution by Cross et al. (1998), there is evidence from the survey findings to show that, while being away from home, 96.9% of the non-residents kept contact through visits or by sending remittances. Also, 96% of the non-residents did not lose their right to use the household assets, including land.

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[24] *Cross et al. (1998) have cautioned against taking for granted statements made by migrants regarding returning home. The Eastern Seaboard of South Africa study exposed both permanent migration reflected by residential settlement of a migrant (and his/her family) as well as temporal migration for work. In a process termed "one way gravity flow" the debate regarding circulatory migration in South Africa has indicated that as urbanisation takes place, rural people who migrate, especially to urban areas, end up settling permanently in their new homes. In a study of Xhosa migrants from the Eastern Cape to the Western Cape, Bekker (1999) conclude that even though migrants express intentions to return home, this expectation weakens over time, more so if the children initially left behind join their parents.*

The results indicate further that on the average 63.8% of the migrants would not want to settle elsewhere other than their current households. The majority, 76.1% of the migrants do not intend to settle permanently elsewhere other than home. This validates the NELM rationale (Taylor et al., 1996) that under normal circumstances individuals do not sever ties with their source households to which they still belong. Continuing interactions between migrants and the rural households suggest that a household model would be more appropriate than an individual -level model of migration decisions. While 22.4% would only want to settle back home after retirement, 36.7% would like to do so after a few more years of work; only 8.0% wanted to settle back home as soon as possible and 3.6% never want to go back to their original homes.

6.6.4   Migrants' economic activities

Table 6.20 summarises the economic activities migrants were involved in away from home. The highest proportion of migrants' activities (36.6%) is performed within the industrial sector followed by the tertiary sector activities (31.2%). The majority of migrants (34.4%) were engaged in formal or informal economic activities in the industrial sector (including mining and agro-processing); a further 29% were employed in the tertiary sector. Only 3% were employed in primary agriculture, most probably as labourers on nearby commercial farms. This figure is lower than expected, may be because some labourers commute between the commercial farms where they work and their homes, thus they were not counted as migrants. By our definition of a migrant, being someone who does not share normal daily meals with his / her family on a daily regular basis, does not consider commuting casual labourers as migrants. Likewise, many residents who work on shops and other business establishments in their vicinity as commuting casual labourers responded to this question as non migrants.

Table 6.20:   Migrant current economic activity

Activity	Frequency	%	Cumulative%
Agriculture	13	3	3
Cattle farming	3	0.7	3.7
Industry	150	34.4	38.1
Tertiary services	126	28.9	67.0
Civil service	8	1.8	68.8
None or do not work	94	21.6	90.4
Other	5	1.1	91.5
No response	37	8.5	100
Total	**436**	**100**	

21.6% of migrants were not gainfully employed, but were either seeking for work or involved in education away from Lebowa.

The difference between the sub-regions in the concentration of economic activities for migrants is presented in Table 6.21. Migrants from the Western sub-region are almost divided equally between the industrial (40.5%) and tertiary sectors 46.6%, with none in the civil service. Migrants from Bochum (72%), Zebediela (63.5%) and Seshego (55.6%) rely heavily on the industrial and mining sector. Each of the six sub-regions has only a small proportion of migrants employed in the agricultural or livestock sector, with Bochum leading (16%).

Table 6.21:   Activity of migrants per region in the Limpopo Province- South Africa

	Agric	Cattle	Industry/Mining	Tertiary	Civils	None	Other
Bochum	16%	-	72%	-	12%	-	-
Seshego	5.5%	2.8%	55.6%	-	5.5%	27.8%	2.8%
Praktiseer	-	-	3.8%	56.4%	2.6%	37.2%	-
Schoonord	4.1%	1.4%	21.9%	31.5%	5.5%	31.5%	4.1%
Zebediela	-	-	63.5%	-	-	36.5%	-
Western	2.3%	0.6%	40.5%	40.5%	-	14.3%	1.8%

Note: Some migrants indicated more than one activity, thus, the total percentage indicate the proportion of activities in different sectors of the economy and will not add up.

In addition to the sectoral economic activities, migrants are a significant force behind the rapid growth of the informal sector in South Africa (known as townships), which harbours many migrants in transit to towns and cities but provides income and employment for many migrants. According to Welch (2000), the existence of informal sector employment lowers the urban unemployment rate, thus raising the probability of finding urban wage employment (therefore, shortening the waiting period); but by so doing results in an increase in the migration rate to the urban areas.

6.6.5 Effect of migration on family labour

The negative effect on family and agricultural labour caused by rural out-migration has been well researched and documented (Renis & Fei, 1961; Oberai & Singh, 1983; Taylor et al., 1996, among others) and was discussed fully in Chapter 3. Migration does not only reduce family labour but also affects the allocation of tasks among members of the households. In this respect the questionnaire asked respondents about the replacement labour and the people taking over the household tasks from the non-resident.

Table 6.22:   Effect of migration on family responsibilities

Household has enough people to take over tasks (n =292)		Who took over migrant's tasks? (n =286)	
Answer	# & (%) of non-residents	Answer	% of non-residents
Yes, all the time	147 (50.3)	Head of household's wife	7.4
Yes, usually	20 (6.9)	Son or daughter	16.1
Usually not	26 (8.9)	Grandchild	8.6
Hardly ever	99 (31.9)	Nobody	30.3
Total	292 (100)	Head of household's wife and children	5.2
		Various	6.8
		No tasks	5.2

Over half of the migrant households (50.3%) had enough people to take over the migrants' tasks. The responses on the effect of migration on family labour are in line with the NELM view that migration decisions take place within a family or household context and that the household members left behind reorganise themselves to accommodate the departed members tasks. For their part, the migrants compensate for their absence by sending home remittances both in cash and in kind. The survey

findings indicate that 95% of the non-residents keep in contact with their households left behind in the rural areas, through visits or by sending remittances. Only 15.3% of the migrant households indicated that they do not receive any remittances at all; the rest receive remittances at varying degrees, some frequently (33.2%), others sometimes (38.3%) and some rarely (12.5%).

6.6.6 Effect of migration on household income

The contribution of migrant remittances to household income was adequately discussed in section 6.5.5.4 and will not be repeated here; Appendix 7 also gives a summary of the different sources of income by percentiles and clearly indicates the significant contribution of migration remittances to the total income of the households. A more detailed analysis of the effect of migration remittances is presented in Chapter 8. It suffices to say that migrant remittances, in both cash and in kind, contribute significantly to household income of those who receive them.

6.7   DISTINCTION BETWEEN HOUSEHOLDS WITH AND WITHOUT MIGRANTS

6.7.1 Are households with and without migrants significantly different?

One of the exploratory analyses applied to the data is a special type of Analysis of Variance (ANOVA) test known as the *t* Test discussed in section 5.7.1. It is a test to assess the statistical significance of the difference between two sample means for a single dependent variable In this study we assessed the statistical difference between the means of households with migrants and those without migrants. The single dependent variable is the presence / absence of migration in households. The independent variables are categorised into three groups: the social aspects, assets and income. The *t* test was used to examine the variability among the sample means of observation of key variables relative to the spread of the observations within households with and without migrants. The null hypothesis is that the samples of values come from populations with equal means. Where the *t* value is sufficiently large, then we say that the difference was not due to sampling variability, but

represents a true difference (Hair, et al, 1998). If the absolute value of the *t* statistic is greater than the critical value of the *t* statistic the null hypothesis of no difference between households with and without migrants is rejected. The Type 1 error level, denoted as α or as significance level, indicates the probability level that the it will be accepted that the group means are different when in fact they are not. The closer α is to zero the more significant it is, implying that the group means are actually different and the difference is not due to sampling error. All the computations were done using the SPSS package. The results of the *t* Test are discussed below and presented in Appendix 11.

The variables that indicate strong significant differences between households without migrants and those with migrants are discussed below:

- Household size (number of people in the household, both residents and non residents; the number of adults 15 years old and older (that is members of the household of working age); children adult ratio as well as the number of male and female number of household members were among the social aspects for which the means of households with migrants and those without migrants showed significant differences. Migrant households were significantly bigger in size and had more adults of working age than those without migrants. In all cases α was significant at the 0.01 level (or 99%); This implies that large families have more flexibility regarding sending some members of the household to seek for work outside their home, while the remaining people may take over the migrants' responsibilities. It could also mean that the presence of migrants influence the families to have bigger families to compensate for labour lost to migration.

- Some asset categories measured in adult equivalent showed very strong significant difference between means of households with migrants and those without migrants, they include: AE total size of property in hectare (at one per cent significant level) and the AE value of household land (at 5 per cent significance level). The rest of the asset categories are not significant (AE value of livestock, AE in house assets - such as television) as well as farm assets and livestock. However, households with migrants have higher means of total values of livestock

as well as the mean adult equivalent value of all livestock, even though the means are not significantly different. Households with migrants also have higher means for household income (including remittances) and wealth, but because the families are relatively bigger the per capita and adult equivalent values of wealth are smaller than for households without migrants. Though not proven at this stage, the migration remittances may contribute to higher means for household income among households with migrants.

- The means of some income categories are in the two groups are significantly different; for instance AE pension (at one per cent level of significance), migrant households depend less on pensions as the mean AE pension is significantly lower than in households without migrants. AE household income including remittances is also significantly different within the two groups (at 10 per cent level of significance). Surprisingly, the AE agricultural income and subsistence is higher among migrant households. This could be because some remittances, especially in kind, may come in a form of agricultural inputs.

6.7.2   Remittances and their uses

The value of remittances and goods sent or brought to the household by the migrants were discussed earlier in section *6.5.5.4*.   Here we present some basic facts to complete the overview of migration.[25]   In half of the cases, the migrant also received support from the household when necessary. The migrants, thus, usually remain part of the extended household.

Virtually all of the cash remittances received by the household were used for food-related expenditure. However, some of it was used to pay for other basic needs such as clothing, education and health bills, and in almost all cases, the whole household was said to benefit. There are many combinations of the basic items acquired using

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[25]   *Different respondents have different views about the actual size of the remittance contribution to the household. In the Limpopo case study, it was found that in some regions the migrant overstated his or her contribution to the household while in other regions the migrant understated his or her contribution as compared to the perception of the head of household.*

cash remittances but the main ones involving the majority of the household members are summarised in Table 6.23. An interesting finding to note is that a negligible proportion of households indicated use of cash remittances for buying land or purchasing farm inputs and tools or off-farm investments. This could be due to the inadequate amount of remittance income sent to them, only sufficing for expenditure on items basic; it could also be a function of the complicated land tenure system, which does not facilitate easy land transactions.

For 49% of the households the amount sent or brought home by the non-residents was almost the same as in previous years; 25% of the respondents said it was more than before while 25.5% said the migrants brought less than the preceding year. It is important to note that remittances free up other household income, which can be used to buy food items and other necessities such as productive inputs for economic activities. Thus, there are some fungibility issues, to be explored; for instance, migrants' income remitted back to their households of origin may provide households with new funds to invest in agricultural and non-agricultural production and enterprises. Presence of migration may also offer rural families with a new source of income security, if the correlation between remittances and farm income is low. According to Taylor, (2001), by contributing to family income, remittances increase the demand for normal goods, including some locally produced goods by poorer households. In this way, migration creates expenditure linkages that generate local and regional income multipliers (discussed in Chapter1, section 1.3.4) and transmit impacts of remittances from migrants to non- migrant households. These remittances may also increase families demand for leisure, which in perfect labour market may discourage production or lead to abandonment of the farms. Fungibility issues, which the survey did not explore in-depth could be an area for further research in future

Table 6.23:   Use of cash remittances

Use of remittances	% of households (n = 238)
Food, exclusively	67.6%
Food, clothes and education	14.3%
Food and clothes	10.9%
Food and education	5.8%
Improvements to house	1.3%

The main beneficiary of remittances, in most cases was indicated as the whole family, 70.6%, the head of the household, 15.9%, the head of the household's partner, 8% and 15.8% indicated other beneficiaries (sister, mother, child, wife, brother and children). In return for the financial support to their households, non-residents received support from their household members. On average 58.4% of the households with non-residents rendered support to their non-resident member. The majority of households were of the opinion that migration improves the financial position of the household. Only 12.6% of households viewed migration in a negative light arguing that it made the household worse off. In these cases the reasons for negativity could be varied: either the migrant's departure left a void in the household without anybody to take over her / his responsibilities, the migrant is a delinquent who does not send much home or the migrant is a dependent (e.g., a student) who for the time being is not likely to benefit the family financially and other wise.

6.8   SUMMARY

The chapter presented the empirical findings from the household survey of 24 villages in Limpopo regarding land and other assets, household income and migration. Incidences of migration were high in all the villages and migrants come from all income and assets categories. Similarly, the amounts of remittances are extremely varied. Contrary to expectations, there are higher incidences of migration from the Western region, which is relatively better endowed with land and other rural assets than the other two regions. It may be true that the wealthy are in a better position to pay the expenses of moving (for work as well as for acquiring education) which makes it easier for them to find work elsewhere. On the other hand, it is possible that migration could have generated the wealth for the household. There is a significant proportion of the surveyed households (12.6%) who are of the opinion that migration made the households worse off by extracting able bodied members of the households out of the family labour pool.

It was established that the migrants maintain close links with their households, and contribute significantly to household income. However, the findings project an artificial picture that agriculture is of little importance; this has to be analysed further before any conclusions can be made. Landless households tend to receive the highest

in kind remittances income. Nevertheless, even if total remittances are lower for poorer households, they are significant as a source of income and livelihood from their point of view, and may help to alleviate poverty and decrease inequality. Both income and asset size and distribution findings already indicate a link between inequality and out-migration. We also found a link between household size and migration incidences. In Chapters 7 and 8 more rigorous analyses are applied to confirm relationships and cause and effect between these important variables of the study.