

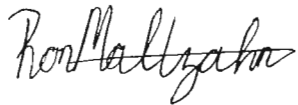
An exploration of the multidimensional nature of poverty pictures across five Southern  
African Development Community countries

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Psychology), in the School of Psychology, University of KwaZulu-Natal.

Unless specifically indicated to the contrary, this thesis is the result of my own work.

A handwritten signature in black ink, appearing to read 'R von Maltzahn'.

R von Maltzahn

A handwritten signature in black ink, appearing to read 'K Durrheim'.

K Durrheim (Supervisor)

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## ABSTRACT

This thesis explores the multidimensional nature of poverty as well as the impact of units of analysis on the creation of poverty pictures. The multidimensional nature of poverty is explored through the comparison of income and an asset-based measure (Living Standard Measure) and is conducted across five South African Development Community countries. This is done via six main avenues of investigation:

- income and its predictors
- the asset-based Living Standard Measure
- the consistency of the Living Standard Measure
- a comparison of income and the Living Standard Measure
- a comparison at different units of analysis of poverty across the five countries
- the multidimensional nature of poverty

Socio-economic and political secondary data obtained from the Human Sciences Research Council was used for the comparisons. In total, 5927 respondents were drawn from the five countries. Findings from this study indicate that there is a large degree of agreement and overlap as to the poverty pictures created by income and the Living Standard Measure. There also appears to be a convergence in poverty picture created at different levels of analysis as well as with different measures. Despite these similarities, and the fact that different dimensions and units of analysis do not alter the general poverty picture drastically, an argument is made that these two elements do have important roles in poverty measurement as they provide details to the general picture. These details have an impact on the success of the interventions chosen. In conclusion this thesis suggests that there is a possibility that the multidimensionality of poverty has been over-emphasised in recent literature.

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## 1. OVERVIEW OF POVERTY

Poverty is a multidimensional concept that exists at different levels within society. This study aims to explore and contrast two dimensions of poverty while noting the effect of different units of analysis on poverty measurement. Poverty differences across countries are also explored. As a direct result of its complexity, the topic of poverty has created much academic and practical debate as to how it is best defined, measured and overcome. This chapter aims to introduce and contextualise poverty, examine some of the responses to it and lastly explore the importance of poverty measurement so as to provide a basic platform for Chapter 2. Chapter 2 provides a more in-depth analysis of poverty including definitions, units of analysis, measurement tools and examples of documented research in the field.

### 1.1 The Poverty Picture

It is unlikely that the true extent and impact of poverty will ever be known. Statistics seem to be the most persuasive and hard-hitting way of presenting the situation as a result of their objective and 'scientific' nature. Aside from the impact, statistics also have the ability to identify and contextualise various dimensions and levels at which poverty operates. The statistics below identify some of the dimensions of poverty as well as highlight the severity and uneven distribution of this phenomenon across countries.

#### *1.1.1 Global Poverty*

- Almost half the world's population (2.8 billion people) live on less than two US dollars a day (The World Bank, 2001).
- The World Bank (2001) calculates that just over one fifth of the global population (about 1.2 billion people) is living below the international poverty line of one US dollar a day.
- Six of every 100 infants born do not live to see their first birthday, and eight do not survive to see their fifth (The World Bank, 2001).

- Of those who do reach school age, nine boys in 100, and 14 girls, do not go to primary school (The World Bank, 2001).

### *1.1.2 Poverty in Africa*

- Although Africa accounts for about one-tenth of the world's population, it contributed only 1% of the gross domestic product (GDP) and 2% of the world trade in 1999. On the other extreme, the high income countries in the Organisation for Economic Co-operation and Development account for only 14% of the global population but in the same time period contributed 64.8% of the world trade of goods and services (The World Bank, 2000).
- 34 of the world's 48 poorest countries are found in Africa (The World Bank, 2005).
- 24 of the 32 countries with the lowest levels of human development are in Africa.
- From 1981 to 2001, the number of Africans living in poverty nearly doubled from 164 million to 314 million (The World Bank, 2005).
- Few countries on the continent are on track to meet many of the Millennium Development Goals (The World Bank, 2005).
- Over one half (53%) of Africans questioned in the Afrobarometer say they or their family had 'gone without enough food to eat' at least once in the previous year, and almost a fifth (18%) had done so 'frequently' (Afrobarometer, 2004).

As can be seen from the above statistics the poverty situation is severe. The figures highlight the extent of the problem as well as identify the fact that poverty is not a one-dimensional phenomenon. Poverty is also not uniformly distributed with certain areas, Africa being one of them, experiencing extreme poverty. Thus, poverty is a relevant topic that needs to be explored. This study aims to compare two measures of poverty, income and asset-based measures, so that similarities and differences in poverty pictures created by different measures can be explored. The impact of the unit of

analysis, as well as differences across five Southern African Development Community (SADC) countries will also be explored.

## 1.2 Responses at Different Levels

With statistics and figures such as those cited above not many, if any, people doubt the reality and severity of the poverty situation. However, the type and scale of the responses to the problem differ. These varying responses depend on the resources that stakeholders have to offer, as well as their perceptions as to what poverty is and how it is best solved. As a result, poverty is defined and addressed at a number of levels. These levels of response include international or global initiatives, national poverty reduction plans as well as smaller more community-orientated interventions aimed at certain households or members of the community. These different levels of interventions are closely related to the different units of analysis that are encountered in poverty research and are the topic of discussion in the following chapters.

### *1.2.1 International Response*

The most obvious and apparent responses are those that occur at an international level as they receive widespread media coverage and are driven by large funds. One of the major players in the field of poverty research at this level is the World Bank. In the 1990s their focus shifted away from the debt crisis that had dominated their attention in the 1980s to poverty, with a commitment to poverty reduction in the 1990 *World Development Report* (Hanmer, Pyatt & White, 1999). The aim of the World Bank's poverty assessments is to provide "the basis for a collaborative approach to poverty reduction by country officials and the Bank" (The World Bank, 1992, p.4). This collaborative approach acknowledges the fact that if interventions are to work, they need to be conducted in partnership with stakeholders at various levels, both national and international.

One of the current large-scale international drives to eradicate poverty is the development of the Millennium Goals (United Nations, 2005). These originated in 2000 when the Millennium Declaration was signed pledging leaders to a series of collective priorities for peace and security, poverty reduction, the environment and human rights. Under this pledge, the leaders committed themselves to attaining measurable improvements in critical areas of human development. Under the poverty priority the goal is a 50% reduction in the number of people living on less than one dollar a day and the number of people suffering from hunger. Tracking progress in this area requires cross-country analysis to identify vulnerable populations.

### *1.2.2 Government Response*

Government is traditionally associated with addressing poverty issues at a national level. Poverty at this level is tracked through household surveys and analyses. Ravallion (1992) identifies two distinct tasks of poverty comparisons at this level. The first is to make an overall assessment of the country's economic development progress, with the second one being to evaluate specific policies or projects. The second task emphasises the practical implications of poverty research and measurement. The aim at this level is to identify and target poor areas within a country in an attempt to raise their level of wealth and capacity to be in line with the rest of the country. Progress in this regard is tracked through cross-household and community analyses.

This level of national response can be seen in the South African White Paper on Reconstruction and Development which addresses this problem and states "at the heart of the Government of National Unity is a commitment to effectively address the problems of poverty and the gross inequality evident in all aspects of South African society" (Government of South Africa, 1994, as cited in Klasen, 1997, p.52). As can be seen, poverty at a national level is of great concern.

### *1.2.3 Individual/Community Response*

Many smaller-scaled interventions are driven by non-governmental organisations and community organisations. These programmes are often highly specialised for a particular area. The emphasis in these interventions is usually on capacity building and empowerment as the organisations realise that simply providing communities or individuals with resources is not a sustainable option. As a result of their comparatively small size their ability to provide resources is limited, however, they are capable of providing skills and building capacity. Identifying and supporting vulnerable individuals and households within specific communities is critical for interventions at this level.

### 1.3 The Importance of Measuring Poverty

Poverty has existed globally for many centuries. However, recently there has been an increase in the awareness and interest of its existence among Western societies (Kakwani, 1984). This increased interest has resulted in the development of alternative methods for measuring and monitoring poverty. Measurement occurs at different levels as can be seen from the different levels of responses, each level requiring a particular type of information. Both the units of analysis as well as the measures associated with each level will be discussed in Chapter 2.

Different attempts to measure poverty all essentially have a common aim – to provide better, more relevant data in an attempt to overcome the poverty problem. The severity of the problem can be seen in The International Monetary Fund's description of "the persistent failure to break the cycle of stagnation and poverty in the poorest countries" as "perhaps the most striking exception to the otherwise remarkable economic achievements of the twentieth century" (IMF, 2000, as cited in Gore, 2003, p.9). Thus, it can be seen that poverty is regarded as a major failing in a field that has enjoyed "remarkable" achievements.

On a similar economic level, Sahn and Stifel (2000) highlight the importance of researching, exploring and monitoring poverty. They believe that “addressing this issue is a pre-requisite to improving our understanding of the under-lying social and economic processes that have contributed to changes in economic well-being” (p.2123).

Glewwe and van der Gaag (1988) believe that the importance of gathering comprehensive poverty data cannot be overemphasised. They provide further rationale for poverty monitoring as poverty statistics, whether accurate or not, affect interventions and policies and these ultimately affect the poor and vulnerable. Therefore, the more comprehensive and accurate the poverty estimates, the better the interventions and the more likely they are to succeed and reach the people in need. Thus, if the relevant people are to benefit from interventions, relevant poverty measurement is necessary.

The most important aspect of poverty measurement is not the actual numbers and figures obtained from the measurement, rather it appears to be the implications of the measurement. This is captured by Ravallion (1992, p.1) when he states that “The most important reason for measuring poverty is probably not the need for a single number for some place and date, but rather to make a poverty comparison. This is an assessment of which of two situations has more poverty”. It is this point that provides the basic rationale behind this study. Rather than attempt to provide an accurate picture in terms of exact figures, this study tackles poverty from a comparative stance with the exploration of different poverty measures across different units of analysis and across different countries.

“Poverty is not just a state of affairs, it is an *unacceptable* state of affairs - it implicitly contains the question, what are we going to do about it?” (Alcock, 1993, as cited in Noble, Ratcliffe & Wright, 2004, p.2). This is one of the dominant views encountered in the literature. As a result of the complexity and the scale of the phenomenon this thesis does not aim to answer the question “what are we going to do about it?” This question is



far too broad and complex to be addressed in this study. This study aims to contrast two measures of poverty to better understand the multidimensional nature of poverty.

This chapter has highlighted the severity of the poverty situation as well as laid the foundation as to why poverty measurement is important and the various levels at which measurement and intervention occur. The second chapter goes on to explore the multidimensional nature of poverty and reviews some of the different measures of poverty associated with different units of analysis. The focus in this chapter is on income-based and asset-based measures at the household level as they are the two measures compared in the results chapter. Chapter 3 outlines the aims and objectives of the study with Chapter 4 providing details as to the methodology adopted in the primary and secondary sections of the study. In this chapter, the measures used to collect the income- and asset-based data are discussed. Chapter 5 reports the results. The results and findings from the comparison of poverty at the different units of analysis, as well as those created with different measures are discussed in Chapter 6. This chapter also contrasts the findings across the five countries.

The aim of this thesis is to explore the multidimensional nature of poverty as well as the effect of units of analysis on poverty assessments as outlined above. This study will compare poverty pictures created by income-based and asset-based measures and different units of analysis across five SADC countries.



## 2. CONCEPTUALISING AND MEASURING POVERTY

This chapter explores the multidimensional nature of poverty with a particular focus on income and asset-based indicators of poverty. The three main units of analysis encountered in poverty analysis, national, household and individual, provide the framework around which the dimensions and measures of poverty are discussed. The household unit of analysis is the last unit discussed as it is the principle unit in this study with both income and asset-based measures found at this level. The use of units of analysis as a framework is mirrored later in Chapter 4, where they provide the framework for the results.

### 2.1 The Multidimensional Nature of Poverty

#### *2.1.1 Definitions of Poverty*

The only point of consensus in the literature relating to poverty, is that a single definition is elusive and ultimately unattainable (UNESCAP, 1999). This, coupled with the multidimensional nature of poverty (Bourguignon, 2002), makes it a complex construct to measure (Narayan, 2002). In this section, some of the popular definitions of poverty are explored so as to highlight the multidimensional nature of poverty and provide a setting against which the two measures used in this study, income and asset-based measures, can be viewed. In addition to providing a context for the two measures, a definition is a critical step in the operationalisation and measurement of any construct.

The only part of the definition of poverty that is widely accepted is that poverty is multidimensional and is composed of a multitude of factors such as income, education, availability of health services, living conditions, nutrition, exposure to disease, security and safety (Narayan, 2002). This issue of the multidimensional nature of poverty is emphasised in much of the literature. Before an exploration of poverty is possible, some

basic and generic definitions of the construct are offered below. These help to identify some of the dimensions of poverty.

Individuals, families and groups in the population can be said to be in poverty when they lack the resources to obtain the types of diet, participate in the activities and have the living conditions which are customary, or at least widely encouraged or approved, in societies to which they belong. Their resources are so seriously below those commanded by the average family or individual that they are in effect excluded from ordinary living patterns, customs and activities (Townsend, 1979, p.31).

People are considered as poor if their standard of living falls below the poverty line, that is, the amount of income (or consumption) associated with a minimum acceptable level of nutrition and other necessities of everyday life (The World Bank, 1992, p.19).

Poverty is a summation of a variety of concrete phenomena – growing disparities in living standards, rising underemployment, increasing marginalisation and declining access to vital resources, social discrimination and ecological deprivation (Kothari, 1993, p.24).

A condition characterised by severe deprivation of basic human needs, including food, safe drinking water, sanitation facilities, health, shelter, education and information. It depends not only on income but also on access to social services (United Nations, 2000, point 18).

Poverty is characterised by the inability of individuals, households or entire communities to command sufficient resources to satisfy basic needs (May, Woolard & Klasen, 2000, p.28).

The poor are those who lack resources to obtain the 'minimum necessities of life'. The 'poverty line' is the level of income which is just

sufficient to buy these so-called minimum necessities of life. A person is poor if his or her income falls below that line (Kakwani, 1984, p. 254).

Some of the dimensions and factors identified in the above quotes include: food, drinking water, sanitation, health, shelter, education, information, ecological deprivation, necessities, resources, living conditions, social discrimination and employment. Some of the dimensions identified are very broad for example resources in May, Woolard and Klasen (2000) with others being very specific. The quotes also serve to highlight the fact that poverty is larger than just money, The United Nations (2000) identify service dimensions such as water and sanitation with Townsend (1979) identifying factors that contribute to living conditions and Kothari (1993) identifying social dimensions such as employment and marginalisation. As can be seen, poverty is not merely about income (Woolard, 2002). These quotes, although not providing a single definition, serve to highlight the issue of the multidimensional nature of poverty.

Support for the two dimensions used in this study, those of income and assets, can be found in DFID'S guidelines on *Poverty: Bridging the gap* (2001). In these guidelines five dimensions of poverty are identified (Figure 1) namely: income, assets, well-being, services and empowerment. This study utilises measures of two of the five dimensions, income and assets (included in this is access to services such as water and banking), and compares the poverty profiles and pictures generated by each dimension. As can be seen early on, the two dimensions of poverty used in this study have a high profile in poverty literature. Details relating to these two dimensions are provided in the section on household levels of analysis later in the chapter.

Figure 1: Dimensions of poverty (DFID, 2001)



### 2.1.2 Poverty as a Concept

Despite the fact that there is not a single definition of poverty there are a couple of concepts which appear to be dominant in the poverty literature. These concepts provide some interesting insights as well as potential structures from which to view poverty. Some of the more pivotal concepts to the poverty data in this project are outlined below:

#### 2.1.2.1 Absolute, relative and subjective poverty

Poverty is frequently categorised in the literature as relative, absolute or subjective. These definitions of poverty are mirrored in Hagenars and de Vos' (1998) slightly more layman's identification of three main types of poverty:

1. Having less than an objectively defined absolute minimum – absolute
2. Having less than others in society – relative
3. Feeling that you do not have enough to get along – subjective

Absolute poverty defines and sets the poverty line, relative poverty describes the distribution of the poor in and around the poverty line and subjective poverty relies on

the subjective experience of the poor in relation to others (UNESCAP, 1999). A person living in absolute poverty experiences an inability to attain a minimal essential standard of living and is “not able to satisfy his or her minimum requirements for food, clothing or shelter” (DFID, 2001, p.174). This form of measurement is characterised by the absence of a reference group (Noble, Wright & Cluver, in press) and the use of a threshold value. The one dollar a day, or two dollars a day, poverty lines are internationally accepted absolute poverty lines (DFID). These poverty lines take the base measure of poverty to be survival. This concept, and the data collected in this measurement are ideal for statistical analysis.

In contrast, relative poverty is defined in relation to social norms and the standard of living in a particular society. It therefore includes the individual's ability to take part in activities that society values even if they are not necessary for survival (DFID, 2001). Asset-based measures and indicators are often used to assess this form of poverty as many assets are not essential for survival but play a role in determining an acceptable standard of living relative to others in the community.

Subjective poverty is a person's lived experience of poverty and depends on their definition of poverty and their relative wealth within a given community. An example of a subjective poverty measurement is the Lived Poverty Index in the Afrobarometer (Afrobarometer, 2004). This index is composed of questions that ask people “on a scale between 0 and 10, where 0 are poor people and 10 are rich people, where would you place yourself?” Subjective measures are always contentious and difficult to validate but provide interesting information in terms of whether perceived and actual conditions are congruent. The results from the Afrobarometer study indicate that across 15 African countries the mean score for the Lived Poverty Index was 3.6 and 83% of respondents place themselves below the midpoint of this scale. The extremes of this scale were South Africa with a median of 5 and Malawi, with more than 50% giving themselves a score of 0 or 1.



Each concept has both advantages and disadvantages associated with it. Although relative poverty is an important social phenomenon, Ravallion (1992) argues that when informing policy, absolute poverty indicators and lines should be used so as to ensure that poverty measures are consistent and not reliant on subjectivity and perceptions. This is one of the major advantages of an income or money-metric based measure.

\* These concepts of absolute, relative and subjective poverty are not solely academic concepts. In a recent review of more than 40 national poverty studies May (2001, as cited in May, Roberts, Moqasa & Woolard, 2002) found that a mix of three central approaches were commonly used in the conceptualisation and measurement of poverty:

- Poverty is conceptualised as the failure to attain a minimum standard of living. This failure is reflected in quantifiable and absolute indicators, often those of income and consumption.
- Poverty is conceptualised as a lack of resources. This results in people not being able to attain a type of life-style that is socially acceptable and this results in the use of a relative indicator. This indicator varies according to the standards of the society being measured.
- Finally, poverty can be conceptualised as being constrained choices, unfulfilled capabilities and exclusion. This is more of a subjective and human rights based approach to poverty and as a result is a complex conceptualisation to measure. Qualitative and participatory research techniques frequently play a central role within this conceptualisation.

The three approaches encountered in the practical measurement of poverty by May mirror the theoretical definitions of absolute, relative and subjective poverty.

\* It is argued by May et al. (2002), that these different conceptualisations merely serve to reinforce the fact that poverty is multidimensional and should be used in combination as opposed to being seen as competing methodologies. This provides support for the

simultaneous use of different measures with the realisation that each has something important to contribute to measurement. This provides motivation for a study such as this which utilises and contrasts poverty measures from different approaches.

#### *2.1.2.2 Chronic and transient poverty*

Another distinction between poverty concepts is that made between chronic and transient poverty (Thorbecke, 2004). This distinction is not explicitly mentioned in definitions and is more of an underlying concept. This type of poverty is particularly relevant to this study as there is a much greater prevalence of transient poverty in the developing world (Baulch & McCulloch, 1998, as cited in Thorbecke). It is not possible to assess the type of poverty captured in this project but it is an interesting distinction that is worth noting as it may provide possible suggestions and reasons for some of the observations.

Examples of the transient nature of poverty in the developing world can be seen in an annual survey run for five consecutive years in Pakistan where poverty levels of households were assessed every year (Thorbecke, 2004). Findings from this study indicate that only 3% of the households were classified as poor in all five years whereas half of the households were classified as poor in at least one of the five years of the analysis. This observation indicates that poverty levels can change relatively quickly and from year to year and that households identified as poor are unlikely to maintain this status on a yearly basis. A similar finding was made by Gaiha and Deolaiker (1993, as cited in Thorbecke) when 22% of the sampled households in rural south India were below the poverty line in every one of the nine consecutive years of the study while almost 90% of all households were classified as poor in at least one of the nine years. Thus, despite the differing poverty rates across the two countries, in both cases the once-off poverty rates were significantly higher than the long-term poverty rates. This is a useful point to note when comparisons of poverty rates are being made.

## 2.2 Poverty Measures ✓

As mentioned in the previous chapter, poverty measurement is important for a number of reasons. The basic approach to poverty measurement is simply a comparison of needs and resources (Foster, 1998). However, this comparison is not a simple process because of a number of factors, these include:

- Various stakeholders and parties involved in poverty assessment differ as to their definition of what constitutes a need as well as what elements are seen to satisfy the need (Boltvinik, 2000).
- The objective of the analysis and the nature of the data required affect the type of data collected and ultimately the measure used (Booyesen, 2002).
- The poor are not a homogenous group and thus no single measure will reliably identify all the poor across the various dimensions (Beall, 1997 as cited in Rakodi, 2001).

The above factors are just some of the factors that may account for some of the variation in reported poverty rates.

Thus, it can be seen that this comparison of needs and resources is not simple and creates much debate and contention. The unease that results from the lack of a definitive path when measuring poverty is captured by Øyen (1996, as cited in Dewilde, 2004, p.333):

the constant uneasiness of working in a field where neither the concepts and the methodologies, nor the theories are precise enough to be useful working tools [ . . . ] It takes courage to live with the complexity of a poverty definition and the lack of an adequate theoretical framework.

As a result of the breadth of the field, the flexibility of indicators to use and the resultant unease captured by Øyen (1996, as cited in Dewilde, 2004) this study makes no attempt to devise a conclusive measure of poverty or create the definitive picture of poverty.



Instead, a comparison of two already existing and popular poverty indicators will be made. In the section that follows various poverty measures will be presented according to the unit of analysis at which they make their poverty assessment. The primary unit of analysis in this study is the household and thus, the household and in particular income and asset-based measures, will be the focus of the discussion.

### 2.3 Poverty measurement at different levels of analysis ✓

Poverty measurement is defined as “the quantitative assessment of the level and depth of poverty of individuals or in aggregate, for a group or in a region, country or across the world” (Dercon, 2005, p.1). One aspect that stands out in this definition is the existence of multiple levels of poverty measurement. The remainder of the discussion on poverty measurement is structured around these levels.

The selection of the correct indicator or index depends upon not only the dimension of poverty one is trying to assess but also the level of poverty, for example household or individuals. The level of analysis is important for the identification of a suitable intervention as outlined in Chapter 1. The importance of the unit of analysis can be seen in Borat’s statement (1999) that “the unit of analysis...imparts crucial information about the nature of poverty” (p.157).

Empirical support for the importance of units of analysis can be seen in work by Iceland (2003) on the empirical evaluation of the effect of units of analysis on poverty levels. This study compared poverty levels across four units of analysis: the official family, the cohabiting couple, the household, and a level called the family/couple/household (FCH) unit. Findings from this study indicate that poverty levels are lower when more inclusive units of analysis are used. Iceland found that when using the National Academy of Sciences official measurement for poverty the family rate of poverty was 15.4%, the FCH rate was 14.7%, cohabitating couples rate was 14.9% and the household rate was 14%.

It is proposed that differences in poverty levels across these units occur as a result of income pooling among family and economies of scale that exist in households. Thus, it can be seen that the level at which one analyses poverty is thought to have an effect on the results.

Another empirical study that highlights the importance of the unit of analysis in measurement is one by Borat (1999). In this study differences in poverty levels between the household and the individual in South Africa were explored. It was found that the transfer of individual earnings and poverty information to the household level could significantly change the description of poverty. Three groups that suffer a high degree of indigence (the unemployed, farm workers and domestic workers) were examined in relation to poverty and income. At the individual level, domestic workers were found to be poorer than farm workers with nearly 40% of all domestic workers earning less than R293 a month. However, at the household level this trend was reversed and domestic workers were found to live in wealthier households than farm workers. Thus, careful attention as to the unit of analysis used in studies and as a comparative statistic is very important.

The measurement tools that one uses depend on the dimension of poverty one is trying to measure as well as the level at which the poverty occurs. The two dimensions of poverty that are of particular interest in this study are income and asset ownership. These two dimensions manifest at both an individual as well as a household or collective level in society (Narayan, 2002) and data relating to these two units was captured in the questionnaires. Borat (1999) identifies the individual and household levels of analysis as particularly important predictors of poverty and believes that they should be coupled when trying to understand low earnings in a society. The following section of the chapter aims to provide a broad overview as to different measures used with different units of analysis namely: national, individual and household.

### 2.3.1 National

This unit of analysis usually involves data collected at a national level and used for international comparisons by large global organisations. These poverty analyses are used to determine which countries, and more specifically, which areas of countries would benefit from aid and what kind of aid.

In addition to the descriptive data on individuals and household poverty (both income and asset based indicators) that was collected in this study, there are poverty or welfare indicators and statistics produced and published by global corporations that can serve as proxy measures for poverty, development and welfare at a national level. These national statistics are interesting in themselves. However, they are especially useful in a study such as this as they provide insight into poverty at a national level and can be used as a comparison for household and individual poverty statistics.

There are many stakeholders involved at this level of poverty comparisons. The World Bank is one of the most prominent stakeholders referred to in academic literature. The World Bank's first global poverty estimates at a national level were published in 1990 in the *World development report*. For this estimate, data were collected from 22 developing countries (Ravallion, Datt, and van de Walle, 1991, as cited in The World Bank, 2005). This was to be the start of a large international database on poverty. Over the last 15 years this database has expanded and now includes 440 surveys representing almost 100 developing countries with a total sample size in excess of one million randomly sampled households. Items in the original survey included questions relating to income sources, income expenditure, and other household characteristics such as number of people sharing that income. Although the data was collected at a household level the aim of the data was to allow for international comparisons along various dimensions.

Another poverty measure utilised by the World Bank is the African Development indicator (ADI). The ADI collects data pertaining to economic, social, and environmental data factors with the aim being to present a broad picture of development and poverty across Africa. This database consists of nearly 1200 indicators.

### *2.3.1.1 Money-metric indicators* ✓

As mentioned in Chapter 1, the use of the international poverty line provides a universal picture as to the severity of poverty at national levels. This poverty line is defined as the percentage of population living on less than \$1.08 a day at 1993 international prices (equivalent to \$1 a day in 1985 prices, adjusted for purchasing power parity) and is frequently used as the international poverty line (UNICEF, 2005). In 2001 it was estimated that 46.4% (313 million people) of sub-Saharan Africa were living on less than one US dollar a day and approximately 516 million people were living on less than two US dollars a day (The World Bank, 2005).

Table 1 provides details of poverty according to the international poverty line in each of the five SADC countries in this project. Data relating to Mali is included in Table 1 for use as a comparison and reference point as Mali is one of the poorest countries according to this measure. South Africa and Swaziland appear to be the countries with the lowest percentage of the population living below the poverty line. Zambia is the poorest country under this measure with nearly two thirds of the population living below this level.

Table 1: Poverty in each of the five SADC countries according to the international poverty line (United Nations Development Programme, 2005)

	Survey year	Population below \$1 a day (%)	Poverty Gap* at \$1 a day (%)	Population below \$2 a day (%)	Poverty gap at \$2 a day (%)
Lesotho	1995	36.4	19.0	56.1	33.1
Namibia	1993	34.9	14.0	55.8	30.4
South Africa	2000	10.7	1.7	34.1	12.6
Swaziland	1994	8.0	2.5	22.5	8.9
Zambia	1998	63.7	32.7	87.4	-
Mali	1990-2003	72.3	-	90.6	-

\* This is a measure of the depth of poverty based on the magnitude of the gap between poverty levels of the poor relative to the poverty line

### *2.3.1.2 Social, economic and development indicators*

There are many social indicators that are used to compare national levels of development and poverty. An example of a stand-alone social indicator is child mortality. UNICEF and other organisations concerned frequently use this measure with children. Table 2 provides an overview as to the child mortality situation in each of the five SADC countries in comparison with the worst and the best country with regards to this indicator.

Table 2: Mortality rate data ranked from worst to best (UNICEF, 2005)

	Under-5 mortality rank	Under-5 mortality rate (2003) (per 1000 births)	Infant (Under-1) mortality rate (2003) (per 1000 births)
Sweden	192	3	3
South Africa	65	66	53
Namibia	65	65	48
Lesotho	57	84	63
Swaziland	26	153	105
Zambia	17	182	102
Sierra Leone	1	284	166

Social, economic and developmental indicators often create a more accurate poverty picture when they are combined to form an index which reflects the multidimensionality of poverty. The household development index (HDI) is an example of such an index used at an international level. The HDI is a composite index created by the United

Nations Development Programme with the aim to measure and rank the extent of human development in a country (Table 3). At this early stage the multidimensional nature of poverty is apparent with Swaziland having the lowest level of poverty in terms of percentage of the population living on less than one dollar a day but highest in terms of infant mortality rate. This index rank orders countries in terms of development. This measurement is made along three basic dimensions of human development: a long and healthy life, as measured by life expectancy at birth; knowledge, as measured by the adult literacy rate and the combined gross enrolment ratio for primary, secondary and tertiary schools; and a decent standard of living, as measured by GDP (United Nations Development Programme, 2005). The components of the HDI are defined below:

#### *Life expectancy*

This is defined as “the number of years newborn children would live if subject to the mortality risks prevailing for the cross-section of population at the time of their birth” (UNICEF, 2005). This indicator is seen to be reflective of health conditions and development within a country. South Africa has the highest life expectancy at birth in 2003 of 48 years. Namibia is the only other country with a life expectancy of over 40 years at 44. The life expectancy for the other three countries is: Lesotho 36 years, Swaziland 32 years and Zambia 37 years.

#### *Adult literacy and enrolment ratio*

The literacy rate is the proportion of people over the age of 15 who can read and write. The enrolment ratio is the number of children attending school (both primary and secondary) divided by the total number of children of school going age.

#### *Gross domestic product (GDP)*

The GDP is a macro-economic unit. It is defined as the final amount of goods and services produced within an economy (Collander & Gamber, 2002) and is seen to represent the productivity of a country as well as its ability to generate money.



Table 3: Rank data related to the HDI from best to worst (United Nations Development Programme, 2005)

	HDI rank	HDI value	Life expectancy at birth (years)	Adult literacy rate (%)	Combined gross enrolment ratio for primary, secondary and tertiary schools (%)	GDP per capita (PPP US\$)
Norway	1	0.963	79.4	99.9	101	37670
South Africa	120	0.658	48.4	82.4	78	10346
Namibia	125	0.627	48.3	85	71	6180
Swaziland	147	0.498	32.5	79.2	60	4726
Lesotho	149	0.497	36.3	81.4	66	2561
Zambia	166	0.394	37.5	67.9	48	877
Niger	177	0.281	44.4	14.4	21	835

In terms of the HDI South Africa is the highest ranked country of the five involved in this study. South Africa ranks the highest of the five countries in all of the indicators except for adult literacy. South Africa has a similar HDI to Namibia with Swaziland and Lesotho having a similar ranking. Zambia has the lowest HDI ranking of the five countries especially with regards to adult literacy and enrolment.

### *2.3.2 Individuals* ✓

At the opposite end of the spectrum to national statistics is the individual. A common mistake made at the level of household analysis is the idea that individuals within the same household share the same standard of living (Pyatt, 2003). This assumption is based on the thinking that if a household's income is  $x$  and there are  $n$  people in the household then each person has access to  $x/n$  income. This mistake is overcome if one can collect reliable data at the individual level.

To assess the uneven distribution of resources within a household, measurement at this level should ideally focus on indicators of poverty other than simply income (Fuwa & Vishwanath, 1998). This however, is not easy as other economic indicators such as assets are usually associated with households and social indicators are typically

associated with national or at least regional units of analysis. Thus, income is still an indicator that dominates poverty analysis at the individual unit of analysis.

The heterogeneity of the poor as a group (Beall, 1997, as cited in Rakodi, 2001) provides the rationale for the use of the individual as a unit of analysis. Despite the heterogeneity of the poor there are a couple of variables, frequently identified in the literature, that have a strong association with poverty. Some of these variables that are used later in the analysis of individual levels of income include:

#### 2.3.2.1 Gender ✓

The relationship between gender and poverty is a highly controversial topic. It is difficult to arrive at a consensus on this matter for two reasons: firstly gender inequalities take on a number of shapes and forms and secondly, there is a severe deficit of gender-disaggregated data.

The World Bank (1993, as cited in Whitehead & Lockwood, 1999) identifies gender inequity within the household as a very important dimension of poverty. The feminisation of poverty is the major movement associated with gender, with women being more severely affected by poverty than men (Cagatay, 1998). This relationship is also identified by May et al. (2000). As a result of women being identified as the poorer sex, in particular female-headed households, many interventions have been specifically designed to target women.

Evidence in support of women as the poorer sex is provided by Woolard (2002) who found that households in South Africa headed by a resident male have only a 28% probability of being poor, whereas households with a *de jure* female head have a 48% chance of being poor and households with a *de facto* female head have a 53% chance of being poor. In an attempt to explain this observation four factors are seen to be at play and influencing this trend:



- a) female-headed households are more likely to be in rural areas
- b) female-headed households tend to have fewer adults of working age
- c) female unemployment rates are higher
- d) wage gap between male and female earnings persist

As can be seen above, there is a strong relationship between female-headed households and poverty. The association of a disproportionately higher chance of female-headed households being poorer than male-headed ones is particularly apparent in Malawi and Zambia with lower associations in Ghana and Lesotho (Hanmer et al., 1999).

The issue of gender is highlighted in a report by the International Fund for Agricultural Development (International Fund for Agricultural Development, 2002). Rural women in developing countries were identified as among the poorest and most vulnerable people in the world. Statistics that support this observation are that in 1988 there were 564 million poor women living below the poverty line. More recently, in 1995, the United Nations Development Programme (UNDP, as cited in the International Fund for Agricultural Development) has suggested that women made up 70% of the poor (International Fund for Agricultural Development).

#### *2.3.2.2 Location – rural vs. urban*

Poverty analyses routinely find poverty concentrated in rural areas (Hanmer et al., 1999). Poverty analyses are assessments of poverty at the individual level carried out by the World Bank. In a meta-analysis of 25 poverty analyses of separate countries in sub-Saharan Africa, Hanmer et al. found that in 23 of these 25 countries more than 70% of the poor lived in rural areas. Extreme instances where more than 90% of the poor were found in rural areas occurred in Lesotho, Rwanda, Zimbabwe, Malawi and Uganda.

### *2.3.2.3 Education*

A strong relationship has been identified between living standards and education (Richards, 2004). May et al. (2000) use the argument that education improves the productivity of the primary asset of the poor, time. This relationship between education and income is seen to operate at an individual level of analysis. Thus, education appears to be linked to the money-metric measure of poverty. The relationship between education and income at the individual level has repercussions at the group or household level with an educated population being associated with higher economic growth.

The identification of variables associated with individual poverty is not intended to suggest causality. Rather what it serves to do is identify how variables at one level can have an impact on the larger aggregated picture of poverty. It also is apparent that variables at the individual level interact and there is a degree of co-linearity. An example of this co-linearity is seen with a clear link between education and gender, two-thirds of the world's illiterate people are women (Richards, 2004).

### *2.3.2.4 Employment*

This is somewhat of an obvious association as generally employment provides an income. This ties in strongly with the economic and money-metric view of poverty.

In a cross-cutting study by Mattes, Bratton and Davids (2003), conducted across Africa, the fit of five gradually expanding models to individual poverty were tested. In the first instance the impact of age, gender and urban/rural location was tested. This model accounted for 10% of the variance in the personal poverty levels. When employment status and education are added the variance accounted for increased to 17%. Developmental infrastructure, community services, agricultural activity and access to schools were added in the fourth level and race and national citizenship in the fifth level. The final variance accounted for in the fifth level was 34%. From bivariate analysis of

this data it is apparent that there is a strong urban bias to development and poverty in Southern Africa. This bias affects access to necessities as well as access to schooling. It is apparent from the model testing that rural-urban location plays a strong role in shaping poverty together with gender. Not having a job, now or at any point in the past year, is also strongly associated with higher levels of poverty. However, the most important determinants of individual poverty were found to be developmental infrastructure and education.

So far both the individual and national units of analysis and their associated measures of poverty have been discussed. This chapter moves on to explore the household level of analysis. The next section explores poverty measures associated with the household unit of analysis with particular focus on income and asset-based measures.

### *2.3.3 Household*

This is a very important level of analysis and is frequently used in many poverty studies. International studies typically highlight differences in poverty levels between rich and poor countries but often downplay, or ignore, the differences between the rich and poor within a country (Townsend, 1993, as cited in Hirschowitz & Orkin, 1997). Data at a household level allows one to disaggregate the data into geographical or residential units which can be used to inform both public policies and research into the determinants of regional economic development and poverty (Alderman et al., 2001).

The household is the most popular unit of analysis employed in poverty research as it is the most robust overall predictor of income and ultimately the standard of living that is accessible to individuals and groups in society (Bhorat, 1999). However, the definition as to what constitutes a household varies between studies and this affects the comparability of results at this level of analysis. One popular definition is that used by The World Bank (n.d): “A household is defined as a group of related or unrelated people,

who live in a dwelling unit or its equivalent, eat from the same pot, and share common housekeeping arrangements”.

The household unit of analysis makes use of the traditional money-metric poverty measures based on income or expenditure, as well as alternative measures and indicators (Booyesen, 2002) – these measures being related to the multidimensional nature of poverty. Essentially these two types of measures fit respectively into the utility-approach and capability-approach to poverty measurement. With the utility-approach to measurement, poverty is interpreted in terms of the command over commodities that resources afford people via income and consumption (Lipton and Ravallion, 1995). Thus, income is pivotal in the measurement of poverty according to the utility approach. The capability approach on the other hand, focuses on the extent to which the consumption of certain goods and services affords people certain capabilities, for example access to a toilet ensures sanitation. Capabilities are usually measured with the use of non money-metric indicators.

The discussion that follows will focus on one measure from each of the measurement approaches; income from the utility-approach and asset-based and related living standard measures from the capability-approach.

#### *2.3.2.1 Utility-based measures – money-metric measures*

Income and consumption are seen as the two most popular resources that afford one command over commodities. The debate that exists in this approach is which indicator is the most appropriate to use to measure poverty. Advantages of this approach to measurement include: face validity, ease of data collection and the production of statistics that lend themselves to comparison. Baulch (1996, as cited in Woolard, 2002) goes so far as to say that a money-metric measure of welfare is “probably the best objective proxy for poverty status” (p.2).

All money-metric measurements, irrespective of the indicator used, are based on the idea of setting a minimum level of an indicator that is deemed necessary or sufficient. This minimum level becomes the threshold value for determining poverty and is commonly referred to as the poverty line. If there is no poverty line in terms of a minimum indicator, as is the case in this study, then populations are usually divided into deciles or quartiles according to the income-related indicator. This grouping allows for comparisons across settings in terms of relative poverty levels.

#### 2.3.2.1.1 Expenditure/Consumption

Expenditure is the major competing money-metric indicator to income. In opposition to the use of income is the idea that consumption is more accurately obtained through household surveys than income and in the long-run is a more valid measure (Deaton, 1977, as cited in Alderman, Babita, Demombynes, Makhatha & Özler, 2002). The claim to the increased validity arising from the use of consumption as an indicator is based on the idea that consumption is a more consistent measure as it is relatively stable over time and is not affected by seasonal fluctuations (Dercon, 2005). One of the major criticisms with indicators based on consumption behaviour is that they are unable to distinguish poverty from other causes of deviations from the norm, for example health, age and household size (Hagenaars & de Vos, 1988).

#### 2.3.2.1.2 Income

Income based measures were the first and most widely used approach to poverty assessment (Scott, 2002). The model that underpins the use of this indicator is that money is a universally convertible asset and can be used to satisfy all needs. The popularity of this indicator can be seen in its prolific use in studies. Hagenaars and de Vos (1988) believe that income is so pivotal to poverty that every poverty definition should have some reference to income.

Income poverty assessments are popular because their results are readily understood and can be converted easily to form targets for reducing poverty. They are also representative at the national level and objective. Finally, nationally representative household surveys allow comparisons to be made between regions and, if repeated, can reveal trends (DFID, 2001).

There are many income-based measures, below are some commonly encountered measures:

#### 1. Head-count ratio

Shimeles and Thoenen (2005) identify this as the simplest poverty measure. This is a measurement of the proportion of individuals that fall below a predetermined poverty line (Kakwani, 1990). The advantage of this measure is that it provides a quick summary statistic as to the incidence of poverty (Shimeles & Thoenen). This measurement has been criticised because it is seen as a crude poverty measure as it does not take into account the income-gap among the poor, it simply tells how many people are poor.

#### 2. Poverty sensitivity index (Foster, Greer and Thorbecke Index, 1984)

This measure incorporates sensitivity with regard to distribution within the poor themselves and is one of the most traditional poverty measures. Known as the Foster-Greer-Thorbecke class of poverty measures, these measures consist of the following indices:

- The headcount index or incidence of poverty.
- The poverty gap index which measures the depth of poverty given by the gap between actual income of poor households and the poverty line.
- The poverty severity index, which gives more weight to the shortfall in incomes further below the poverty line.



Income traditionally is a very popular indicator of the money-metric measurements.

However, as with all measures it has problems associated with it, these include:

- Income as an indicator is incomplete (Diaz, 2003) and as a result, strategies for poverty alleviation tend to focus on economic matters (DFID, 2001).
- Measurement and conclusions arrived at are based on the assumption that all members of the household, young and old, male or female, receive equal shares of the income (DFID).
- The poverty measures obtained through this indicator are not good predictors of vulnerability as it is easier to survive on less money in rural areas as a result of subsistence farming (DFID).
- Accurate data may be difficult to obtain (DFID).
- People are not always willing to declare their real earnings (Cheli, 1995).
- Survey designs differ and definitions of what constitutes a household differ making comparisons difficult (The World Bank, 2001).
- Income is thought to be more difficult to measure in poor and rural societies (Dercon, 2005). Problems associated with income in these areas include fluctuations related to seasonality and risk. If short-term recall is used for income it may not provide a very accurate picture.
- It assumes that income is the only barrier that is preventing needs from being satisfied (Scott).
- Income brackets on questionnaires are usually too broad (Alderman et al., 2002).
- There is no agreement as to what constitutes income with a large base of possible sources such as wages, casual income, income from self-employment, income from grants and investments and income from other people (Skordis & Welch, 2002).

One of the biggest criticisms of income-based measures is that people with similar income levels may experience differences in quality of life and living standards. This may be partly due to the ratio of income to the number of people in a household. This means

that income is not a standard measurement as people with the same income do not necessarily enjoy the same standard of living (Booyesen, 2002). One potential solution to this problem is to adjust the money-metric measure according to the household size (in this system men, women and children are weighted differently) and so take into account economies of scale (Booyesen). This view is contrasted by that of Glewwe and van der Gaag (1988) who state that total income is a better income indicator than per capita income. Some of the problems identified by Glewwe and van der Gaag with per capita income are that in developing countries the per capita incomes of large groups of the population may vary greatly from year to year and at a more practical level informal farms are not likely to keep accurate books and be aware of income per se.

The UNDP acknowledges the limitation of income when it states “Since income is not the sum total of human lives, the lack of it cannot be the sum total of human deprivation” (1998, as cited in Ngwane, Yadavalli, & Steffans, 2002, p.545). From this it can be seen that income on its own is not able to provide a complete and accurate picture of the poverty status of an individual, let alone a nation. Such arguments provide strong motivation for a multidimensional view of poverty.

As a result of the numerous disadvantages associated with income as an indicator and the realisation of the multidimensionality of the phenomenon there has been a steady move away from income as the only measure of poverty. However, it is difficult, if not impossible, to find a single alternative indicator that is seen as accurate and valid for use across all levels of analysis by all parties involved. Asset-based indicators and indices are a relatively new and popular method of poverty assessment.

#### *2.3.2.2 Asset-related measures and indices*

Recently there has been a move towards using household assets and access to services as indicators of poverty. Single indicators are not very useful on their own as they capture only a fragment of the poverty picture. Thus, the current challenge is to



construct an index that captures the relative importance of each asset in the total poverty picture (Shimeles & Thoenen, 2005). The general way of constructing such a measure is to use a variance-covariance structure that results from the correlation of assets and other socio-economic characteristics (Shimeles & Thoenen). The weighting of each asset towards the index total is meant to reflect the strength of the relationship between the asset and a 'wealth factor' as proposed by Sahn and Stifel (2000).

Each theory or definition of poverty differs slightly as to what it sees as contributing to poverty and hence utilises a unique combination of indicators in its measures. What follows are a couple of indices which make use of asset-based indicators at some level.

#### 2.3.2.2.1 Statistics South Africa

Statistics South Africa has created two household indices based on the 1996 census aimed at policy audiences (Hirschowitz, Orkin & Alberts, 2000). These are the Household Circumstances Index and the Household Infrastructure Index. Some of the indicators in the index include: owning a telephone or cellular phone, living in a formal house and having access to electricity. In both cases, the index provides a ranking for each province based on indicators selected by principle component analysis. The ranking of the provinces from these indices, together with the square root of the number of households in each province, are used to produce a formula for allocating funds to the different provinces. As can be seen from this example measurement at this level can have profound effects on the distribution of funds to certain areas.

#### 2.3.2.2.2 Klasen's (1997) composite indicator of deprivation

This indicator system was designed to determine whether other indicators of deprivation produce results that are similar to those obtained in the traditional income approach. This thesis has many parallels with Klasen's study. The aim of both studies being to compare an index based measure with the income measure. In Klasen's study the index consisted of 12 indicators including income, health, education, household wealth, access

to services, transport and perceptions of quality of life. These indicators were chosen for their relation to capabilities. Each household was assigned a score, from a low of 1 to a high of 5, for each indicator. The score for the total index was the average across all the indicators. Findings from this comparison indicate that generally there is a close correlation between income poverty and the composite index of deprivation. However, it is interesting to note is that about 35% of the most severely deprived people do not belong in the lowest income quintile. This equates to approximately 3.7 million South Africans who are severely deprived but who are 'missed' by the income measure. This thesis aims to make similar comparisons but instead of being restricted to South Africa it will involve comparisons across five countries.

#### 2.3.2.2.3 Use of the Demographic Health Survey (DHS) to construct a welfare index from household assets (Sahn & Stifel, 2000)

The DHS has been conducted across many African countries and at more than one point in time, thus it is a good source of data for cross-country and cross-temporal analysis. However, one problem with it is that it does not have any income- or expenditure-related data. This makes traditional monitoring of poverty difficult. Sahn and Stifel used the information related to household assets to construct a welfare index. This was done by conducting a factor analysis on various household characteristics (construction materials, toilet facilities and water source), durables (ownership of a bicycle, television, refrigerator, radio, television) and household head's education level with the underlying assumption being that there is a common factor of welfare underlying all these variables. From this principle component analysis, weightings for each of the variables in the final asset index score were obtained. Sahn and Stifel applied this index to 11 sub-Saharan African countries to track both cross-country comparisons as well as changes within a country across time. This asset index proved to be a fairly accurate measure as the rankings obtained using the asset index were similar to those obtained when using GDP. This study demonstrates the use of different units of analysis for

comparisons of different measures as the index was used on households with the comparative statistic of GDP coming from the national unit of analysis.

#### 2.3.2.2.4 Use of Census income data to validate a new index

In a study by Alderman et al. (2002) the 1995 October Household Survey and Income and Expenditure Survey was used to create a poverty index. This index was then validated using data from the 1996 Census. This method allowed one to combine quantity from the census with in-depth indicator data from other surveys to map geographic dimensions of poverty.

The above are examples of indices incorporating many different asset-based indicators and illustrate that such indices have become popular and important in the measurement of poverty. As a result of the multidimensional nature of poverty there are many facets of poverty that are measured for example 'deprivation', 'development' or 'living standards'. What follows is a discussion of the measurement of 'living standards', as this is the dimension of poverty that is measured through the use of asset-based indicators in this study and is used as a comparison for the income measure.

#### 2.3.2.2.5 Money-metric, asset-based and social indicators at the household level

##### The World Bank Living Standard Measurement Study

The term 'living standard' gained popularity and exposure with the Living Standard Measurement Study (LSMS) that was established in 1980 by the World Bank. The aim of this study was to improve the type and quality of household data that was collected by statistics offices in developing countries. Although the project is driven by the World Bank, it is conducted by the respective countries and provides detailed country-specific data. Information collected in these studies is used for decision making at a national level. The series of surveys aim to find new ways of monitoring living standards, to identify consequences of policy and to open up communication between analyst, policy makers and statisticians (Glewwe & van der Gaag, 1988).

The LSMS are a series of surveys conducted in collaboration with the statistical bureau in specific countries. Consequently the surveys are not identical and reflect the design and collection of information that is considered important for, and relevant to, the specific country (Howes & Lanjouw, 1997). The type of information collected needs to provide a link between household behaviour, household living standards and constraints that they face as well as the impact of government actions on poverty status (Glewwe & van der Gaag, 1988). Since its inception, the primary motivation of the studies has shifted from pure research to policy analysis. Because of its size, this study is capable of exploring multiple aspects of household welfare status and behaviour at the same time as featuring extensive quality control features.

The LSMS usually consist of three types of questionnaires: the household questionnaire, the community questionnaire and the price questionnaire. The household questionnaire accesses information on a number of modules including: household composition, income related modules and sectoral modules. The collection of a wide variety of household characteristics enables one to explore the relationship between variables that are important contributors to the quality of life. It also allows one to compare traditional measures of poverty with more modern social indicators and indices.

The LSMS takes place in two rounds. In the first visit, household information is collected including a list of all household members. Individual information related to education, health, employment and migration is collected. Housing conditions are also covered. The second visit occurs about two weeks after the first one and covers employment activities, household expenditures, consumption of home produced items, assets, savings, debt, and miscellaneous income sources. This household information is usually obtained from a single member of the household who is the most familiar with this information (Grootaert, 1986). As living standards are influenced by environment, a community questionnaire supplements the household questionnaire and aims to gather information

pertaining to the external environment. The entire survey takes about four hours per household. The data obtained from these studies consists of many individual responses to questions relating to different dimensions of living standards of the household. The data from these surveys are not combined to form an index or a single summary statistic related to general living standards.

The LSMS work brought the term 'living standards' to the fore, and made it a popular construct in poverty-related research. The South African Advertising Research Foundation also developed a tool called the Living Standard Measure (LSM). This poverty measure is an asset-based index and is used as a comparison for income in this study.

#### 2.3.2.2.6 The Living Standard Measure (South African Advertising Research Foundation, 2001)

The LSM is a tool developed by the South African Advertising Research Foundation (SAARF) in the late 1980s. The primary aim of the LSM was to create and identify groups of people based on their living standard. The condition for the creation of such an index was that the index must be able to differentiate groups of people better than any single demographic variable. In the world of advertising these groupings are used by marketers to define and identify their target markets. The success of the LSM can be seen in the fact that it is currently the most widely used marketing research tool in Southern Africa (South African Advertising Research Foundation, 2001).

The unique element of the LSM is that it involves the division of the population into effectively 'wealth' or 'poverty' groupings without the use of income data. The LSM is a modern measure that cuts across divisions such as race and culture and uses criteria such as ownership of major appliances and degree of urbanisation of households to classify households.



The LSM was created by identifying variables that were already measured in the SAARF AMPS survey that would be able to discriminate and segment the population according to their various living standards. Initially there were 71 potential indicators identified. These indicators were finally refined and narrowed down through the use of principle component analysis and stepwise regression analysis to 13 indicators. Neither education nor income was seen to contribute sufficiently to warrant their inclusion as indicators.

From this original LSM measure there has been a continual refinement of both the indicators used as well as their respective weightings to the total LSM score. Such changes are essential as the social and economic situation is in a continual state of flux and technological processes change at a rapid rate. While this continual updating and refinement of the tool ensures that it is valid and reliable this comes at a cost as it means that measures across time are not comparable.

A major criticism of the LSM is that the ownership of different assets has differing meaning and significance in different countries. Thus, the use of a single set of uniform weighting criteria developed in South Africa may not be suitable for other countries.

Another criticism of the measure is that due to biases in some of the questions, people in the same household would not end up in the same LSM category. An example of this problem is the question related to personal supermarket shopper often created gender biases in the scoring of the LSM.

The scale, however, does not appear to be too problematic as when it was updated, 15 of the original questions were kept. The major change was the addition of 14 new questions to give the scale finer differentiations.

This chapter has used units of analysis as a pivot from which to view different measures with the focus being on income and asset-based measures at the household level. In this discussion it has become apparent that both measures are widely used. Income is the traditional measure of poverty but is slowly being replaced by other measures which make use of alternative indicators of poverty. One of the main reasons behind the change in poverty measures is the realisation that poverty is a multidimensional construct and indicators other than income need to be utilised if this multidimensional nature is to be captured. The literature is filled with a multitude of studies that focus on painting a single dimensional picture of poverty and studies that attempt to create new measures to assess poverty. What appears to be lacking in the literature are studies that objectively and analytically contrast existing measures. In the review of the literature very few studies were found in which the traditional picture of poverty created by income was compared to the picture created by an alternative measure, Klasen's (1997) study was one such study.

This study aims to address the gap in the literature identified above. The rationale behind such an approach to the study of poverty is that differences or similarities in pictures obtained by different measures may provide useful insights into poverty. What makes this study particularly interesting is the fact that not only are two measures of poverty compared but the respective pictures created can be compared across countries and across units of analysis.

### 3. AIMS AND OBJECTIVES

Poverty is a complex phenomenon and thus it is necessary to focus on particular facets of poverty. The aim of this project is to explore two facets of poverty:

1. The multidimensional nature of poverty
2. The impact of units of analysis on poverty measures

The primary aim of the project is to explore the multidimensional nature of poverty. This is achieved by exploring and comparing poverty measures, those of income and asset-based measures (the LSM) at the household level. Through this comparison the validity and usefulness of the LSM as a measure of poverty will be explored.

The second facet of poverty, the impact of the units of analysis on poverty measures, will be explored at three levels:

- i) Individual level – this involves the exploration of associations between individual income and demographics such as gender, education levels and employment status.
- ii) Household level – this involves exploring associations between household income and location and size of household.
- iii) International level

Across both these facets of poverty cross country comparisons between Lesotho, South Africa, Namibia, Swaziland and Zambia will be made.

Rather than painting an accurate poverty picture in each of the countries, the aim of this study is more comparative. The aim is to use different measures of poverty to explore the multidimensional nature of poverty and to make these comparisons across different units of analysis as well as across five countries.



## 4. METHODOLOGY

This study made use of secondary, public domain data archived at the Surveys, Analyses, Modelling and Mapping unit of the Human Sciences Research Council (HSRC) in Pretoria. Secondary analysis is a technique that essentially spans two projects, both the original study in which the data was collected and the study in which the secondary data is reanalysed. Thus, it is necessary to have a basic understanding of the primary project before the secondary project can be fully understood. In order to cover both these aspects, this chapter firstly examines the original study in which the data was collected. The chapter then moves on to discuss secondary analysis as a methodological tool. With an understanding of both the advantages and limitations of this approach the chapter concludes with an outlay of the methodology adopted in the secondary analysis.

### 4.1 The primary research question and project

The identification of the link between good democratic governance and sustainable human development made by SADC provided the motivation for this study (Idasa, 2000). The Public Opinion Analysis Programme was set up to explore this relationship. This project was headed by Dr Stephen Rule. Relevant social, economic and political data exploring this link has been routinely collected in South Africa. Thus, this link could be easily explored across the SADC countries by simply extending the regularly conducted South African surveys to other countries within the SADC region. The aim of these surveys was to create a large and multinational data set that could serve as a baseline for social, economic and political issues (Idasa). The original research project was conducted by the Democracy and Governance Group of the HSRC and was conducted in Lesotho, Namibia, South Africa, Swaziland and Zambia.

The aims of the multinational surveys were to (Idasa, 2000):

- extend the existing programme of public opinion surveys in South Africa to other SADC countries.

- collect attitude data on economic and social policy, national priorities and political preferences.
- collect data related to governance and development that could be used by government agencies and other organisations to formulate policies and disseminate the information to the public.
- strengthen democracy, enhance national stability and increase public knowledge and awareness concerning issues of national importance and public interest.

#### *4.1.1 Tools*

The surveys were originally designed by the HSRC for use in South Africa. These questionnaires were reviewed by local experts in each country to ensure that the questions were suitable for, and relevant to, the particular country (Idasa, 2000). An example of an adjustment that had to be made was that in Swaziland questions relating to democracies had to be altered as Swaziland is a monarchy.

Once the questionnaires were seen as suitable, they were field piloted in each country after an initial rough translation. After the pilot test the questionnaires were translated using the double blind method (Idasa, 2000). Field workers were selected from the home countries and underwent extensive training in interviewing techniques, ethics, household selection, substitution techniques as well as the aims of the survey.

#### *4.1.2 Sampling and data collection*

The methodological aim of the study was to obtain a representative sample of all citizens of voting age in each of the five countries (Idasa, 2000). The sampling methodology was chosen so as to achieve this aim. As each of the five individual surveys had a similar aim the sampling methodology employed across the five countries was very similar and these similarities will be discussed as a whole. In cases where there were variations between the countries each country will be discussed separately at the end of this section. Acceptable exclusion criteria of specific groups included: areas that were

inaccessible and/or not relevant to the study; areas in which there was armed conflict or natural disasters; national parks; game parks and institutional residences (Idasa).

The sample design used was a multi-stage, stratified area cluster probability sampling (Idasa, 2000). This sampling strategy was adopted as it allowed every sample element (possible respondent divided according to group probability) an equal chance of being chosen for inclusion into the sample. This equal probability was achieved by choosing individuals according to their proportional probabilities in relation to the population size of successive area clusters. Methods of random selection were used at every stage of the sampling.

The sampling procedure was conducted in a number of hierarchical steps (Idasa, 2000):

- a) Random selection of primary sampling units (PSUs) from a sampling frame (geographical selection)
- b) Random selection of household from the PSUs (household selection)
- c) Random selection of a respondent from the eligible members of selected households (respondent selection)

#### *4.1.2.1 Selection of PSUs*

The definition of a PSU in this study is the “smallest cost-effective area for which population data is available” (Idasa, 2000, p. 8). The following were also identified as necessary attributes of a PSU: they must be well-defined geographic units; census data and mapping materials must be available for PSUs; they must contain enough potential participants so that random selection may be adopted; and they must not be so large that field workers have to travel unreasonable distances to reach sampled locations (Idasa).

This was the first level of clustering. Two steps were involved in PSU selection, firstly the formation of PSUs and secondly, the stratification of the PSUs.

In most cases, census enumerator areas (EAs) were chosen as the PSUs and a list of all the EAs within the area served as the sampling frame. The required number of PSUs was then randomly selected from the sampling frame to form what is known as the master sample. The master sampling frame was then stratified according to region/province and then within those regions stratified according to urban or rural status. This was done to ensure selection probability proportional to size. From these PSUs a multi-stage area cluster probability sample was used to ensure representivity within the final composition of the sample.

The ideal approach to sampling at this level would be to sample a large number of randomly selected PSUs from which only a couple of households are chosen. This would ensure a nationally representative sample. However, because of logistical and financial restraints this is not always possible and is balanced against a small number of PSUs from which a large number of households are chosen (Idasa, 2000).

#### *4.1.2.2 Household sampling design*

Eight households were selected from each PSU for interviews. The definition of a household used in the collection of the primary data was “single housing units/groups of person living together and eating from the same pot” (Idasa, 2000, p.9). Detailed maps of all housing units that existed within each EA were then used in the next step of random sampling. A sampling start point was randomly selected according to a randomised grid method. From this starting point, the selection of households varied according to the area in which the fieldworkers found themselves:

- a. In well-populated urban and rural areas, with single-dwelling units, a random point like a street corner, school or water source was chosen as the starting point. The four enumerators were told to walk away from this point in the following directions: one towards the sun, one away from the sun, and the other two at right angle to the original two and in opposite directions to each other. The

target household identified by each enumerator was the fifth dwelling on the right after the start point.

- b. In well-populated urban and rural areas, with multiple-dwelling units where a block of flats was included the enumerator stopped at every fifth flat.
- c. In sparsely-populated rural areas, with single-dwelling units/farms the following applied: if there were 15 or less households within walking distance of the start point the field team dropped only one of the four enumerators there; if there were 16-30 households within walking distance of the start point then two enumerators were dropped there; if only one or two enumerators could be dropped at the start point then the rest of the team were driven to the nearest housing settlement within the same EA where as many enumerators as possible were dropped and so on.
- d. In sparsely-populated rural areas, with commercial farms where there were populous settlements of farm workers efforts were made to avoid collecting all of the interviews for that EA on one farm, rather two enumerators were dropped at one farm and conducted only one interview each at that farm and then they were moved on to another farm and the same with the other pair of enumerators. At every other farm one of the two enumerators dropped selected the farm owner's household.

#### *4.1.2.3 Individual sampling design*

An eligible respondent was considered to be any person of voting age. Individuals were stratified according to a gender quota, if an enumerator's previous interview was a male, then the next one had to be a female. The enumerator listed all eligible household members of the relevant gender, even those not presently home but who would return to the house that evening. A random number sampling grid, similar to a Kish grid (Nemeth, 2003), was then used to select a random respondent. This grid used 'the number of persons from which respondent must be drawn' (columns) and 'number of questionnaire'

(rows) to select a number and the household member corresponding to the number on the list was interviewed (Appendix A).

In order to ensure accuracy, field supervisors conducted one randomly selected check per PSU. Questionnaires were also checked as they were completed and the enumerators sent back to revisit the respondent to correct all problems before the research group left the area.

The surveys were overseen by the Institute for Democracy in South Africa (Idasa) but separate consultants were contracted for the work within each of the countries. Sechaba Consultants were used in Lesotho, Victon Joint Ventures was used in Namibia, Markinor in Zambia, and the HSRC in South Africa.

#### *4.1.3 Specifics of data collection in each country*

##### *Namibia (Tender, 2000)*

The surveys were conducted in Namibia by Victon Joint Venture in August 2000. The survey instrument consisted of 24 pages. EA data from the national census was not available for Namibia. Instead, the country was divided into 11 distinct study groups each with between 1% and 50% of the population. The study groups were created so that each one was unique with regards to a totality of characteristics such as origin, language, traditions, customs and history. In order to make the sampling practical the study groups were consolidated into three areas, namely the far north, central north and central south, and sampled accordingly with 288, 188 and 228 questionnaires collected from each area respectively. This ensured selection probability proportion from each of the study groups with a total national sample size of 704. The sampling method in Namibia was affected by a number of factors, these included: rural-urban variations, vast distances, varying population densities, and vagueness of rural address descriptions.



*Lesotho (Rule, Davids & Khosa, 2001)*

The majority of the interviews were conducted in Sesotho by a local consultancy company, Sechaba Consultants, in consultation with Idasa. The survey was conducted during August-September 2000. The survey instrument consisted of 21 pages. A total of 88 EAs were randomly chosen for the survey and included coverage of all ten administrative regions in the country. The choice of each EA was based on the sampling used in a prior study with the very next EA in each stratum to the one used in the earlier sample was selected for this study. The total sample size across all the EAs was 704.

*South Africa*

The data collection took place in August 2000. The questionnaire used in the South African survey was longer than in the other countries and consisted of 40 pages. The reason for the increased length of this survey was that the HSRC includes private clients' questions in the survey. An example of such private corporate research is the inclusion of a selection of questions relating to lotto participation for Lotto SA. A sample of 2 704 respondents was selected throughout South Africa in clusters of eight households situated in 338 EAs as determined from the 1996 census. In order to ensure adequate representation the sample was explicitly stratified by province and urban/rural locations. This added up to 18 strata (Table 4). Disproportional samples were drawn from less populated provinces such as the Northern Cape, Free State, Mpumalanga and North West. The realised sample size was slightly smaller than planned at 2611.

Table 4: Number of EAs per province and strata

	Eastern Cape	Free State	Gauteng	KwaZulu-Natal	Mpumalanga	Northern Cape	North Province	North West	Westerr Cape
Urban	14	21	56	24	12	21	4	11	29
Rural	25	9	2	32	18	9	28	19	4
Total	39	30	58	56	30	30	32	30	33

Information relating to the specific data collection in Swaziland and Zambia was not available from the HSRC. A 24-page questionnaire was used in Swaziland with a



sample size of 703 people from five regions. In Zambia the survey was conducted by Markinor. The total sample size in Zambia was 1205.

#### 4.2 Secondary analysis

In conventional research, data, especially quantitative data, is collected according to a research question that has been identified prior to designing the research. Consequently data collection is tailored so as to collect the relevant data to answer the question. However, as a direct result of the amount of data collected in surveys there is often too much data for it to be fully analysed. Alternatively, the information collected, when viewed from another perspective, or from a different paradigm, could be used to answer a different question. Enter secondary analysis.

Secondary analysis is defined by the data used in the analysis. As its name suggests secondary analysis uses secondary data. Stewart and Kamins (1993) define secondary data as “sources of data and other information collected by others and archived in some form... Secondary information offers relatively quick and inexpensive answers to many questions and is almost always the point of departure for primary research” (p.1). Secondary analysis is a versatile technique. It can be used in both descriptive and exploratory data (Irish International University, 2005) as well as at various stages in the analysis process for example raw data as well as compiled data (Kervin, 1992, as cited in Irish International University).

Essentially secondary analysis has two main uses. Firstly, if the appropriate existing data set can be found it provides a short cut to data collection. Secondly, secondary analysis may involve “the application of a creative analytical technique to data that has been amassed by others” (Kiecolt & Nathan, 1985, p.10) and is often to test hypotheses. An example of secondary data being used to test a hypothesis is Kebede (2000) when already existing data was used to test the hypothesis related to energy use among the

poor in Ethiopia. Another example of the use of secondary analysis for hypothesis testing can be seen in Gray Jones' study (2002) that hypothesised that economic status plays a role in battering among African American men. Through this hypothesis generation and testing researchers, who are often experts in the related field, are able to identify gaps in the theory as well as add to the theory. Consequently secondary data analysis is a popular tool in theory building (Stewart & Kamins, 1993).

#### *4.2.1 Secondary analysis vs. meta-analysis*

If working with somebody else's data is part of the criteria for secondary analysis then it is necessary to illustrate the difference between secondary analysis and meta-analysis. Meta-analysis is another popular statistical tool used with data that was collected by somebody else for another primary study. The difference between secondary analysis and meta-analyses is that with secondary analysis the units of analysis remain the individual data points whereas in meta-analyses the units of analysis become the actual studies themselves (Kiecolt & Nathan, 1985). Thus meta-analysis and secondary analysis are used at similar stages in research but provide two distinct functions. Secondary analysis makes use of the data in its original form, whereas meta-analysis makes use of the results of studies and combines them to arrive at a summary conclusion.

Once the purpose and aims of secondary analysis are understood it is possible to examine some of the strengths and weaknesses associated with the method. The type and quality of the data is determined in the original study with the quality of the new conclusions being dependent on the secondary analysis. As a result, the strengths and weaknesses of secondary analysis are a combination of those associated with traditional survey research as well as issues that arise out of using somebody else's data.

#### *4.2.2 Advantages of secondary analysis*

One of the primary attractions of using secondary analysis is the fact that it is an economical technique that facilitates maximal use of the limited resources allocated to social science research (Kiecolt & Nathan, 1985). This economical use of resources occurs at many levels including time, personnel and money. This economical utilisation of resources is facilitated by the fact that the data already exists so savings are made in relation to gathering data, preparing it and analysing it. The data handling stage can be limited to the analysis of interest which can be conducted by a single person. The research team is significantly smaller than that associated with traditional research and collection of large data sets.

The resource saving that is associated with secondary analysis is not synonymous with a decrease in the quality of the analysis. In certain cases the converse may occur. As a result of the type of data that is often used in such studies (i.e. large national data sets) the sampling strategies often allow for a more representative sample than would be achievable by a single researcher with a limited budget. If used correctly and in conjunction with primary data, secondary analysis can result in a question being more thoroughly investigated than if only a single source of data was available. This type of analysis has the ability to build on data and knowledge that is already available as well as allowing for trends across databases and time to be detected.

Another advantage associated with secondary analysis is the scope from which researchers are able to access data. Data available for analysis comes from a variety of sources. Some of these sources include:

- academic archives
- government agencies
- private research firms
- commercial enterprises
- other organisations

Such a wide range of data allows for some very interesting comparisons that would not be logistically possible on a limited budget. In this case, secondary analysis focuses on collating the various related components of data across a number of surveys.

The use of secondary analysis is not limited to the production of final results for a study. An alternative function of secondary analysis is to use it as a pilot study to provide ballpark figures or estimates of a phenomenon of interest before significant resources are spent on conducting a new study (Stewart & Kamins, 1993). Existing data can also be used to estimate base lines and develop prior probability rates that can be used to inform policy, track changes or alternatively inform proposed research (Stewart & Kamins). Having a pilot in which the data is already collected and entered saves both time and resources and allows researchers to generate informed hypotheses that can be tested in the subsequent study.

Despite the fact that the questions that can be addressed in secondary data analysis are limited by the type of data originally collected, working with the data often provides new ideas for other studies which emerge from an interaction between the researcher's interests and knowledge that already exists. Secondary analysis can also be used to increase the validity of the data by pooling small samples to ultimately create a larger and more representative sample.

#### *4.2.3 Limitations of secondary analysis*

As with any research method, there are always limitations or disadvantages. Many of the limitations associated with secondary analysis are intrinsic to survey research methods as a whole. The most obvious problem is that the researcher is limited by the availability of public domain databases or the location and access of data sets of interest.

One argument related to data access that is levelled against secondary analysis is the fact that accessing databases takes time and high levels of administration. This is countered by the fact that collecting data and organising data collection also requires high levels of organisation and time, arguably more than accessing already existing data.

Other problems with secondary analysis are encountered once the data has been accessed and it is time to work with the data. The first problem is the degree to which complete and accurate documentation of the data collection process is available to the analyst – this was an issue in this research and is discussed later. As the data often has no initial meaning to the researcher involved with the secondary analysis they are unable to detect individual, interviewing, coding or data entry errors. Issues of validity and reliability are further complicated by the fact that the findings are only as accurate and reliable as the data used in the analysis and this is determined by the original researcher by the validity of the measures used and the operationalisation of the variables. As a result, secondary sources of data need to be carefully evaluated (Stewart & Kamins, 1993).

Secondary analysis can make use of many research designs and often follows the original nature of the data that is used. Some designs that can be used in secondary analysis include cross sectional designs, temporal analysis, cross national studies and contextual designs (Kiecolt & Nathan, 1985). Of interest to this study are cross-national studies. Data from different countries can be used to determine whether a social phenomenon is similar across settings.

A problem frequently encountered in secondary analysis is the data format. If data is collected in continuous numerical form it is possible for the secondary analyst to group the data into any categories that are needed, either dictated by personal interest or theoretical underpinning. However, if the data is already collected in categorical format

and the categories do not correspond across surveys it is only possible to reduce further the data to the simplest common category.

Problems can be encountered when the questions are comparable but the response categories available are unequal or different. This not only poses a problem in terms of analysing the data but also affects the responses across the sample as the group in which respondents place themselves is partially determined by the options available (Kiecolt & Nathan, 1985).

Most probably, the most obvious and undeniable problem associated with secondary data is that it is old (Stewart & Kamins, 1993). The research process is typically a long one and a secondary analyst is usually only able to access the data once the original analysers are finished with it.

#### *4.2.4 Possible solutions to problems encountered in secondary analysis*

It is important to acknowledge upfront that there are certain problems that simply cannot be solved. These irresolvable problems usually are associated with the primary data collection and the secondary researcher has to acknowledge them and make the most of the data. However, there are some checks that can be done prior to the analysis that can save time further on in the analysis. One such check is to assess the quality of the data before analysis begins. If the data is not valid or accurate there is no point in proceeding with further analysis and thus, such an evaluation can save time and energy.

This evaluation is often not necessary for data that has been collected by large institutions whose principle job is to collect such data and whose reputation is dependent on the quality and reliability of their product (Irish International University, 2005).



With regards to evaluating the quality of the secondary sources Stewart and Kamins (1993) provide a six-step guideline. The steps or questions used in the evaluation are as follows:

1. What was the purpose of the study?
2. Who was responsible for collecting the data? This question is hoped to assess the credibility of the research in terms of bias, competence, resources and quality of the data.
3. What information was actually collected? This question is used to examine the operational definitions employed in the original study and see if they are similar to the ones required in the secondary analysis.
4. When was the information collected? This provides information that allows the researcher to look for factors present at the time of the data collection that may have affected the results.
5. How was the information obtained? Responses to this question provide information pertaining to methodology which has an impact on the reliability and validity of the final data set.
6. How consistent is the data with other information? If two or more independent data sets arrive at a similar conclusion then it can be assumed that the data is reflective of a larger picture.

As can be seen from the above questions, methodology and its implementation is usually the most important element that affects the reliability and validity (Dale, Arber & Proctor, 1988, as cited in Irish International University, 2005). Answers to some of these questions in relation to this study are provided later on in the chapter when background to the original study is discussed.

Once the validity of the primary data has been established, a common solution to the problem of a possible incongruency, between the original operationalisation of the construct and that which is needed in the secondary study, is overcome by creating



composite indices or scores that are better reflections of the construct under exploration. The most common method of doing this is to identify and create groups and relevant scores that are based on a series of related questions of interest. The suitability of using existing variables as indicators can be assessed by running covariate analytic techniques to determine the relationship between the variables. This aspect of secondary analysis draws parallels with the indices used in the measurement of poverty and serves to highlight the fact that indices can either be placed within a questionnaire or can be created from components of the questionnaire once the data has been collected. The former option is the most theoretically and statistically driven option.

Irish International University (2005) provide three summary criteria for the success or usefulness of secondary analysis. In order for secondary analysis to be worthwhile:

- It must enable one to answer the research and meet the objectives of the study.
- The benefits of using secondary data must be greater than the costs.
- One must be able to access the data.

#### *4.2.5 Ethical questions raised in secondary analysis*

Some of the criticism levelled against secondary analysis is that it is simply an attempt by researchers and academics to obtain multiple publications out of a single piece of research (Schultz, Hoffman & Rieter-Palmon, 2001). A stand on this view is taken by the American Psychological Association in their publication manual (American Psychological Association, 2001, p.353) when they state that:

The prohibition of piecemeal publication does not preclude subsequent reanalysis of published data in light of new theories or methodologies if the reanalysis is clearly labelled as such. There may be times, especially in the instances of large-scale or multidisciplinary projects, when it is both necessary and appropriate to publish multiple reports...Repeated publication from a longitudinal study is often appropriate because the data from different times make unique scientific contributions.

In further support of secondary analysis many large scale, nationally representative data sets are designed and collected with the explicit intent of being made available for public use and further analysis by scholars (Shultz et al., 2001). The National Opinion Research Centre's General Social Survey (GSS) (Davis & Smith, 1992, as cited in Shultz et al.) is an example of a primary project that has been subjected to much secondary analysis. In 1992, Davis and Smith (as cited in Shultz et al.) reported that roughly 2000 books, articles, chapters, and dissertations have used the GSS as their primary source of data.

One of the undeniable facts is that perfect information is seldom available (Stewart & Kamins, 1993). Consequently if science is to progress it is necessary to weigh up the value, use and potential flaws of already existing data against the potential problems, cost and relevance of data yet to be collected. This provides much of the rationale behind secondary analysis.

### 4.3 The secondary analysis

Having briefly outlined the motivation and rationale of secondary analysis it is now possible to address the data management and analysis used to achieve the aims of the secondary analysis.

#### *4.3.1 Measures*

##### *4.3.1.1 Income*

There were a total of five questions relating to monthly income on all the questionnaires. These questions assessed gross joint income of household, income of household after deductions, gross individual income, income of individual after deductions and the amount of money leftover after paying for essential items. The gross joint income as well as the gross individual income were used in this study.

#### 4.3.1.2 Asset-based measures

The measure used to provide data pertaining to asset ownership was the LSM. The 1995 version of the LSM was used in the questionnaires. It consisted of 20 items in the form of yes/no response categories with questions relating to the ownership or use of the following items:

- flush toilet
- polisher/vacuum cleaner
- non-supermarket shopper (personal)
- fridge/freezer
- car in household
- financial services
- electricity
- insurance policy
- hifi/music centre
- telephone in home
- dishwashing liquid
- household supermarket shopper
- hot running water
- credit facility
- tv set
- microwave oven
- rural dweller
- hut dweller
- domestic worker

In this measure each variable carried a different weight. The LSM score was calculated by adding together the weights of the variables and then adding a constant to the score. The role of the constant was ensure that all scores were positive. The weightings and constants used were uniform across the countries (Appendix B).

The scoring system of the LSM consisted of ten ordinal categories. Each category had a defined range of scores. Once a score was obtained, the corresponding level of the LSM was assigned to the household. The categories in ascending status were as follows:

- Traditional have nots
- Self-centred non-earners
- Compound and hostel dwellers
- Urbanised singles
- The young aspirers
- Emerging market
- Established affluents
- Progressive affluents
- Super group

#### *4.3.2 Data collection*

The data used in this analysis is part of the public domain data that the HSRC houses. The data was collected from Surveys, Analyses, Modelling and Mapping unit at the HSRC head offices in Pretoria. The secondary researcher spent three days at the unit obtaining the electronic SPSS data files and questionnaires. During this time the researcher looked through the files and sourced relevant documents related to the conduct of the original research. This was not a simple task. A couple of meetings were held with Dr Stephen Rule to discuss work that had already been done with the data as well as possible areas of exploration.

In total five questionnaires obtained from the HSRC. This collection consisted of:

- HSRC Namibia survey (August 2000)
- Swaziland public opinion survey (June-July 2001)
- HSRC Lesotho survey (August 2000)
- HSRC Zambia survey (August 2000)
- HSRC national survey (August 2000)

### *4.3.3 Data management*

Before the data could be analysed it was necessary to combine the separate country data sets into a single one. This was done so that comparisons of measures across countries could be made. With a single data set it was possible to explore the data both in terms of within country descriptives as well as cross-country comparisons, this allowing both general as well as specific trends and patterns to be identified.

Cleaning and combining the data from the various surveys was a formidable and time-consuming task. However, it did provide a very good opportunity to gain an understanding of the content of the questionnaires and the nature of the data collected. This cleaning consisted of a number of steps which are outlined below.

#### *4.3.3.1 Ensuring the same questions had the same variable names*

The first task was to ensure that the questions that were the same across all the questionnaires had the same variable name (an eight digit code) across all the data sets prior to combining. If the data had the same variable name then when the files were merged the variables would be recognised as the same and the data within that variable would simply be transferred to the already existing variable in the original data set. The ease of this varied across surveys. The Namibian survey was taken as the template as it was one of the most comprehensive surveys and had very thorough labels. This allowed one, without much experience and knowledge of the data, to be sure which variable names referred to which questions.

In terms of naming and labelling variables the data sets from Swaziland and Zambia presented a number of challenges and a significant amount of work. The consistency of data entry across these surveys was not as good as the others, this most probably due to the fact that these surveys had been conducted and captured by private external companies. The variables in the Swaziland survey were given variable names according to the question numbers and there were no labels given to the variables. Thus, the only

way to ensure that the variable was indeed the correct one that corresponded to the number was to look at the value labels and ensure that they were appropriate responses for the question. The Zambian data had been named in a similar manner but had been labelled which made variable identification significantly easier and more accurate.

#### *4.3.3.2 Dealing with country specific data*

Another problem was that certain data was specific to a country. Initially the questions appeared the same, however, the responses were unique for each country. For example under the section of “Geographical preferences” the responses varied across countries. In Namibia the responses to the question “Indicate in which region of Namibia you would most like to live” the options available were districts within Namibia and in South Africa the question was exactly the same, however, the options available were the local provinces. This challenge was addressed prior to merging the data sets. Identifiers were added to the original labels so that the country of origin could be determined by looking at the label for example “pref\_n” for Namibia and “pref\_s” for South Africa. Thus, these variables with different answers were kept as separate variables but their similarities could be seen from their names.

#### *4.3.3.3 Ensuring that the responses as well as value labels were identical*

Once the variables had been correctly named it was necessary to look at two issues: firstly if the values and value labelling were the same across the different surveys and secondly, if the possible responses were consistent across the surveys. This was important as when the files are merged it is the numerical values that are merged. Therefore, if the value labels are different across the surveys for the same value then when the data is merged the numerical values are transferred and assumed to take on the value label that was in the original data set. An example of this follows.



#### 4.3.3.3.1 Value labelling

Most of the questions were not problematic as they were the same across all surveys and labelled consistently. However, many demographic variables were labelled differently across the counties according to demographic particulars within the country. This comparison of value labels was done manually by systematically comparing surveys to the Namibian 'template' survey and then converting existing values into new numeric values according to the labels before the files were merged. An example of this was with coding with regards to race. In the 'template' questionnaire there were six options to choose from:

1. Black
2. Rehobother
3. San
4. Coloured
5. Indian
6. White

All the other surveys had a choice of four options and the numbering did not correspond to that of the Namibian data. The four choices and their relevant value labels on the other surveys were:

1. Black African
2. Coloured
3. Indian
4. White

If the data was merged into the Namibian set without editing, the coloureds (value labelled 2) would have been classified in the combined data set as Rehobother (also coded as 2 in the 'template' questionnaire), the Indians (value labelled 3) as San (also coded as 3 in the 'template' questionnaire) and so on. The solution to this problem was to recode the variable in the each country's original data set according to the value labels in the template set. This was done prior to the merge so that when the variables were combined the value labels in both data sets corresponded with each other.

#### 4.3.3.3.2 Possible responses

Another much less obvious problem encountered was that although the questions first appeared consistent across the survey, upon closer analysis the choices available were not always identical. An example of this was the responses available for the question “Are you a sympathiser or a member who regularly attends meetings or are you an office bearer of:” This question appeared in four of the five questionnaires. In all the cases there were seven subsections of the question which initially appeared the same. However, upon closer inspection, they were not. In the Swaziland survey one subsection had been removed (political party) and replaced with another subsection (church or religious organisation) and the order in which they were presented changed. In this instance the questions were renumbered according to their content to ensure consistency across the data sets.

#### 4.3.3.4 Making comparisons easier

In order to facilitate comparison of salaries across the five countries the salaries were all converted in US dollars. This conversion did not facilitate comparison in terms of creating equal and uniform intervals. This was not possible and would have had to be implemented in the planning stages of questionnaire design if it was to be accomplished. However, converting currencies into a common unit allowed for an easier comparison when examining the data.

The date on which the exchange rates were taken was the 29 December 2000. The reason for this choice was based on the fact that the data was collected in 2000 and in the case of Swaziland, 2001. It is not known exactly when the surveys began and when they finished. If this was known then it might have been possible to use more accurate dates. However, it is unlikely that the exchange rate fluctuated greatly during this period. Another factor that makes the choice of dates for the exchange rate somewhat arbitrary is that salaries, most probably the major source of income, usually only increase once a year. The end of December 2000 was seen as mid way between the start of the

collection of the data in the four countries and the delayed start in Swaziland. The exchange rate on 29<sup>th</sup> December was the date used in the calculations as there were no data available for any date later in December. The exchange rates, as of 29 December 2000 (eXchangerate.com) were:

Lesotho (income collected in Rands)

1 ZAR = 0.131903 dollars

Namibian (income collected in Rands)

1 ZAR = 0.131903 dollars

South African (income collected in Rands)

1 ZAR = 0.131903 dollars

Swaziland (income collected in Lilangeni)

1 E = 0.131411 dollars

Zambian (income collected in Kwacha)

1K = 0.0002223 dollars

#### *4.3.3.5 Methods for checking the combined data set*

##### *4.3.3.5.1 Comparing output from the original as well as the combined data set*

The method used to check the recoding process was to run basic frequency counts on the original data and to compare them with similar frequency counts run on the same variable disaggregated according to country in the combined data set.

##### *4.3.3.5.2 Scanning the output of the combined data set for non-sense output*

Another method used to check the accuracy of the data was to run basic exploratory data analysis on the combined data set. The output was then carefully checked for output that did not make sense. An example of this was when a frequency count was

run on the responses to the question “Do you have a working land line at home?” The majority of the answers came up as “yes” and “no” however there were a small amount of responses labelled “3” and “5”. When these cases were identified it was found that they all came from the Swaziland data which had been coded with “3s” and “5s” despite it appearing otherwise on the questionnaires. This problem was easily resolved by recoding the variables into the value labels by simply renumbering them.

Tidying the data and combining it into a uniform format and single data set was a lengthy process. It may be argued that it would have been easier and quicker to work only with the data that had immediately apparent use in the secondary analysis. However, this is not a practical suggestion as many connections of interest are not known at the start of an analysis, the analysis is informed as it progresses by literature being read. This type of work is similar to qualitative analysis in that it is only with familiarisation with the data that one becomes aware as to what the interesting facets of the data are and what areas to pursue with further analysis.

The familiarity with the data that emerged from cleaning and managing the data allowed the researcher to start identifying interesting themes and topics in the data. This allowed the analysis to progress in such a manner that it was continually shaped and guided by theory explored as the observations emerged. The researcher’s initial interest in the measurement and classification of poverty grew in this initial stage of analysis and was directed into the exploration of the dimensionality and different units of analysis associated with the measurement of poverty presented in the following chapter.

#### *4.3.4 Data analysis*

##### *4.3.4.1 Practical*

Rindskopf (2004) identifies three main components or uses of applied statistics:

- Description: this aims to answer the question “what is there?” and is used to summarise the available information;

- Exploration: with this analysis the aim is to find possible meanings of the data; and
- Inference testing: the aim behind these statistics is to “settle the matter as much as possible” (p.138).

Rindskopf (2004) highlights the importance of the first two components, especially exploration, when he states that to date, data analysis has been focused on inference testing. Recently there has been a shift, with an attempt to try and find a balance between descriptive statistics and inferential statistics. This shift has facilitated the “emergence of exploration as a primary purpose of applied statistics” (Rindskopf, 2004, p.138). Rindskopf believes that despite the fact that “exploratory methods will not usually generate hypotheses by themselves, they certainly help in the process by highlighting important features of the data” (Rindskopf, p.138).

Against the backdrop of Rindskopf highlighting the various components of statistics, this study aims to make use of the two components of description and exploration to compare income and asset-based poverty measures across five SADC countries. Running parallel to this comparison is an exploration of the effect of units of analysis on the measurement of poverty.

This thesis explores six major avenues of investigation. They are:

1. Income and the associated predictors
2. The consistency of the LSM
3. Asset ownership and service delivery and the associated predictors
4. A comparison of income and asset ownership as poverty measures
5. A cross country comparison of poverty
6. An exploration of the multidimensional nature of poverty

To obtain an overview of the sample, basic exploratory statistics were conducted on the demographic data both for the total international sample as well as for the individual countries in the sample. This allowed one to compare samples in terms of demographics.

As most of the data was categorical, the exploration of the different dimensions of poverty as well as the different units of poverty, mainly involved the use of non-parametric tests. These tests included Chi-square tests and related measures of association. Adjusted standardised residuals were used to determine the location of the associations with Cramér's  $V$  detecting the strength of the association between two variables. In cases where the categories were ordinal, Spearman's rank correlations were conducted.

#### *4.3.4.2 Theoretical*

The details of the data analysis are outlined above. However, the choice of the most appropriate analytical technique was not a simple one. What follows is the procedure and some of the thinking behind the final choice of the chi-squared test.

The first step of the preliminary exploration of the data involved calculating Spearman's correlation coefficients for the separate components of the LSM and different demographic variables such as employment, education, gender and household income. The rationale behind using this technique was that possession of a component on the LSM could be seen as ordinal (0 for 'No' and 1 for 'Yes') and the other variable used in the correlation was ordinal (1 for 'No education'; 2 for 'Primary school education' etc.). Thus, the idea behind the analysis was to explore the ordinal relationship between the two variables. The one problem with this technique was that correlations were calculated across different units of analysis. An example of this is when the association between employment status of an individual and their ownership of assets (which occurs at a household level) was explored. This was problematic as the person randomly



chosen to 'represent' the household in the questionnaire may not have been an accurate reflection of the 'typical member' of the household. Statistically this was also not the most appropriate technique but it did provide a broad picture from which to begin to view the data. Through an awareness of the shortcomings and inappropriateness of the technique research was conducted to find a better method. This step also highlighted the importance of units of analysis.

One of the primary motivations for looking for a technique other than a simple chi-squared analysis is summarised by Long and Chen (2004). They believe that categorical data is often unnecessarily limited to explorations of the strength of associations. Other analytic techniques were explored in an attempt to overcome this limited approach to analysis.

The next stage in finding a suitable data analysis technique was sparked by the idea of linear regression. Long and Cheng (2004) highlight the usefulness of the linear regression model (LRM) when they make the observation that it is the most commonly used statistical method in the social sciences. Part of the appeal of LRM is that it can deal with multiple independent variables and the results are easy to interpret. This very useful technique allows one to see the effect that an independent variable has on the dependent variable. However, LRM rests on the assumption that the dependent variable is continuous, uncensored and not truncated. This is not the case in this analysis as the dependent variable is ordinal, but not continuous and all the independent variables dichotomous. Therefore LRM is not a suitable method for this data as if it is used with such assumption violations then "the estimates are likely to be inconsistent, inefficient, or simply nonsensical" (Long & Cheng, p.259).

It is apparent that LRM is not a suitable technique but would provide the type of exploration suitable for this analysis. Therefore, it made sense to search for a categorical technique analogous to LRM. The aim was to find a technique that by using

a household indicator of poverty (i.e. income or LSM level) as the dependent variable one could identify the relative importance of the various components of the LSM in predicting the dependent variable. The converse being that it allows one to find which components are typically associated with particular groupings of the dependent variable.

Categorical or nominal data have severe limitations to its analysis as counts are the only numerical dimension of the data that can be used in traditional analysis (Hardy & Reynolds, 2004; Howell, 2002). Variables with skewed distributions or categorical classes, which prevent the use of linear analyses, are frequently logged in statistical analyses. The use of the log function is often used to overcome numerical challenges and limitations and therefore a couple of techniques using this function were explored, namely log-linear analysis and logistic regression. Below is a brief discussion as to the assumptions, limitations and rationale behind the final selection of statistical technique used in this analysis:

#### 4.3.4.2.1 Log-linear analysis

Log-linear models use a linear combination of a matrix of independent variables and a vector of coefficients to predict the frequency or count of category outcomes (Anderton & Cheney, 2004). The employment of the log-linear model allows for the regression approach to be used to find and explain the interrelationships of the independent data with the dependent data (Anderton & Cheney).

This technique emphasises the interrelationship between independent variables and produces a complex array of interaction effects. This was not appropriate as there were 20 independent variables which have co-linearity and the interaction of 20 variables would have resulted in a very complex equation thus not really simplifying the data at all or facilitating understanding.

#### 4.3.4.2.2 Logistic regression

Logistic regression is a multivariate technique that allows one to predict the presence or absence of a characteristic (dependent variable) based on values of a collection of predictor values (independent variables) (SPSS, 2004). In this way, logistic regression is similar to LRM and initially looks a potential solution. However, logistic regression is not suitable as it is limited to models where the dependent variable is dichotomous (SPSS, 2004) and this is not the case as household income consists of four categories.

#### 4.3.4.2.3 Multinomial logistic regression

Multinomial logistic regression overcomes the limitation of dichotomous outcomes associated with logistic regression and allows for multiple outcomes. Similar to logistic regression, this technique is used for analyses in which one wants to classify subjects based on values of a set of predictor variables but does not restrict the dependent variable to two categories (SPSS, 2004). Multinomial logistic regression is a suitable statistical tool to use in this analysis as it produces similar results to a LMR but can be used with categorical independent and dependent variables.

#### 4.3.4.2.4 Ordinal logistic regression

The ordinal regression models are specialised cases of the multiple logistic regression. The unique quality of ordinal logistic regression is that it allows for multiple dependent variables but it takes into account the ordered nature of the dependent variable. This is the case with this data as the household income is categorised from lowest to highest. Thus, ordinal logistic regression appears to be the ideal analysis to run on this data with the household income quartiles as the output variable is ordered and the components of the LSM as binary predictor variables.

The ordinal regression procedure on SPSS is an adaptation of the general linear model to ordinal categorical data and is known as the Polytomous Universal Model (PLUM) (Norušis, 2005). There are several models for ordinal outcomes, but ordered logit and

ordered probit models are the most commonly used models for ordinal outcomes in the social sciences (Long & Chen, 2004). Logit functions are best used when the categories are evenly distributed and equally probable (Norušis) and more suitable for observations and exploratory studies. Ordinal logistic regression was chosen as the most appropriate test.

In terms of interpretation of the results there are a number of tests which are of interest:

The model fit test and goodness of fit statistics are similar and look at the expected and observed values within each category. The null hypothesis in this case is that the model without predictors is as good as the model with the predictors thus if a model is good one will reject the null hypothesis. These tests can only be used for models that have large expected values in each cell. If this is not the case SPSS produces a warning as to the number of empty cells in the design (Norušis, 2005). Such a warning does not invalidate the ordinal regression but simply means that the goodness of fit test is not accurate (Norušis).

The Wald statistic is the square of the ratio of the coefficient to its standard error (Norušis, 2005). The null hypothesis is that the ratio of the coefficient to its standard error is zero and Wald statistics with  $p < 0.05$  are significant. Significant Wald statistics indicate a relationship between the independent variable and the logit (Norušis, 2005). The estimate of the coefficient is also used in interpretation of the results.

The test of parallel lines is one of the last tests in the printout but should be looked at first as if it is significant the results for the rest of the analysis are invalid. This tests for the one assumption behind ordinal logistic regression that the relationships between the independent variables and the logits are the same for all the logits, in other words the results are a set of parallel lines one for each category of the outcome variable. If this

assumption is violated and the null hypothesis rejected one has to use multinomial regression (Norušis, 2005).

Ordinal logistic regression was run across all five countries with the LSM components as the independent variables and household income as the dependent variable. Unfortunately, despite the apparent theoretical suitability of the test all the analyses had significant results for the test of parallel lines. No warning is produced by SPSS and thus, if one is not familiar with the test it is easy to over look the meaning and importance of this result and continue to use and interpret the analysis despite the severe violation of the assumption.

In line with suggestions by Norušis (2005) a multinomial logistic regression was performed on the data as the ordinal logistic regression was not a suitable technique. Once again, despite the apparent theoretical appropriateness of this technique the results from these tests emerged with the warning "There is possibly a quasi-complete separation in the data. Either the maximum likelihood estimates do not exist or some parameter estimates are infinite. The NOMREG procedure continues despite the above warning(s). Subsequent results shown are based on the last iteration. Validity of the model fit is uncertain".

The implications and solutions to this problem are not easily found in the literature and when they are found they are not always very clear. Some insight into this problem is provided by Webb, Willson and Chong (2004, p. 274): "If the data are completely or partially separated, it may not be possible to obtain reliable maximum likelihood estimates since convergence may not occur. Convergence does not occur because one or more parameters in the model become theoretically infinite. Such is the case if the model perfectly predicts the response or if there are more parameters in the model than can be estimated because the data are sparse." In this case the problem is more likely to be the fact that the parameter becomes infinite as a result of a very good fitting model.

The other option of sparse data is not likely to apply with this data set as it is large. The solution offered by Webb et al. in response to the infinite parameter problem is to eliminate some of the variables. However they warn that it is impossible to determine those variables suitable for elimination. Ultimately there appears no feasible way out of this problem.

As can be seen from the above a considerable amount of research was conducted in an attempt to find a multivariate technique to assist with the analysis. However, a suitable technique could not be found and traditional non-parametric chi-squared tests and related tests of associations were run on the data.



## 5. RESULTS

This chapter is divided into three sections. The chapter opens with descriptive statistics of the samples, the aim of which is to provide context for interpretation of the analysis. The second section explores poverty at a household level with an exploration and comparison of two measures of poverty, income and asset-based measures (the LSM). The final section draws on the findings of the previous section and explores the multidimensional nature of poverty by comparing these two poverty measures. Throughout this chapter, units of analysis and the different countries are used as the variables along which comparisons between the measures can be made. Below is a summary of the chapter that follows:

1. In the descriptive statistics the following units of analysis are used:
  - a. Individuals in sample
  - b. Households in sample
2. Exploration of:
  - a. Income
  - b. Asset-based poverty measures
3. Comparison of income and asset-based poverty measures

The above analysis provides information related to the main avenues of exploration as outlined in Chapter 3 (income, asset-based measures, consistency of the LSM, a comparison of the two measures, a cross-country comparison and a multidimensional analysis of poverty). The results will be discussed in relation to these avenues in the following chapter.

## 5.1 Descriptive statistics of the samples

Across the five countries a total of 5927 individuals were questioned. The sample demographics as well as variables used in the next section are described in the section below.

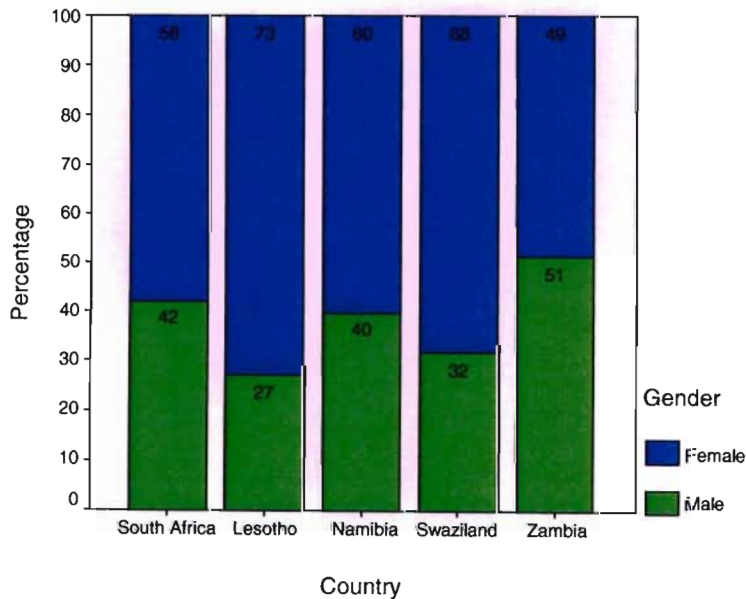
### *5.1.1 Individual level*

#### *5.1.1.1 Gender*

**Table 5: Gender composition of the respondents in each country and as a whole**

		Gender				
		Male		Female		Total
		Count	Percent	Count	Percent	Count
Country	Lesotho	191	27.1%	513	72.9%	704
	Namibia	280	39.8%	424	60.2%	704
	South Africa	1098	42.1%	1511	57.9%	2609
	Swaziland	223	31.7%	480	68.3%	703
	Zambia	617	51.2%	588	48.8%	1205
	Total	2409	40.7%	3516	59.3%	5925

**Figure 2: A graphical representation of the gender composition of the sample in each country**



In the total sample 40.7% of the respondents were males and 59.3% of the respondents were female. Data for two cases was missing and presumably this was lost in the process of filling out the forms or transferring the data. The individual gender compositions of the samples within each country can be seen in Table 5 and are graphically represented in Figure 2. The only country in which more than half of the sample was male was Zambia at 51%, with Lesotho having the smallest proportion of males in its sample at 27%.

### 5.1.1.2 Age

Figure 3: Age distribution in Lesotho

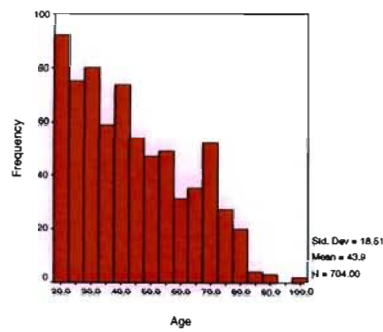


Figure 4: Age distribution of Namibia

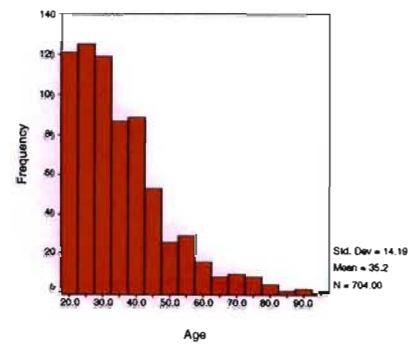


Figure 5: Age distribution in South Africa

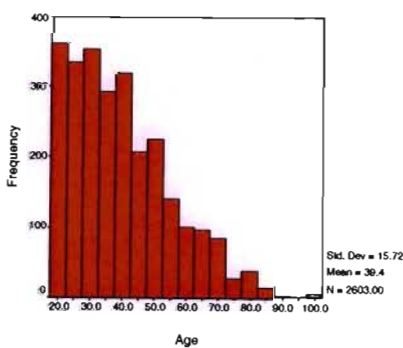
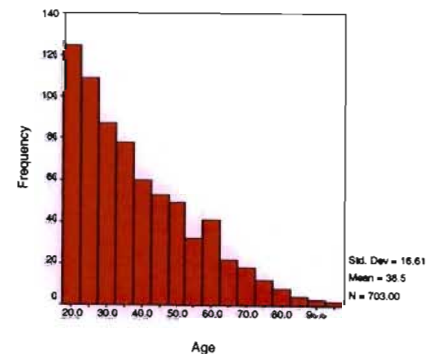
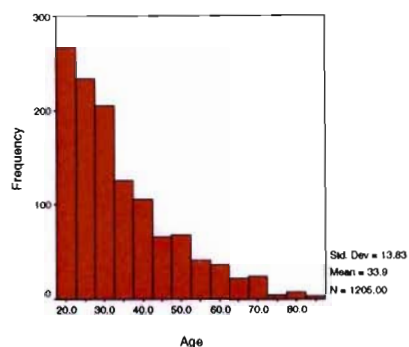


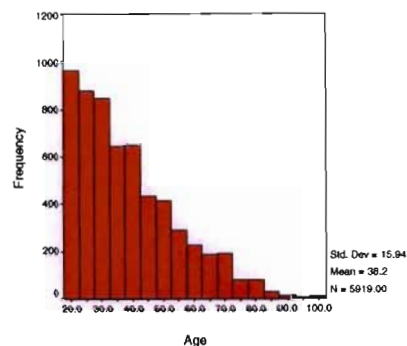
Figure 6: Age distribution in Swaziland



**Figure 7: Age distribution in Zambia**



**Figure 8: Age distribution of the total sample**



With regards to the distribution of the age of respondents, all countries have age distributions which are positively skewed. The lower limit in age was controlled by the selection criteria that only people over the age of 18 were able to participate in the survey. The trend in developing countries is to have the majority of the population in their twenties and thirties and a relatively small older population. The positively skewed distribution of ages reflects this trend.

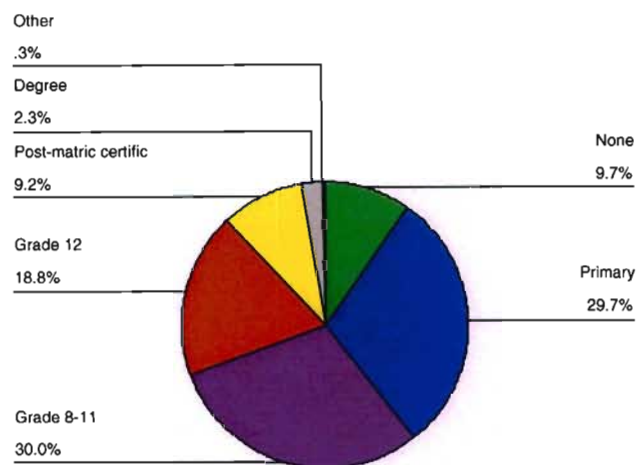
With regards to the mean ages within the countries, Lesotho has the highest mean of 43.9 years and Zambia the lowest mean of 33.9 years with the other three countries ranging between 35 and 40 years and similar standard deviations (ranging from 13.83-18.51).

### 5.1.1.3 Education levels

**Table 6: Education levels of individuals in each country and of the sample as a whole**

Country	Highest educational qualification													
	None		Primary		Grade 8-11		Grade 12		Post-matric certificate or diploma		Degree		Other	
	Count	Percent	Count	Percent	Count	Percent	Count	Percent	Count	Percent	Count	Percent	Count	Percent
Lesotho	76	10.8%	368	52.3%	227	32.2%	26	3.7%	6	.9%	1	.1%	0	0%
Namibia	63	9.0%	117	16.7%	238	33.9%	197	28.1%	73	10.4%	13	1.9%	1	.1%
South Africa	186	7.1%	600	23.0%	849	32.6%	550	21.1%	310	11.9%	105	4.0%	5	.2%
Swaziland	112	15.9%	208	29.6%	192	27.3%	112	15.9%	52	7.4%	15	2.1%	12	1.7%
Zambia	135	11.2%	464	38.5%	271	22.5%	228	18.9%	104	8.6%	3	.2%	0	.0%
Total	572		1757		1777		1113		545		137		18	

**Figure 9: Education levels of the total sample**



The education levels of the samples in each country are outlined in Table 66. The country with the highest percentage of the sample with no education is Swaziland at 15.9% with the lowest percentage in this category being South Africa (7.1%). South Africa also has the highest proportion of any country with a post-matric or degree qualification (15.9%). Over half of Lesotho's sample (52.3%) has only a primary school qualification with only 4.7% having any qualification above a grade 11. The overall composition of the sample, with regards to educational qualifications, can be seen in Figure 9 with more than two thirds (69.4%) of the sample not having a matric (or equivalent secondary education qualification).

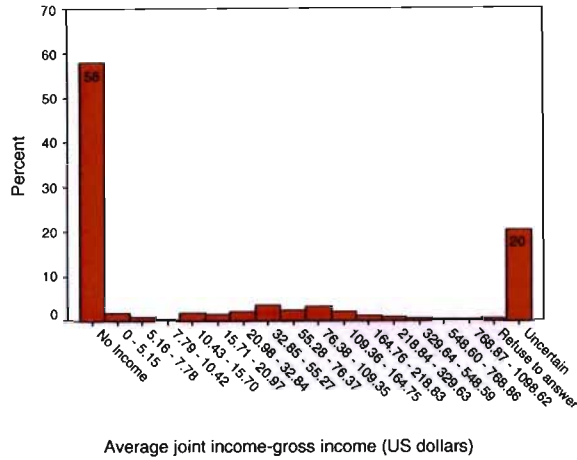
### *5.1.2 Household level*

#### *5.1.2.1 Monthly household income*

As mentioned in the Chapter 4, the data used in this section was collected in the currency units of the specific country. To assist with comparisons the intervals used were converted in US dollars. Having all measurements in the same units made comparisons easier, however, it did not overcome the problem of having different category intervals.

## Lesotho

Figure 10: Household income for Lesotho

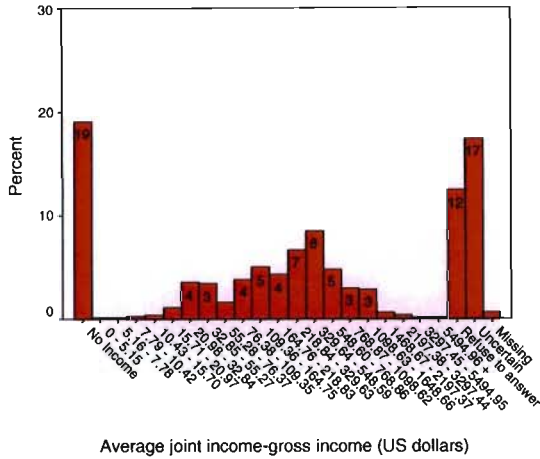


As can be seen from Figure 10 most people in Lesotho have no income; over half of the sample (58%) has no income. Migrant labour may account for part of this observation as men may be outside the country earning, with this not considered as part of the household's income. This provides a possible reason as to how households can survive on 'no income'. This possibility of migrant labour fits with the very high percentage of female respondents in Lesotho seen in Table 5. For the remaining sample that does have some form of income, this income is roughly normally distributed although it is slightly positively skewed. One fifth of the sample is uncertain as to what is their income.



## Namibia

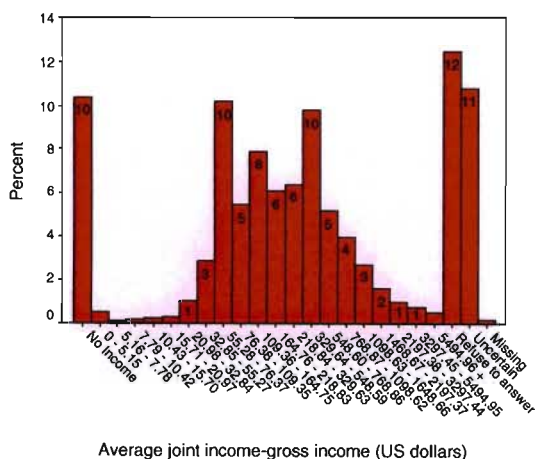
Figure 11: Household income for Namibia



Once again, a large proportion of the sample, 19%, has no form of income (Figure 11). An interesting point to note is the large number of people within the Namibian sample who either are uncertain as to their income (17%) or who refuse to answer the question (12%). This data is also slightly positively skew with the modal income being in the range of \$329-\$548.

## South Africa

Figure 12: Household income for South Africa

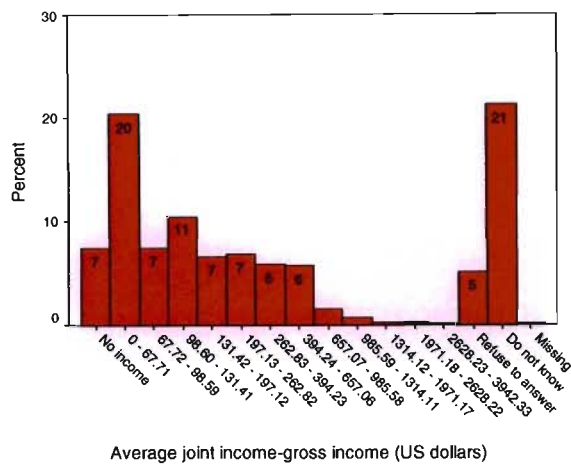


In South Africa (Figure 12), once again, a large proportion of the sample does not have any income. Twelve percent of the people sampled refused to answer the question and

10% were uncertain as to the combined gross income of the family. The distribution of the income, in the sector of the sample that does have an income and were prepared to answer the question, is bi-modal with maximums in the income range of \$55.28-\$76.37 (10%) and \$329.64-\$548.59 (10%).

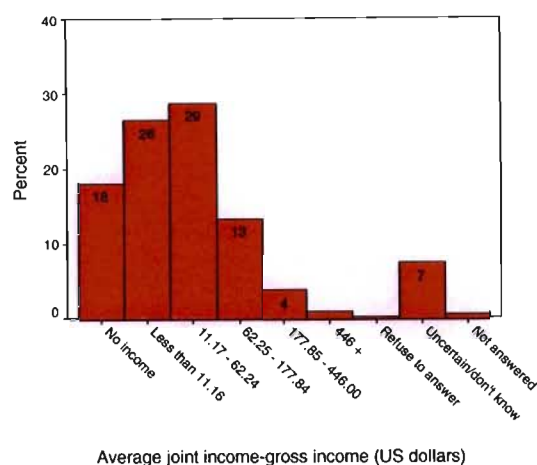
### Swaziland

Figure 13: Household income for Swaziland



The income distribution in Swaziland (Figure 13) is positively skewed. The modal range of income is \$0-\$67.71 (20%). The intervals between \$67.72 and \$657.06 consist of a similar number of people in each interval with a slightly higher number in the range \$98.60-\$131.41 (11%). After the value of \$657.06 there is a severe drop-off in the number of people in the subsequent intervals. In this sample, the percentage of people with no income is not as high relative to the samples of the previous three countries.

**Figure 14: Household income for Zambia**



In Zambia (Figure 14) the income distribution is again positively skewed and, as was the case with Swaziland, the group with no income is not as high relative to the other income groups. In the sample, fewer people (7%) were uncertain as to their income and a very few number (0.4%) refused to answer the question. The modal income group earned between \$11.17 and \$62.24 (29%).

Table 7 below is a summary of the descriptive statistics for income in each country. A limitation of categorical data is evident as average income for each country could not be calculated. However, what this table demonstrates is that in Lesotho and Namibia the largest groups are those which have no income. The median results show the range of income distribution with both Namibia and South Africa having high medians. Namibia presents particularly interesting results as the largest group is the one with no income, however, people that are earning appear to be earning well in comparison with the other countries.

**Table 7: Summary descriptive statistics for household income**

	Median (\$)	Mode (\$)
Lesotho	32-55	No income
Namibia	218-329	No income
South Africa	164-218	55-76
Swaziland	98-131	0-67
Zambia	11-62	11-62

Note: Median worked out of the group who are actually earning (i.e. excludes: no income group, unsure etc)

## 5.2 Exploration and Analysis

### *5.2.1 Income*

In addition to the descriptive statistics relating to income in the previous section, Chi-square tests were conducted to determine the relationship between income and various variables. This section of the analysis explores income as a measure and identifies predictors of income at different levels of analysis.

The conversion of the income data earlier in this chapter into US dollars was of little use in this analysis as the currencies were still in different categorical intervals making comparisons across countries impossible. In order to overcome this problem, the data was recategorised into equivalent categories across the samples. The personal and household incomes were recoded into four categories namely: no income, low income level, middle income level and highest income level. This was done separately for each country by placing all households with no income into the no income group, thus the size of this group in each country is not always one quarter of the total sample size. The remainder of the sample was then allocated proportionally into the remaining three levels with the lowest third of the remaining group being allocated to the low income level and so on.

#### *5.2.1.1 Individual level*

Using the individual as the unit of analysis the relationship between the income categories of the individual person (no income, low income level, middle income level and upper income level), gender and education level was explored.

##### *5.2.1.1.1 Gender*

Chi-square tests were conducted to determine if there was an association between the gender of the individual and their individual income in each of the five countries. Adjusted standardised residuals were used to identify income categories which had an

over or under representation of men or women. Cramér's V was calculated to determine the strength of the association.

**Table 8: Chi-square results for individual income and gender**

	Pearson's Chi-Square	Df	Asymp.Sig (2-sided)	Cramér's V
Lesotho	8.138	3	0.430	0.108
Namibia	12.254	3	0.007	0.148
South Africa	112.084	3	0.000	0.238
Swaziland	47.431	3	0.000	0.269
Zambia	48.105	3	0.000	0.206

**Table 9: Adjusted standardised residuals for gender and personal income level**

		No income	Lower level	Middle level	Upper level
Lesotho	Male	-0.4	-2.2	1.5	1.2
	Female	0.4	2.2	1.5	1.2
Namibia	Male	-3.0	-0.2	2.8	1.4
	Female	3.0	0.2	-2.8	-1.4
South Africa	Male	-7.0	-4.0	6.7	6.5
	Female	7.0	4.0	-6.7	-6.5
Swaziland	Male	-3.3	-2.6	2.4	6.2
	Female	3.3	2.6	-2.4	-6.2
Zambia	Male	-3.6	-2.1	3.4	5.5
	Female	3.6	2.1	-3.4	-5.5

For all the countries, except Lesotho, there was a significant association between gender and income level (Table 8). The strongest association between gender and income was found in Swaziland followed by South Africa (Cramér's V). Overall, except in Lesotho, the general trend was that there was an overrepresentation of men in the upper income levels and an under representation in the lower income levels. The opposite trend was observed for females (Table 9).

#### 5.2.1.1.2 Education

Chi-square tests with adjusted residuals were conducted to determine if there was an association between the education level of the individual and their income in each of the five countries.

**Table 10: Chi-square results for individual income and education level**

	Pearson's Chi-Square	Df	Asymp.Sig (2-sided)	Cramér's V
Lesotho	14.581	12	0.265	0.083
Namibia	169.440	12	0.000	0.317
South Africa	755.646	12	0.000	0.357
Swaziland	129.580	12	0.000	0.259
Zambia	217.401	12	0.000	0.253

From Table 10 it can be seen that there was a significant association between education level and income in Namibia, South Africa, Swaziland and Zambia. Once again Lesotho is the only country that does not observe the trend. The strongest association between education level and income is seen in South Africa.

**Table 11: Adjusted standardised residuals for gender and personal income level**

		No income	Lower level	Middle level	Upper level
Namibia	None	1.6	2.1	-2.0	-2.2
	Primary	0.1	4.2	-1.1	-3.4
	Grade 8-11	3.5	-1.2	0	-3.8
	Grade 12	-0.7	-1.9	2.3	0.4
	Post matric	-5.8	-2.5	-0.1	11.3
South Africa	None	-2.9	12.5	-3.3	-5.9
	Primary	-1.6	10.7	1.0	-10.2
	Grade 8-11	6.6	-4.0	1.7	-6.2
	Grade 12	2.9	-8.3	0.2	4.8
	Post matric	-7.6	-8.2	-1.1	19.9
Swaziland	None	2.5	0.3	-0.3	-3.6
	Primary	0.7	3.3	-0.6	-4.5
	Grade 8-11	0.7	-1.0	2.0	-0.7
	Grade 12	-0.1	-1.8	-0.8	2.7
	Post matric	-5.4	-1.9	-0.6	9.8
Zambia	None	2.9	1.8	-3.9	-2.8
	Primary	3.0	4.5	-5.5	-5.2
	Grade 8-11	-0.8	0.1	2.3	-2.3
	Grade 12	-1.6	-3.7	2.9	5.1
	Post matric	-4.9	-4.7	6.3	8.1

The adjusted standardised residuals in Table 11 identify the pattern of association between income levels and education levels. Across all the countries there is an over representation of post-matric qualifications in the upper income level, this observation is most evident in South Africa and Namibia. It is interesting to note that a similar observation is made for people with a grade 12 qualification, however, the only country



where this is not seen is Namibia. The relationship between low income and poor education is not as clear-cut as that found at the other end of the spectrum. In Swaziland and Zambia there is an over representation of people with no education in the no income category with an under representation of people with no education in the no income group in South Africa. In Namibia and South Africa there is an over representation of people with no education or only primary school education in the lower income level.

#### 5.2.1.1.3 Job searching status

Not strictly related to demographic variables is the relationship between an individual's income and their job searching status. This data was only collected in two countries, Namibia and South Africa, but it does show a significant association between the two variables ( $\chi^2=108.378$ ,  $df=3$ ,  $p=0.000$ , Cramér's  $V=0.442$ ;  $\chi^2=409.944$ ,  $df=3$ ,  $p=0.000$ , Cramér's  $s=0.477$ ). There are significantly more people searching for jobs in the no income category than any of the other income categories.

This in itself is not a surprising observation, however it provides support for the idea that many of the people who are not earning in these countries would like to earn and are taking positive steps to remedy the problem. It proves that the majority who are not earning are not in this position by choice.

#### 5.2.1.2 Household level

##### 5.2.1.2.1 Location: Rural vs. urban

Chi-square tests with Cramér's  $V$  were run on the data to determine if there was a significant association between household income and the location of the household i.e. rural vs. urban.

Table 12: Chi-square results for location and household income

	Pearson chi-square	df	Asymp Sig (2-sided)	Cramer's V
Lesotho	3.521	3	0.318	0.08
Namibia	48.941	3	0.000	0.315
South Africa	142.438	3	0.000	0.279
Swaziland	20.901	3	0.000	0.203
Zambia	330.996	3	0.000	0.558

As can be seen in Table 12 there is a significant association between location and household income in all the countries except for Lesotho. This relationship is the strongest in Zambia. The general trend is that household incomes are generally higher in urban areas.

#### 5.2.1.2.2 Number of people in the household

A chi-square test was conducted to determine if there was a significant relationship between the household income level and the number of people living in the household for each country. The results from these tests are presented in Table 13.

Table 13: Chi-square results for household size and household income

	Pearson chi-square	df	Asymp Sig (2-sided)	Cramér's V
Lesotho	2.892	9	0.968	0.042
Namibia	11.979	9	0.214	0.09
South Africa	29.263	9	0.001	0.07
Swaziland	7.808	9	0.554	0.072
Zambia	25.257	9	0.002	0.088

There is a significant association between household size and household income in South Africa and Zambia. In terms of directionality there is no linear relationship such as larger households are associated with higher incomes or large households associated with low incomes. Rather the associations seem to occur between middle income levels and medium-sized households; some associations are seen at the extremes but these observations are not consistent. This finding is interesting in relation to earlier discussion of per capita income calculations in households. It appears that in these five countries such a measure would only provide an alternative picture of poverty in South

Africa and Zambia. In light of this, this measurement is not explored any further in this study.

### 5.2.2 Living Standard Measure

Statistical tests with predictors associated with the individual unit of analysis, such as gender and education, were not conducted with the LSM scores as the LSM is a household measure. This is in contrast to income data which was collected at both the individual and household level.

Statistical tests were also not conducted with predictors associated with household units of analysis. The reason for this was that the LSM has double the number of categories that income has. This resulted in many of the cells having less than the required number of counts. A possible solution to this problem would have been to collapse the categories, however, this would have defeated the point of the analysis to a large degree. Instead of exploring predictors associated with asset-based measures, the measures were explored at a descriptive level.

#### 5.2.2.1 LSM total scores

This section explores the distribution of LSM levels across the population within a country as well as allows one to make cross-country comparison of living standards.

**Table 14: LSM summaries across each country**

		Country									
		South Africa		Lesotho		Namibia		Swaziland		Zambia	
		Count	Column %	Count	Column %	Count	Column %	Count	Column %	Count	Column %
Respondent	Traditional have nots	73	2.8%	254	36.1%	45	6.4%	98	13.9%	481	42.2%
LSM	Self-centred non-earners	162	6.2%	212	30.1%	37	5.3%	125	17.8%	194	17.0%
	Compound and hostel dwellers	263	10.1%	146	20.7%	82	11.6%	237	33.7%	150	13.2%
	Urbanised singles	387	14.8%	67	9.5%	77	10.9%	105	14.9%	113	9.9%
	The young aspirers	430	16.5%	22	3.1%	107	15.2%	58	8.3%	104	9.1%
	Emerging market	423	16.2%	2	.3%	138	19.6%	41	5.8%	67	5.9%
	Established affluents	394	15.1%	1	.1%	156	22.2%	32	4.6%	30	2.6%
	Progressive affluents	479	18.3%	0	.0%	62	8.8%	7	1.0%	1	.1%
	Super group	0	.0%	0	.0%	0	.0%	0	.0%	0	.0%

### *Lesotho*

In Lesotho over a third of the sample (36.1%) is classified as 'traditional have nots', the other large proportion (30.1%) of the sample fall in the 'self-centred non-earners' group. Thus two thirds of the population fall within the two lowest LSM levels. Not only is this a large proportion of the Lesotho sample but it is also the largest proportion of any country's sample that falls in this category. Less than 13% of the sample is classified as above LSM level of four with less than 1% of the sample falling in the top four categories. None of the sample fell within the two highest levels of the LSM.

### *Namibia*

The largest LSM level in Namibia is that of the 'established affluents' with 22.2% of the sample falling in this group. Nearly 80% of the sample falls within the middle-five LSM categories. Namibia has the second highest proportion of the sample in the category of 'progressive affluents' (8.8%). The spread across the LSM levels is fairly even in comparison with other countries.

### *South Africa*

In South Africa there are a similar amount of people in the levels between 'urbanised singles' and 'progressive affluents' (between 14.8% and 18.3% of the sample in each level). There is a very small percentage of the sample (2.8%) in the lowest bracket, that of the 'traditional have nots'. South Africa has the highest proportion of all five countries belonging to the progressive affluents.

### *Swaziland*

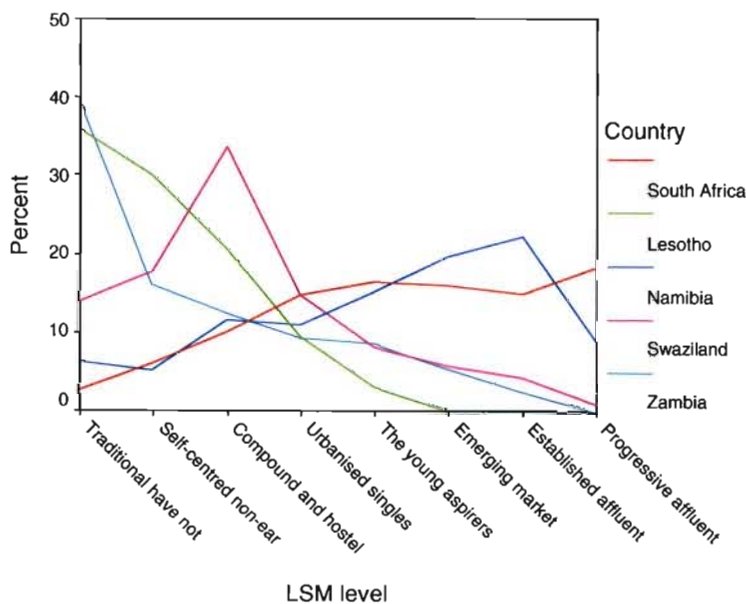
Swaziland has just over a third of its population (33.7%) in the compound and hostel dwellers group of the LSM, the highest proportion of any country. Swaziland has marginally the highest proportion (14.9%) in the urbanised single group. Thirty percent of the sample from Swaziland fell in the two lowest LSM groups. Less than 20% of the sample falls within the top five LSM levels.

### Zambia

Nearly half of the Zambian sample (42.2%) fell in the lowest LSM group. This is the highest proportion of any sample in this group – such a high figure is only also seen in the Lesotho sample. Coupled with this observation is the fact that no group above ‘compound hostel dwellers’ has more than 10% of the sample in it.

Figure 15 assists with cross-country comparisons of living standards. In Lesotho and Zambia the percentage of the population in successively increasing living standards decreases. This is in comparison with an increasing percentage of the population in successively increasing living standards in South Africa and Namibia.

Figure 15: Distribution of the sample according to LSM levels across all five countries

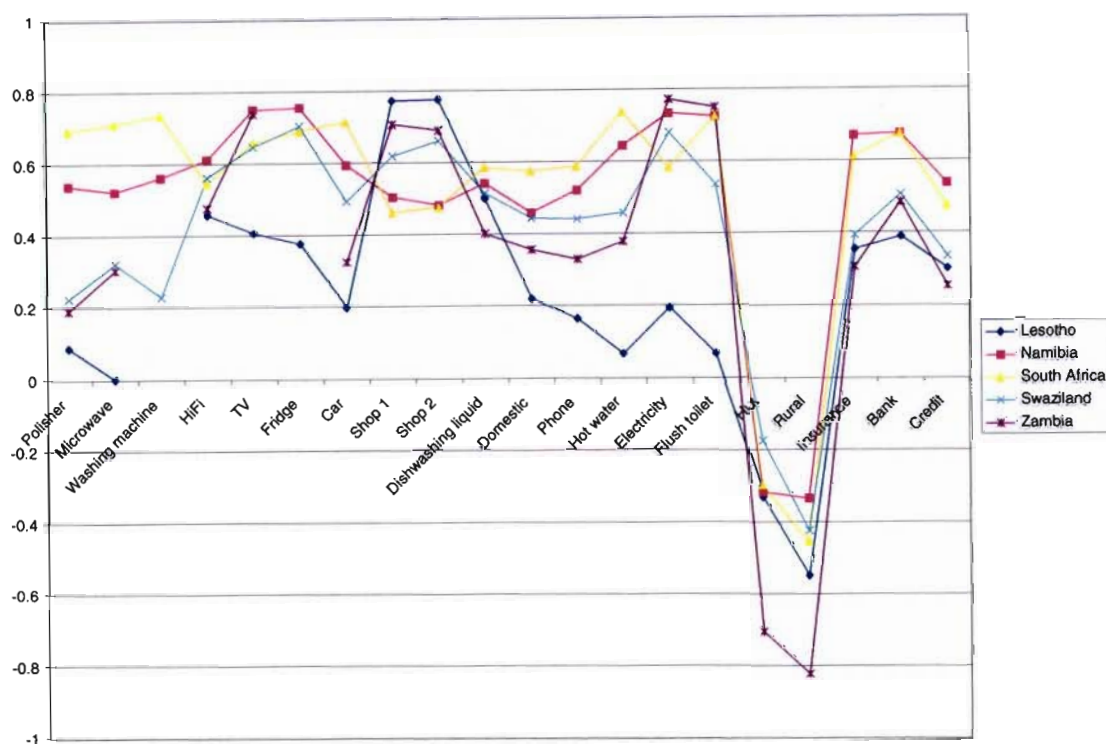


#### 5.2.2.2 The consistency of the LSM across countries

The LSM has a universal scoring system. This scoring relies on the assumption that poverty, and in particular living standards, is a uniform concept across countries.

Spearman's rank order correlations were conducted for each country to explore the relationship between total LSM scores and ownership of each component of the LSM. The aim behind this was to see if certain components had a particularly strong association with living standards and to see if these associations differed across counties. This analysis enabled one to explore the relationship between total score and components without using the potentially biased weighting scores.

**Figure 16: Correlations between asset ownership and total LSM score**



South Africa appears to have the strongest correlation between LSM scores and components. Nearly half, nine of the 20, of the strongest correlations between LSM scores and components are found in South Africa. This is to be expected as this measure was designed for South Africa and hence the internal validity of the measure should be high for South Africa. The components that correlated more strongly with LSM in South Africa, as opposed to anywhere else, were assets such as vacuum,



microwave, washing machine and a car and the services of hot water and a phone. These components are all relatively non-essential or luxury elements (for example hot water is a product of accessing electricity; microwaves and washing machines add comfort as opposed to a fridge which performs a basic function). This adds to the picture that in relation to other countries South Africa is well off, both in terms of income, social indicators and the type of asset that they have.

The lowest correlations between LSM components and LSM scores are generally seen in Lesotho. This is in line with nearly all the other observations of low correlations or associations between any poverty measure and any other variable in Lesotho. A possible suggestion for this is that as a result of the positively skew distribution of any poverty measure in Lesotho, when a relationship between a variable and a poverty measure is explored, the dearth of points in the upper range make any form of relationship across the entire range of the measure very difficult to detect. An interesting observation to note with Lesotho is that there is a very poor correlation between LSM and any service component. The fact that there is such a poor correlation may indicate that in Lesotho, irrespective of living standards or wealth, such services are unattainable. This may point towards the possibility that such services are not available to any people in Lesotho. As a result of the generally poor nature of Lesotho, it is possible that components that differentiate living standards in Lesotho are more basic than those covered in the LSM.

In Zambia, in comparison with the other countries, there is a strong relationship between LSM and housing type and location. This observation mirrors that seen with income at the household level (the negative relationship is due to the fact that yes responses to hut and rural indicate poverty whereas yes responses to the other components indicate ownership of an asset or access to a service and are associated with wealth). This points to the possibility that location may be an underlying factor that has significant influence as to the type of services and assets that people have access to in Zambia.

However, it must be noted that access to shops and ownership of assets may be less essential in rural areas of developing countries such as Zambia as there is a high probability that rural areas will rely on subsistence farming and would not have much use for a car as there are probably not many roads in good condition in these areas. This highlights the issue of a universal scoring system once again.

The relationship between LSM score and components provides another interesting observation in Zambia. There is an extremely high correlation between electricity and LSM score and flush toilet and LSM score. This is the strongest correlation between LSM score and these two components in any of the countries and is in contrast to Zambia's usually moderate correlation in relation to the other countries. This provides interesting information and indicates that there is some element, that electricity and flush toilets represent, that is related to living standards in Zambia. Both these components with a high correlation are service related and may be related to the underlying relationship of location and living standards discussed above.

Although the comparative technique used was simple and only took account of each variable separately, without any interaction effects, what it did provide was an opportunity to explore the relationship between components and the overall score without having to utilise an already biased weighting system.

### *5.2.3 The relationship between the LSM and income*

Having examined LSM scores and income levels separately, the next logical step was to explore the relationship between the LSM (an asset-based measure) and income as a poverty measures. This step of the analysis provided information as to which asset-based indicators have a strong relationship with income and hence the relationship between the two household measures of poverty. This analysis highlights differences in poverty trends across countries.

### 5.2.3.1 LSM score and household income levels

The first part of this analysis was to determine how closely related LSM scores and income levels were related as a whole. This was done by calculating the Spearman's correlation coefficients for household income level and LSM levels (Table 15). If the two measures are indeed related it would be expected that households in the lower income brackets would tend to feature in the lower levels of the LSM.

Table 15: Spearman's correlations of LSM levels with income levels

	Spearman's correlation coefficient
Lesotho	0.323
Namibia	0.705
South Africa	0.669
Swaziland	0.562
Zambia	0.610

From Table 15 it can be seen that in all countries there is a relationship between household income and LSM level. These correlations are all statistically significant at the 1% level. The strongest correlation between LSM and income is seen in Namibia, followed by South Africa with Lesotho having the weakest correlation between these two variables. The correlations in all the countries are positive indicating that higher income levels are associated with higher LSM levels and vice versa. From this relationship between income and LSM the next logical step was to explore the whether there were relationships and associations between LSM components and income.

### 5.3.2.3 LSM components and household income levels

In an attempt to explore the relationship between LSM components and income as household measures of poverty a simple frequency count was run (Table 16). This involved calculating the percentage of households in the no income group and the highest income level that owned or accessed the various components that make up the LSM. Essentially this part of the analysis provides a poverty profile for each country. This analysis served two roles: firstly it allowed for a comparison within countries to

determine which assets are most plentiful and which are only associated with high income and secondly, it allowed for comparisons across countries so that relative ownership of different assets could be compared for similar income groups across countries. This allowed one to explore asset-based ownership across different income groups within countries and between countries.

For the no income group a 10% cut off was taken for asset ownership or service access. This enabled one to see the LSM profile in terms of what ownership looks like for the poor in each country.

The split between Namibia and South Africa and the rest of the countries in terms of both national social indicators as well as LSM levels seen previously, occurs again when exploring the relationship between income and LSM components. A considerable larger percentage of the poor, the no income groups, in these two countries own various assets or have access to various services. This can be seen in Table 16. In terms of services, more than 10% the poor in these countries have access to a working telephone at home, a flush toilet and electricity. This high access to services among the no income group in South Africa and Namibia indicates that income is not very strongly related to these services. A possibility for this is that as a result of the relative development of these countries (as indicated by the HDI) these services have become 'normal' and not simply provided to those who can afford to pay large amounts of money for them. Assets that are particularly prominent with this group in these countries include a fridge, television and hifi. Financial services are also widely used by this group in South Africa and Namibia.

One observation related to the discussion above that provides interesting insight into the relationship between income and LSM components is Zambia. At a national level, Zambia would appear to be poorer than any of the other countries as it has the worst standing in relation to the international poverty line. In addition to this, it also has the

highest infant mortality, the lowest life expectancy and the lowest enrolment rate. Thus, at both at a national and a household income level it would appear that Zambia should be the poorest country. What is apparent at the household level is that location is strongly related to income group in Zambia. However, despite this strong relationship between location and income, the provision of services at this income level in Zambia is higher than that seen in Lesotho and Swaziland, this indicating that at some level the factor of location has been overcome to provide better services than are accessible in Lesotho and Swaziland despite the impact of location. At this level the GDP may account for some of the improved service delivery in Zambia relative to Swaziland. However, the sole impact of GDP does not hold as, in terms of income, Zambia has 44% of the sample earning less than \$11 and Swaziland has only 27% earning less than \$60. Thus money at a national and household level is not analogous and highlights the fact that GDP is a complex measure and is not simply a reflection of income.

A poverty profile was also conducted with the upper income level. In this profile, the minimum cut-off for ownership was set at 40%. A similar picture to that seen in the no income groups is seen in the upper income group with the highest percentage of ownership of assets generally found in South Africa and Namibia. With the exception of Lesotho, more than 40% of upper income groups in each country have a TV, hifi and electricity. This, in contrast to the picture provided by the no income group, highlights the type of assets that are purchased when there is a higher income. The use of financial services is also much more prevalent in the upper income level. There is a sharp contrast between the two income groups in Zambia indicating that income is a large determinant behind the living standards in Zambia.



Table 16: Proportion of the highest and lowest income groups with ownership and access to LSM components

		Phone	Fridge	Vacuum	TV	Hifi	Microwave	Washing machine	Electricity	Water	Domestic
Lesotho	No income	0.5	4.4	0.2	4.2	7.6	0.2	-	0.7	0.2	0
Namibia	No income	5.6	24.4	5.2	21.5	29.6	4.4	2.2	26.7	5.2	3.7
South Africa	No income	10.8	40.6	3.7	44.1	42.8	8.3	3.4	66.8	9.6	0.7
Swaziland	No income	1.9	3.8	0	5.8	7.7	0	0	5.8	0	0
Zambia	No income	1	-	0	9.3	3.3	0.5	-	9.3	2.3	1.9

		Car	Toilet	Shop 1	Shop 2	Insurance	Bank	Credit	Dishwashing	Hut	Rural
Lesotho	No income	1.0	0.2	34.0	22.0	3.7	6.8	3.2	-	54.3	67.7
Namibia	No income	7.4	25.4	68.9	74.1	5.2	19.3	3.0	37.0	38.1	62.2
South Africa	No income	9.6	39.9	64.7	66.3	7.4	14.3	6.7	37.2	21.3	37.3
Swaziland	No income	0	0	11.5	23.1	0	5.8	0	0	24	64
Zambia	No income	2.8	7	11.7	23.4	0	1.9	0.5	1.9	80.4	89.7

		Phone	Fridge	Vacuum	TV	Hifi	Microwave	Washing machine	Electricity	Water	Domestic
Lesotho	Upper income	1.9	20.4	0	22.2	31.5	0	-	3.7	0	9.3
Namibia	Upper income	56.3	91.7	35.4	92.4	79.2	34.0	39.6	95.8	59.7	27.1
South Africa	Upper income	56.6	94.3	57.3	94.2	86	62.7	66	98.2	78.7	45.5
Swaziland	Upper income	21.3	60	4	56.7	47.3	11.3	4.7	45.3	21.3	23.3
Zambia	Upper income	16	-	6	75.5	43.5	14.4	-	73.1	20.4	19.9

		Car	Toilet	Shop 1	Shop 2	Insurance	Bank	Credit	Dishwashing	Hut	Rural
Lesotho	Upper income	3.7	0	72.2	64.8	46.3	38.9	25.9	-	24.1	57.4
Namibia	Upper income	49.3	93.1	89.6	91.0	78.6	91.0	56.3	85.6	13.2	21.7
South Africa	Upper income	67.9	89.5	91.2	93.4	67.3	79.3	46.4	85.6	7.6	12.4
Swaziland	Upper income	36.7	27.3	74	85.3	24.7	54	26	37.3	8.2	49
Zambia	Upper income	14.4	70.8	66.7	89.9	13.9	36.6	10.6	28.2	8.3	19.4



## 6. DISCUSSION

The main aim of this study was to compare income and asset-based poverty measures and in the process, explore the multidimensional nature of poverty. The income data was collected at two levels of analysis and the survey conducted in five countries. This enabled the impact of units of analysis on poverty measurement to be explored, as well as facilitated the comparison of poverty pictures across countries. The aim of this chapter is to paint the big picture that emerges from this study with regards to the elements of poverty measurement mentioned above. This chapter is structured so as to cover the main avenues of exploration identified in Chapter 3.

### 6.1 Income and its predictors

As a whole, income painted a severe picture of poverty in all five countries with all the average incomes less than \$350 a month. This income poverty picture was created using data collected at two levels of analysis (the individual level and the household level).

At the individual level, income was associated with both gender and education. With regards to gender, all the countries, except for Lesotho, females were more severely affected by poverty than males. This mirrors Cagatay's observation that women are generally poorer than men (1998).

An association between income and education was also detected with Lesotho, once again, being the only country in which no association was found. The strongest association between the two variables was found in South Africa. This observation in South Africa, may be related to the high adult literacy rate and the high combined gross enrolment rate seen at the national level. Other than common sense, a possible suggestion as to the reason for this association is that education helps poor people increase the productivity of their major resource, time (May et al., 2000).

At the household level, location and household size played a role in predicting the poverty situation. The same pattern as that seen at the individual level was observed with location. In all the countries, with the exception of Lesotho, there was a significant association between income and location. The observation was in-line with the literature that shows that areas with low or no income are more likely to be the rural areas (Hanmer et al., 1999). In other words, poverty (as measured by income) is worse in rural areas (Hanmer et al.). The reason for poverty in rural areas cannot simply be ascribed to low wages in these areas. There is a fair possibility that living expenses are lower in rural areas and thus poor people may be attracted to rural areas as opposed to rural areas being the cause of poverty. Another factor that may contribute to low income in rural areas is that there are often less work opportunities in rural areas.

Household size does not appear to be as strongly related to income as the other variables. A significant association between income and household size was only seen in South Africa and Zambia. This is an interesting observation as South Africa and Zambia, in terms of the HDI at a national level, are the two most extreme and diverse of the SADC countries in this survey. Thus, there appears to be no obvious relationship between national poverty and household-size related income. This observation of a general lack of relationship between household size and income is interesting as it goes against much of the literature in support of adjusting income according to household size (Booyesen, 2002).

When looking for possible causes of the relationships between predictors and income, it must be noted that the predictors are unlikely to simply be causal factors. The complexity of this relationship and the interrelated nature of the predictors can be seen with women generally poorer than men, but also more likely to live in rural areas which are traditionally poorer areas.

The poverty picture obtained by using income as an indicator is useful as it provides data at two levels of analysis and allows one to explore the relationship between income and predictors as identified in the literature. Another useful aspect of this data is that it is collected in numerical form so that the possibility of conducting parametric statistical tests exists. However, in this study the data was collected as categorical data so statistical tests were limited to non-parametric tests. As is apparent, income is a single faceted measure and the picture presented on poverty is limited to this dimension.

### 6.2 Asset-based measures

In terms of the type of poverty picture created by the LSM, it is similar to that created by income. Lesotho and Zambia are the poorest of the countries with South Africa having the highest general living standard. This is seen with large percentages of the population in the upper living standard groups in Namibia and South Africa and large percentages of the population in the lower living standard groups in the other three countries.

The picture created by this measure provides a more detailed and multidimensional picture as it encompasses more than one dimension of poverty. Both services and assets are assessed. With this measure, a single score as well as the details relating to each component can be analysed. In addition to a more detailed picture, it also has finer gradations than income between poverty groups which can be useful in analysis.

### 6.3 Consistency of the LSM

The advantage of the LSM, as mentioned earlier, is that it creates a detailed picture pertaining to more than a single dimension of poverty. The weighting of each component towards the total score was introduced by the SAARF after substantial research. However, this measure was designed for use in South Africa and as a result the weightings have been created for the South Africa situation. A universal weighting

score such as this allows one to make international comparisons. However, such a scoring system places importance and value on the components that are seen as important contributors towards living standards in South Africa. Essentially when applying such a scoring system one is only paying attention to the dimensions determined as important in South Africa and ultimately not acknowledging the true multidimensionality of poverty and subjective differences across countries.

From Figure 16 it can be seen that the general pattern of correlations of components with LSM scores follows a similar pattern across all the countries, except for Lesotho. Of all the components, the assets (at the left of the figure) have the least consistent correlation with the LSM total across all the countries. However, apart from these, the LSM components generally have similar correlations with the total score. This suggests that the components making up the LSM are probably good indicators of living standards. However, the magnitudes of the correlations differ across countries and this may point to the possibility of exploring the relative weightings of each component across countries.

#### 6.4 A comparison of income and asset-based measures

Overall there is a fairly strong relationship between LSM scores and income. Although the LSM makes no claim to measure income, the aim of the tool is to measure an element associated with spending patterns, which ultimately must be closely related to an economic measure such as income or consumption. It thus makes sense that these two measures are related and their strong associations across all the countries indicate that the LSM is a successful measure. Overall, the components serve as a solid core to access data related to income without actually capturing income figures. This basic core of components could be fine tuned for separate countries and potentially new components added or ones taken out to make income and living standards more closely

related. This may need to be done separately for each country so that the LSM would reflect the different situations in each country more accurately.

There appears to be a common element to income and the LSM score that results in high correlations between the two variables. This is in contrast to much of the literature that argues that income is an incomplete indicator of poverty (Diaz, 2003). However, there is also a degree of variation which is unaccounted for by this common element. This variation lends some support to the notion of the multidimensional nature of poverty as emphasised by Bourguignon (2002). Laderachi's (1997) proposal of keeping measurement approaches as broad as possible may be able to access some of this unaccounted variation. However, there is much evidence to be found in support of a commonality across the measures. An observation that adds weight to the interrelated nature of income and living standards is the fact that this observation is made across all five countries. What is particularly interesting is that this relationship exists in both the rich countries, which have easy access to all the components on the LSM, as well as in the poor countries such as Zambia where access to some of the components may be limited.

It is interesting to note that when the relationship between the individual components of LSM and income was explored the components differed across countries as well as across income levels. More of the poor in South Africa and Namibia tend to have ownership or access to LSM components and this would relate to overall higher LSM scores in these countries. With regards to ownership, this may reflect a larger disposable income but with regards to services it may simply reflect a greater degree of infrastructure and development in these countries. Thus, there may be a chance that the LSM is not simply tapping into household living standards but also the degree of national development and service delivery – ultimately something that an individual cannot change. This may provide an explanation for some of the variance unaccounted for in the correlations between income and LSM.

One of the major differences between these two measures is that income can be used for an individual level or a household level but asset-based measures are associated with household analysis as assets tend to be collective possessions.

#### 6.5 Cross country comparisons of poverty

Irrespective of the unit of analysis or the type of poverty measure used, the same general poverty ranking of the five countries emerged. The general pattern was Namibia and South Africa as the two wealthiest countries followed by Swaziland, Zambia and Lesotho. From data obtained at the household LSM level, it can be seen that there are two distinct patterns with regards to living standards across the five countries, this is seen in Figure 16. In Lesotho, Swaziland and Zambia there is the pattern of a decreasing percentage of the national population in the higher LSM groups. In South Africa and Namibia there is an increase in the percentage of the population in the higher LSM levels. Thus, there appears to be a split with regards to living standards among the five countries, this was visible with household income with Lesotho and Zambia having the lowest median incomes.

The ordering of the split mirrors the rankings of the HDI at the national level. The split between the countries, according to where the largest difference in HDI ranks occurs, creates the same two groups as those seen with the LSM. This picture is mirrored again at the national level with Lesotho and Zambia the lowest ranked of the five countries according for GDP. The agreement between GDP and income is the least surprising of the agreements at this level as they are both economically based measures. However, the agreement between income and HDI is particularly interesting as it shows a correlation between income at the household level and social indicators at the national level (in the form of HDI). Despite the thinking that different measures at different levels would place emphasis on different dimensions and thus create different rankings or



differences in the poverty picture from measure to measure, it appears that the general picture across measures and units of analysis is fairly similar.

Despite the similar pictures, interesting differences in national pictures can be seen best when looking at the LSM and income data. In Lesotho there is a poor correlation between LSM scores and the LSM service components. This may indicate that in Lesotho, irrespective of living standards or wealth, such services are unattainable. This may point towards the idea that such services are not available to any people in Lesotho. In Zambia there is a particularly strong relationship between LSM and housing type and location. This observation mirrors that seen with income at the household level and points to the possibility that location may be an underlying factor that has significant influence as to the type of services and assets to which people have access.

It appears that the type of poverty picture created by different measures across different units of analysis is similar resulting in similar rankings of the countries in terms of poverty. However, it appears that in each country different factors such as development or infrastructure have slightly different effects on the indicators.

#### 6.6 The multidimensional nature of poverty

Different units of analysis and different poverty measures aim to access different dimensions of poverty. From the cross-country comparison which made use of different units of analysis as well as different poverty measures it appears that the general picture of poverty is similar across units of analysis and different dimensions of poverty. Thus, the cumulative effect of poverty indicators in this study has created similar pictures. However, this does not provide motivation for the use of income as the sole measure of poverty. Despite similar poverty pictures, the different dimensions of poverty and the levels they are assessed provide details to the basic poverty picture.

Small differences between proxy variables at the same level of analysis (for example mortality rate and literacy at the national level) provide insight into specific components or dimensions of poverty. This insight helps policy makers identify the relevant dimensions of poverty that are particularly problematic at each level. Insight such as this helps in the selection of appropriate interventions. Small improvements to relevant areas may allow for more successful interventions than generic blanket interventions.

In conclusion this study contests the major emphasis that is placed on the multidimensional nature of poverty. Rather, it argues that poverty pictures created by different measures and at different units of analysis tend to converge. Despite these observations and an apparent commonality running throughout all the measures, the role of multiple dimensions remains important as it seems to play a pivotal role in interventions strategies. Although impossible to prove, I would like to offer two speculations as to why there is an over-emphasis on the multidimensionality of poverty. The first reason is related to service provision and policy where dimensions can assist in isolating and targeting interventions. The second reason is less pragmatic reason and is related to the academy of knowledge generation where the challenge lies in creating new ways of assessing constructs and here I would like to argue that time may well be better spent taking stock of and comparing existing measures.

Many of the limitations of this study have been carefully outlined in Chapter 4. The next obvious area of exploration that emerges from these findings is to focus on new studies that explore the multidimensional nature of poverty through comparing other measures of poverty and explore this phenomenon in other countries. Studies such as these have the possibility of shaping the way in which poverty is viewed and studied. Ahead lie many exciting possibilities for poverty exploration.

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**8. APPENDICES**

**Appendix A**

**Grid to select respondents**

Number of question-naire				Number of eligible persons from which respondent must be drawn																								
				Last 2 digits	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
01	26	51	76	1	1	1	3	2	4	1	3	5	8	6	5	12	10	1	6	8	7	19	19	13	21	13	24	25
02	27	52	77	1	2	3	4	3	1	2	2	3	4	8	3	7	2	5	14	4	15	4	8	6	16	14	22	19
03	28	53	78	1	1	2	1	4	2	7	6	9	3	5	11	2	1	3	11	7	10	16	16	10	5	2	2	3
04	29	54	79	1	2	3	2	1	3	5	8	6	2	4	2	4	8	11	10	16	6	9	10	15	11	12	11	18
05	30	55	80	1	1	1	4	5	6	3	5	7	5	9	8	1	3	2	13	5	18	1	4	1	20	11	5	24
06	31	56	81	1	2	2	2	3	5	6	7	8	7	1	4	9	14	8	2	17	17	14	12	14	22	10	3	14
07	32	57	82	1	2	1	1	4	1	4	1	4	6	3	6	5	7	13	9	2	3	13	14	8	2	7	20	4
08	33	58	83	1	1	2	3	2	5	1	4	2	1	7	10	6	5	4	15	10	5	2	13	4	17	5	17	8
09	34	59	84	1	1	3	2	5	6	2	2	1	9	10	1	10	4	6	6	1	9	10	1	5	6	9	1	12
10	35	60	85	1	2	2	4	1	3	3	6	9	10	11	12	3	9	15	7	8	11	6	3	9	4	3	10	1
11	36	61	86	1	1	1	3	1	4	5	3	1	6	2	9	13	11	14	4	11	4	15	15	17	1	1	23	2
12	37	62	87	1	2	3	1	3	2	7	5	6	5	7	7	8	6	10	3	3	1	12	20	7	13	22	12	16
13	38	63	88	1	1	2	1	5	3	6	4	3	4	6	2	11	13	12	1	15	8	7	2	12	15	21	13	7
14	39	64	89	1	2	3	2	4	1	4	7	8	2	5	6	11	12	9	16	13	16	11	18	18	14	16	18	23
15	40	65	90	1	2	1	4	2	4	3	8	7	7	11	1	3	5	7	12	14	13	8	17	20	19	20	19	11
16	41	66	91	1	1	3	3	1	6	5	1	5	9	10	3	2	11	13	8	12	12	5	6	21	8	8	4	15
17	42	67	92	1	1	2	2	3	4	2	6	2	3	2	12	5	2	10	13	5	8	18	9	16	10	17	16	20
18	43	68	93	1	2	1	4	2	6	4	1	4	8	9	10	7	9	3	12	12	9	7	20	19	9	19	21	13
19	44	69	94	1	2	2	1	3	5	2	8	9	10	4	9	8	13	1	1	14	10	19	10	11	18	15	7	6
20	45	70	95	1	1	3	2	5	4	1	3	8	1	3	8	6	6	9	5	7	13	4	15	1	7	22	15	21
21	46	71	96	1	1	1	2	5	1	7	2	3	2	1	11	4	7	5	3	2	1	3	12	18	5	19	14	9
22	47	72	97	1	2	1	3	1	3	2	6	2	1	8	7	1	4	2	11	8	2	17	4	17	21	16	3	5
23	48	73	98	1	2	3	4	2	2	6	7	7	8	3	4	9	3	6	2	11	11	16	2	8	11	23	6	22
24	49	74	99	1	1	2	1	4	6	3	5	5	3	1	5	13	1	14	8	14	6	15	9	14	3	6	9	17
25	50	75	00	1	1	2	3	3	2	4	6	4	7	5	3	12	12	12	4	6	2	17	11	2	12	4	8	10

## Appendix B

### LSM weighting formula

Variables	Column B	Weight	
Fridge/freezer	Yes (1)	1=0.25756	2=0
Polisher/vacuum cleaner	Yes (1)	1=0.37961	2=0
TV	Yes (1)	1=0.21475	2=0
Hi-fi or music centre (radio excluded)	Yes (1)	1=0.20851	2=0
Microwave oven	Yes (1)	1=0.24034	2=0
Washing machine	Yes (1)	1=0.24180	2=0
Electricity	No (2)	2=-0.37422	1=0
Hot running water	Yes (1)	1=0.23846	2=0
Domestic servant	No (2)	2=-0.21713	1=0
At least one car	No (2)	2=-0.30588	1=0
Flush toilet	Yes (1)	1=0.44159	2=0
Do household shopping at supermarkets?	Yes (1)	1=0.35539	2=0
Shop at supermarkets	No (2)	2=-0.45993	1=0
Have any insurance policies?	No (2)	2=-0.26101	1=0
Use any financial services such as a bank account, ATM card or credit card?	No (2)	2=-0.28062	1=0
Have an account or credit card at a retail store?	No (2)	2=-0.23440	1=0
Buy dishwashing liquid?	Yes (1)	1=0.26529	2=0
Hut dweller	Yes (1)	1=-0.19987	2=0
Rural dweller (communities less than 500 people)	Yes (1)	1=-0.26659	2=0
Do you have a working telephone in your home?	Yes (1)	1=0.22726	2=0
Add values			
Total of values + constant 2.71683			
Lowest – 0.38247 = 1 (Lowest LSM)			
0.38248 – 0.957864 = 2			
0.957865 – 1.66164 = 3			
1.66165 – 2.43711 = 4			
2.43712 – 3.16088 = 5			
3.16089 – 3.92842 = 6			
3.92843 – 4.95124 = 7			
4.95125 – highest = 8 (Highest LSM)			