

**AN ANALYSIS AND APPLICATION OF
DIFFERENT METHODOLOGIES FOR
MEASURING POVERTY IN SHARPEVILLE**

BY

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To my mother Enny Langa-Sekatane

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DECLARATION

I declare that

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MEASURING POVERTY IN SHARPEVILLE

Is my own work, that all the resources used or quoted have been duly acknowledged by means of complete references, and that I have not previously submitted the thesis for a degree at another university.

Mmapula Brendah Sekatane

ABSTRACT

This thesis studies the different methodologies for measuring poverty in Sharpeville. The study focuses on two main areas, namely, an analysis and application of the methodologies used by Stats SA and Slabbert for measuring poverty. The two methodologies are applied on the same set of data from the 2004 household survey from Sharpeville.

When measuring poverty, Stats SA determines a proxy income for households and compares it with a standard poverty line which causes this methodology to be inaccurate. The methodology used by Stats SA to determine the headcount index also does not lend itself to determine the poverty gap, as proxy income values are used instead of real income values. This measure, therefore, does not show how far the poor are below the poverty line. Slabbert measures poverty by comparing the total income of households' with their respective poverty lines, determined by calculating a basket of necessities for each and every member of the household. The methodology used by Slabbert proves to be more accurate and can, in addition, determine the depth of poverty (the poverty gap). Economic impact assessments can also be conducted through Slabbert's method, such as the impact of an increase in child grants and the impact of an increase in basic income.

Applying the two methodologies on the same set of data from Sharpeville, this thesis shows that the Stats SA poverty measure that is used country-wide does not accurately identify the poor population. The population in Sharpeville is estimated at 41,031 and the average household size is 4.9, meaning that there are 8,374 households in Sharpeville. Using Slabbert's method, the headcount index as calculated from the 2004 survey data for Sharpeville is 0.431, meaning that from the 8,374 households in Sharpeville, 3,609 households live in poverty. That means 17,685 people are poor in Sharpeville. The poverty gap index was determined at 0.32, indicating that on average poor households lack 32% of the necessary income to attain a level equal to their poverty line. When employing Stats SA's measure of poverty different results are found. Stats SA's 2001 poverty line of R800 was inflated to 2004 by the CPI to give a poverty line of R963.73, and that poverty line (R963.73) compared with the actual household income from the 2004 survey data to give a headcount index of 0.155, of which the

following is determined. The population is still estimated to be 41,031 and the average household 4.9, meaning that there are 8,374 households, same as above. However, when the inflated Stats SA's poverty line is used it indicates that the percentage of poor households is reduced from 43.1% to 15.5%, meaning that the headcount index is reduced from 0.431 to 0.155. A headcount index of 0.155 means that from the 8,374 households in Sharpeville, 1,299 households live in poverty. This means that 6,365 people are poor in Sharpeville.

It is evident from the figures above that when Stats SA methodology is employed the poverty rate is lower than the one determined by Slabbert. When the poverty rate is low it leads to a lower number of households and people that are being determined as poor and this will mislead policy makers as it does not to reflect the true state of affairs of the inhabitants of the township/squatter areas of Sharpeville with regard to poverty.

This thesis suggests that the Census questionnaire should be revised to ask households/individuals to reveal their exact income as it is currently not the approach. To accommodate those households/individuals who don't feel comfortable revealing their income or those who don't have fixed incomes, the Census questionnaire can have two options for revealing income, with option one for exact income and option two for a category.

This thesis also suggests that Stats SA should change its practice of employing a standard poverty line, and instead, determine a poverty line for each household and compare this to actual household income. Thus, the headcount index and poverty gap can be accurately measured since the problem with poverty is "how far are the poor below the poverty line?"

OPSOMMING

In hierdie tesis word die verskillende metodologieë om armoede in Sharpeville te bepaal, bestudeer. Die studie fokus op twee hoofareas, naamlik 'n analise en 'n toepassing van die metodologieë wat deur Stats SA en Slabbert gebruik word om armoede te bepaal. Die twee metodologieë word toegepas op dieselfde stel data van die 2004 Sharpeville huishoudingsopname.

In die bepaling van armoede stel Stats SA 'n geraamde inkomste vir huishoudings vas en vergelyk dit met 'n standaard-armoedsgrens, wat die metodologie onakkuraat maak. Hierdie metodologie wat deur Stats SA gebruik word om die tellingsindeks per kop te bepaal, leen homself ook nie daartoe om die armoedsgaping vas te stel nie, aangesien geraamde inkomstewaardes gebruik word in plaas van die ware inkomstewaardes. Hierdie maatreël toon gevolglik nie aan hoe ver die armes onder die armoedsgrens val nie. Slabbert meet armoede deur 'n vergelyking tussen die totale inkomste van huishoudings met hulle onderskeie armoedsgrense, soos vasgestel deur die berekening van 'n mandjie noodsaaklikhede vir elke lid van die huishouding, te bepaal. Die metodologie wat deur Slabbert gebruik word, is meer akkuraat en kan ook die graad van armoede bepaal (die armoedegaping). Slabbert se metode kan ook gebruik word vir ekonomiese impakbepalings, byvoorbeeld die impak van 'n verhoging in die kindertoelae en die impak van 'n verhoging in basiese inkomste.

Deur die toepassing van die twee metodologieë op dieselfde stel Sharpeville data, toon die tesis aan dat die Stats SA armoedsmaatreël wat landwyd gebruik word om die arm deel vas die bevolking vas te stel, nie die armes akkuraat identifiseer nie. Die bevolking in Sharpeville word op 41,031 geraam en die gemiddelde grootte van huishoudings is 4.9, wat beteken dat daar 8,374 huishoudings in Sharpeville is. Volgens Slabbert se metode is die tellingsindeks per kop vir Sharpeville, soos bereken uit die 2004 opnamedata 0.431, wat beteken dat van die 8,374 huishoudings in die gebied, 3,609 huishoudings in armoede leef. Dit beteken dat daar 17,685 armes in Sharpeville is. Die armoeds-gapingsindeks is op 0.32 vasgestel, wat aandui dat arm huishoudings gemiddeld 32% van die inkomste kortkom om 'n vlak gelyk aan hul armoedslyn te bereik. Wanneer die Stats SA armoedsmaatstaf gebruik word, is verskillende resultate gevind. Die Stats SA 2001 armoedsgrens van R800 is geïnfleer tot 2004 deur die VPI

om 'n armoedsgrens van R963.73 te kry en die armoedgrens (R963.73) is vergelyk met die werklike huishoudelike inkomste uit die 2004 opnamedata om 'n tellingsindeks per kop van 0.155 te lewer en die volgende is vasgestel. Die bevolking word nog op 41,031 geraam en die gemiddelde huishouding staan op 4.9, wat beteken dat daar 8,374 huishoudings is, dieselfde soos hierbo. Wanneer die geïnfleerde Stats SA armoedsgrens egter gebruik word, dui dit aan dat die persentasie arm huishoudings verminder van 43.1% tot 15.5%, wat beteken dat die tellingsindeks per kop daal van 0.431 tot 0.155. 'n Tellingsindeks per kop van 0.155 beteken dat van die 8,374 huishoudings in Sharpeville, 1,299 huishoudings in armoede leef. Dit beteken dat 6,365 mense in Sharpeville arm is.

Dit is duidelik uit die bostaande syfers dat wanneer die Stats SA metodologie gebruik word die armoedskoers laer is as die een wat deur Slabbert vasgestel is. Wanneer die armoedskoers laag is, lei dit tot 'n laer aantal huishoudings en arm persone wat vasgestel word, wat beleidsmakers sal mislei aangesien dit nie die ware toedrag van sake rakende die inwoners van die dorpsgebied/plakkergedeeltes van Sharpeville reflekteer ten opsigte van armoede nie.

Die tesis suggereer dat die Sensusvraelys hersien moet word om huishoudings/individue te versoek om hulle presiese inkomste te openbaar aangesien dit tans nie die benadering is nie. Om huishoudings/individue tegemoet te kom wat nie op hulle gemak voel om hul inkomste bekend te maak nie of die wat nie 'n vaste inkomste het nie, kan die Sensusvraelys van twee opsies gebruik maak om inkomste bekend te maak, met opsie een vir presiese inkomste en opsie twee, 'n kategorie.

Die tesis dui ook aan dat Stats SA hulle standaardprosedure vir die gebruik van 'n standaard-armoedsgrens moet verander en eerder 'n armoedsgrens vir elke huishouding moet vasstel en dit met die werklike huishoudingsinkomste moet vergelyk. Op hierdie wyse sal die maatreël die tellingsindeks per kop en die armoedsgaping kan vasstel aangesien die probleem in die geval van armoede is: "hoe ver is die armes onder die armoedsgrens?"

TABLE OF CONTENTS

| | PAGE # |
|-----------------------------|--------|
| Acknowledgements | i |
| Declaration | ii |
| Abstract | iii |
| Opsomming | v |
| Table of Contents | vii |
| List of Figures | xiv |
| List of Tables | xvii |
| List of Boxes | xviii |
| List of Abbreviations | xix |

CHAPTER 1 THE PROBLEM AND ITS SETTING

| | | |
|-------|--------------------------------------|--------|
| 1.1 | Introduction | - 1 - |
| 1.2 | The research problem | - 3 - |
| 1.3 | Objective of the study..... | - 8 - |
| 1.4 | Research methodology | - 8 - |
| 1.4.1 | Empirical study..... | - 9 - |
| 1.5 | Geographical area of the study | - 10 - |
| 1.6 | Outline of the study | - 12 - |
| 1.7 | Explanation of terms | - 12 - |

CHAPTER 2 THEORETICAL BACKGROUND OF THE STUDY

| | | |
|-------------|--|--------|
| 2.1 | Introduction | - 14 - |
| 2.2 | Poverty research | - 15 - |
| 2.3 | Poverty research in South Africa..... | - 17 - |
| 2.3.1 | Research before 1980..... | - 17 - |
| 2.3.2 | Research in the 1980s | - 18 - |
| 2.3.3 | Research between 1990 and 1994 | - 19 - |
| 2.3.4 | Research after 1994..... | - 20 - |
| 2.4 | The concept of poverty..... | - 21 - |
| 2.4.1 | Broader understandings of poverty | - 23 - |
| 2.4.2 | Differences between poverty and inequality..... | - 24 - |
| 2.4.3 | Problems encountered in defining and measuring poverty | - 25 - |
| 2.4.4 | Defining poverty | - 30 - |
| 2.4.4.1 | Approaches to defining poverty..... | - 31 - |
| 2.4.4.2 | Definition..... | - 33 - |
| 2.4.5 | Types of poverty..... | - 40 - |
| 2.4.6 | Measuring poverty..... | - 41 - |
| 2.4.6.1 | Approaches to measuring poverty..... | - 42 - |
| 2.4.6.1.1 | The welfarist approach..... | - 43 - |
| 2.4.6.1.2 | Non-welfarist approaches | - 45 - |
| 2.4.6.1.2.1 | Basic needs and functionings | - 45 - |

| | | |
|-------------|--|--------|
| 2.4.6.1.2.2 | Capability approach | - 47 - |
| 2.4.6.2 | Four methodological decisions in measuring poverty..... | - 49 - |
| 2.4.6.3 | Ingredients for a credible approach to poverty measurement | - 52 - |
| 2.4.6.4 | Key requirements for a poverty measure | - 52 - |
| 2.4.6.4.1 | Focus axiom..... | - 53 - |
| 2.4.6.4.2 | Monotonicity axiom | - 53 - |
| 2.4.6.4.3 | Transfer axiom | - 54 - |
| 2.4.6.4.4 | Replication invariance axiom | - 56 - |
| 2.4.6.4.5 | Continuity axiom..... | - 57 - |
| 2.4.6.4.6 | Symmetry axiom | - 57 - |
| 2.4.6.4.7 | Increasing poverty line | - 57 - |
| 2.4.7 | Choosing among different measures of poverty..... | - 58 - |
| 2.4.7.1 | Values | - 58 - |
| 2.4.7.1.1 | A biblical perspective on poverty..... | - 59 - |
| 2.4.7.2 | Outcomes..... | - 61 - |
| 2.4.7.3 | Custom..... | - 62 - |
| 2.4.8 | Measuring poverty and differences in family composition | - 65 - |
| 2.4.9 | Poverty lines | - 66 - |
| 2.4.9.1 | Defining a poverty line..... | - 67 - |
| 2.4.9.2 | Deriving a poverty line..... | - 68 - |
| 2.4.9.3 | The usefulness of a poverty line | - 71 - |

| | | |
|---------|--|--------|
| 2.4.9.4 | Absolute and relative poverty lines..... | - 74 - |
| 2.4.9.5 | Subjective poverty lines | - 79 - |
| 2.4.9.6 | Dual poverty lines..... | - 80 - |
| 2.4.9.7 | Measures of poverty based on poverty lines | - 81 - |
| 2.4.10 | Indexes of poverty..... | - 83 - |
| 2.4.11 | Issues in measurement practices..... | - 86 - |
| 2.5 | Summary and conclusion..... | - 89 - |

CHAPTER 3 AN ANALYSIS OF DIFFERENT METHODOLOGIES OF MEASURING POVERTY

| | | |
|-------|---|---------|
| 3.1 | Introduction | - 93 - |
| 3.2 | Why measure poverty? | - 94 - |
| 3.2.1 | To keep the poor on the agenda | - 94 - |
| 3.2.2 | To target interventions, domestically and worldwide..... | - 94 - |
| 3.2.3 | To monitor and evaluate projects and policy interventions geared towards the poor | - 95 - |
| 3.2.4 | To evaluate the effectiveness of institutions whose goal is to help the poor..... | - 96 - |
| 3.3 | Measurement indicator..... | - 96 - |
| 3.4 | Meaningful methodologies for poverty measurement..... | - 97 - |
| 3.4.1 | The lack of a unique measurement yardstick..... | - 99 - |
| 3.4.2 | Statistical instruments used by different countries in the measurement of poverty | - 100 - |

| | | |
|---------|---|---------|
| 3.4.2.1 | Surveys on eating habits..... | - 101 - |
| 3.4.2.2 | Surveys on family and dwelling budgets | - 101 - |
| 3.4.2.3 | Household surveys..... | - 101 - |
| 3.4.2.4 | Continuous employment and price surveys | - 101 - |
| 3.4.2.5 | Living standards surveys..... | - 102 - |
| 3.4.2.6 | Census data..... | - 102 - |
| 3.4.2.7 | Administrative registers..... | - 102 - |
| 3.5 | Measures of poverty..... | - 103 - |
| 3.5.1 | Headcount index..... | - 103 - |
| 3.5.2 | Poverty gap and the squared poverty gap indices | - 105 - |
| 3.5.3 | Sen index..... | - 108 - |
| 3.5.4 | Foster, Greer and Thorbecke index | - 109 - |
| 3.5.5 | Watts measure..... | - 113 - |
| 3.5.6 | Sen-Shorrocks-Thon (SST) index | - 114 - |
| 3.5.7 | Costa's index of deprivation | - 114 - |
| 3.5.8 | Atkinson class of indices | - 115 - |
| 3.5.9 | Equivalence scales | - 115 - |
| 3.5.10 | Basic needs approach..... | - 117 - |
| 3.5.11 | Income inequality | - 118 - |
| 3.5.12 | Human development index (HDI)..... | - 119 - |
| 3.5.13 | Human poverty index (HPI)..... | - 120 - |

| | | |
|----------|---|---------|
| 3.5.14 | Measuring poverty using Fuzzy sets | - 120 - |
| 3.5.14.1 | Definition of a fuzzy set | - 121 - |
| 3.5.14.2 | Fuzzy index of poverty | - 122 - |
| 3.5.15 | Stochastic dominance | - 123 - |
| 3.6 | Different methodologies for the measurement of poverty by different countries | - 125 - |
| 3.6.1 | Methodology for measuring poverty in the United States..... | - 126 - |
| 3.6.2 | Methodology for measuring poverty in Canada..... | - 127 - |
| 3.7 | Methodologies of Measuring poverty in South Africa | - 128 - |
| 3.7.1 | Definition of a poverty line..... | - 129 - |
| 3.7.2 | Stats SA's measure of poverty | - 131 - |
| 3.7.2.1 | Methodology | - 133 - |
| 3.7.2.2 | Data | - 135 - |
| 3.7.2.3 | Stats SA's 10% sample..... | - 139 - |
| 3.7.3 | Slabbert's measure of poverty | - 141 - |
| 3.7.3.1 | The headcount index and the poverty gap | - 142 - |
| 3.7.3.2 | Dependency ratio | - 145 - |
| 3.8 | Is there a better index of poverty than the poverty rate? | - 147 - |
| 3.9 | Summary and conclusion | - 149 - |

CHAPTER 4 APPLICATION OF THE METHODOLOGIES BY STATS SA AND SLABBERT IN SHARPEVILLE

| | | |
|-------|--|---------|
| 4.1 | Introduction | - 153 - |
| 4.2 | Stats SA's 10% sample and the 2004 survey data of Sharpeville..... | - 153 - |
| 4.3 | Demographic profile..... | - 156 - |
| 4.4 | Household attitude towards income revelation..... | - 176 - |
| 4.4.1 | Poor households and income revelation | - 177 - |
| 4.4.2 | Non-poor households and income revelation..... | - 181 - |
| 4.5 | Summary and conclusion..... | - 185 - |

CHAPTER 5 SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

| | | |
|-------------|---|---------|
| 5.1 | Introduction | - 190 - |
| 5.2 | Summary of the thesis | - 190 - |
| 5.3 | Conclusions | - 199 - |
| 5.4 | Recommendations | - 201 - |
| | List of references | - 203 - |
| Annexure A: | Survey design and application..... | - 223 - |
| Annexure B: | Household questionnaire June 2004 | - 225 - |
| Annexure C | Households' attitude towards income revelation questionnaire June 2006 | - 230 - |

LIST OF FIGURES

CHAPTER 1 THE PROBLEM AND ITS SETTING

Figure 1.1: Sharpeville's geographical location..... - 11 -

CHAPTER 2 THEORETICAL BACKGROUND OF THE STUDY

Figure 2.1 Union and intersection poverty measures..... - 78 -

Figure 2.2 The subjective poverty line - 80 -

CHAPTER 3 AN ANALYSIS OF DIFFERENT METHODOLOGIES OF MEASURING POVERTY

Figure 3.1 Individual poverty measures - 112 -

Figure 3.2 Trends of poverty incidence and poor population in Indonesia, 1976 – 2004..... - 119 -

CHAPTER 4 APPLICATION OF THE METHODOLOGIES BY STATS SA AND SLABBERT IN SHARPEVILLE

Figure 4.1: Poor households and their HSL ratios in Sharpeville - Slabbert's method..... - 159 -

Figure 4.2: Poor households and their HSL ratios in Sharpeville - Stats SA's method..... - 160 -

Figure 4.3: Gender distribution of the poor population in Sharpeville - Slabbert's method..... - 161 -

| | | |
|--------------|--|---------|
| Figure 4.4: | Gender distribution of the poor population in Sharpeville - Stats SA's method | - 161 - |
| Figure 4.5: | Qualifications of the post-school poor population in Sharpeville - Slabbert's method..... | - 162 - |
| Figure 4.6: | Qualifications of the post-school poor population in Sharpeville - Stats SA's method | - 162 - |
| Figure 4.7: | The composition of the poor labour force in Sharpeville - Slabbert's method..... | - 163 - |
| Figure 4.8: | The composition of the poor labour force in Sharpeville - Stats SA's method | - 164 - |
| Figure 4.9: | Sectors of employment for the poor employed in Sharpeville - Slabbert's method..... | - 165 - |
| Figure 4.10: | Sectors of employment for the poor employed in Sharpeville - Stats SA's method | - 166 - |
| Figure 4.11: | Age categories of the poor unemployed population in Sharpeville - Slabbert's method..... | - 167 - |
| Figure 4.12: | Age categories of the poor unemployed population in Sharpeville - Stats SA's method | - 167 - |
| Figure 4.13: | Duration of unemployment for the poor unemployed population in Sharpeville - Slabbert's method..... | - 168 - |
| Figure 4.14: | Duration of unemployment for the poor unemployed population in Sharpeville - Stats SA's method | - 169 - |
| Figure 4.15: | Qualifications of the poor unemployed in Sharpeville - Slabbert's method..... | - 170 - |
| Figure 4.16: | Qualifications of the poor unemployed in Sharpeville - Stats SA's method..... | - 170 - |

| | | |
|--------------|---|---------|
| Figure 4.17: | Skills of the poor unemployed in Sharpeville - Slabbert's method .. | - 171 - |
| Figure 4.18: | Skills of the poor unemployed in Sharpeville - Stats SA's method.. | - 172 - |
| Figure 4.19: | Skills training preferred by the poor unemployed in Sharpeville - Slabbert's method..... | - 173 - |
| Figure 4.20: | Skills training preferred by the poor unemployed in Sharpeville - Stats SA's method | - 174 - |
| Figure 4.21: | Percentage contribution of different sources to poor household income in Sharpeville - Slabbert's method..... | - 175 - |
| Figure 4.22: | Percentage contribution of different sources to poor household income in Sharpeville - Stats SA's method | - 176 - |
| Figure 4.23: | Position of the respondents in the poor household | - 177 - |
| Figure 4.24: | Times of participation in the Census Surveys - poor households ... | - 178 - |
| Figure 4.25: | Did you feel comfortable when you were answering questions about your income? - poor households..... | - 179 - |
| Figure 4.26: | Preferred method of revealing income - poor households | - 180 - |
| Figure 4.27: | Position of the respondents in the non-poor household..... | - 182 - |
| Figure 4.28: | Times of participation in the Census Surveys – non-poor households | - 183 - |
| Figure 4.29: | Did you feel comfortable when you were answering questions about your income? – non-poor households..... | - 184 - |
| Figure 4.30: | Preferred method of revealing income – non-poor households | - 185 - |

LIST OF TABLES

CHAPTER 1 THE PROBLEM AND ITS SETTING

Table 1.1: Ranking households' income for proxy income allocation - 6 -

CHAPTER 2 THEORETICAL BACKGROUND OF THE STUDY

Table 2.1: Factors to be considered in poverty studies - 39 -

Table 2.2: Comparison of the official poverty line with the median income - 51 -

CHAPTER 3 AN ANALYSIS OF DIFFERENT METHODOLOGIES OF MEASURING POVERTY

Table 3.1 South Africa's different geographical hierarchical levels..... - 140 -

CHAPTER 4 APPLICATION OF THE METHODOLOGIES BY STATS SA AND SLABBERT IN SHARPEVILLE

Table 4.1 Stats SA's 10% sample and the 2004 survey data of Sharpeville... - 155 -

Table 4.2 Reasons for revealing in exact income and in terms of a category. - 181 -

Table 4.3 Comparison of the results from the two methodologies (Stats SA's and Slabbert's)..... - 186 -

CHAPTER 5 SUMMARY, CONCLUSION AND RECOMMENDATIONS

Table 5.1 Comparison of the results from the two methodologies (Stats SA's and Slabbert's)..... - 197 -

LIST OF BOXES

CHAPTER 2 THEORETICAL BACKGROUND OF THE STUDY

Box 2.1 Responses by children as to the meaning of poverty - 64 -

CHAPTER 3 AN ANALYSIS OF DIFFERENT METHODOLOGIES OF MEASURING POVERTY

Box 3.1 Example on how Stats SA calculates the proxy income values for households in different income categories..... - 138 -

Box 3.2 Calculation of a dependency ratio: Method 1..... - 146 -

Box 3.3 Calculation of a dependency ratio: Method 2..... - 147 -

LIST OF ABBREVIATIONS

| | |
|-------|--|
| ANC | African National Congress |
| CBPWP | Community Based Public Works Programme |
| CCSD | Canadian Council on Social Development |
| CDFCS | Commonwealth Department of Family and Community Services |
| CEAS | Central Economic Advisory Services |
| CPI | Consumer Price Index |
| CPS | Current Population Survey |
| EA | Enumerator Area |
| EFC | Evangelical Fellowship of Canada |
| EITC | Earned Income Tax Credit |
| EU | European Union |
| FGT | Foster, Greer, and Thorbecke |
| GAD | Gender And Development |
| GDP | Gross Domestic Product |
| GNP | Gross National Product |
| HCI | Household Circumstances Index |
| HDI | Human Development Index |
| HEL | Household Effective Level |
| HII | Household Infrastructure Index |
| HPI | Human Poverty Index |

| | |
|-------|--|
| HSL | Household Subsistence Level |
| HSRC | Human Sciences Research Council |
| IES | Income and Expenditure Survey |
| ILO | International Labour Organisation |
| IMF | International Monetary Fund |
| IRP | Institute for Research on Poverty |
| LDCs | Less Developed Countries |
| LICOs | Low Income Cutoffs |
| LSMS | Living Standard Measurement Studies |
| MHSL | Minimum Humane Standard of Living |
| MIQ | Minimum Income Question |
| MLL | Minimum Living Level |
| MPY | Mid Point Income |
| NGOs | Non-Governmental Organisations |
| OECD | Organisation for Economic Co-operation and Development |
| OHS | October Household Survey |
| PC | Principal Component |
| PDL | Poverty Datum Line |
| PES | Post-Enumeration Survey |
| PIR | Poverty and Inequality Report |
| PPP | Purchasing power parity |

| | |
|----------|--|
| PSLSD | Project for Statistics on Living Standards and Development |
| RDP | Reconstruction and Development Programme |
| SAPPA | South African Poverty Participation Assessment |
| SST | Sen-Shorrocks-Thon |
| Stats SA | Statistics South Africa |
| TBVC | Transkei-Bophuthatswana-Venda-Ciskei |
| UK | United Kingdom |
| UN | United Nations |
| UNDP | United Nations Development Programme |
| US | United States |
| USDA | U.S. Department of Agriculture |
| WID | Women In Development |

CHAPTER 1

THE PROBLEM AND ITS SETTING

1.1 INTRODUCTION

Widespread poverty and excessive inequality remain the principal challenges in the globalisation process that has been under way during the last two decades. Even as economies and governments adjust in order to give a larger role to markets and a smaller role to the State in development, the importance of public action to deal with poverty and vulnerability has increased. It is for this reason that the World Summit for Social Development in 1995 called upon countries to reduce overall poverty substantially and to eradicate extreme poverty. These goals were re-emphasised in a time-bound and measurable framework by the United Nations (UN) as core millennium development goals (UN, 2002:21).

While the debate about aggregate poverty trends rages on, there is nonetheless more agreement as to the factors associated with being poor in South Africa. Living standards have been shown to be closely associated with race, with poor Africans accounting for the overwhelming majority of the poor. There is also a distinctive spatial dimension to poverty in the country, with the incidence of poverty in rural localities significantly higher than for residents of secondary cities and the metropolises. Substantial provincial disparities also exist, with those containing former homelands bearing a disproportionately large share of the poverty burden. Given apartheid spatial engineering, the racial character of poverty relates closely to the spatial dimension of poverty in the country (Roberts, 2004:486).

There is a strong relationship between unemployment and poverty. The unemployment rate for individuals from poor households is higher than the national average, while the labour force participation for the poor is demonstrably lower for poor relative to non-poor households. In 1995, more than half of the economically active in poor households were outside the labour market, which is supported by evidence that poverty deters job-search activities in South Africa. This signifies that poor households are not only likely to have a greater number of unemployed adults relative to richer households, but also more adults who are unavailable for work.

Access to wage income is also an important correlate of poverty, with poor households generally characterised by a lack of earnings; some due to unemployment among potential breadwinners and others due to the poorly-paid nature of work secured (Roberts, 2004:487).

Many people, including academics, campaigners and politicians, talk about the problem of poverty, and underlying their discussion is the assumption that identifying the problem provides a basis for action upon which to agree. However, people do not all agree on what the problem of poverty is, and thus, not surprisingly, the action they wish to encourage or to justify is not all the same. Most people of course claim that their understanding of poverty is the correct one, based on logical argument or scientific research. However, there is no one correct, scientific, or agreed upon definition, because poverty is inevitably a political concept, and thus inherently a contested one. Thus, what commentators mean about poverty depends to some extent on what they intend or expect to do about it. Consequently, academic and political debate about poverty is not merely descriptive, it is prescriptive. Poverty is not just a state of affairs, it is an unacceptable state of affairs, and it implicitly contains the question: "What are we going to do about it?" (Alcock, 1997:3-4).

There is considerable agreement that poverty is a multidimensional problem, involving a number of monetary and non-monetary handicaps. The fact that it is impossible in practice to obtain empirical observations on all these handicaps has often led researchers to reduce poverty to a one-dimensional aspect. However, since the beginning of the 1990s, data on attributes other than income have become increasingly available. The multidimensional approach is thus required more than ever to better understand the performance of a given country in the battle against poverty in all its aspects. Once the dearth of data availability has been overcome, researchers are confronted with a new challenge: How should information reflecting the various aspects of poverty be aggregated to yield a global measure of poverty? Should this measure focus on the situation of those who are poor according to all attributes simultaneously, or should it also account for the deprivation of those who do not reach the required minimum for any one attribute (Bibi, 2003:32-33)?

When analysing poverty in a multi-dimensional context, it is important to decide whether to model poverty itself or the underlying welfare measure. In the static (cross-sectional) context, analysing poverty itself usually corresponds to comparing a continuous welfare (such as income or height for age) to some pre-determined minimum cut-off (such as the poverty line or the z-score in the reference population), constructing a dichotomous indicator (of monetary poverty or malnutrition) based on this, and then aggregating all individuals in the population. Following Lipton (1983), *moderate and extreme poverty or mild, moderate and severe malnutrition* might also be distinguished. However, this direct approach effectively censors (or throws away) most information on the level of welfare measure, and is roundly criticised by some poverty analysts (e.g., Ravallion, 1995). It is also likely that measurement errors in the welfare measure may create misclassifications and “false transitions” between discrete poverty states in a panel data context. At the same time, modelling a continuous welfare measure itself may be criticised for not paying explicit attention to those below the “poverty line” of “minimum cut-off”, and for giving excessive weight to outliers (Baulch & Masset, 2002:2).

1.2 THE RESEARCH PROBLEM

Although reducing poverty is a nearly universal goal among nations and scholars, there is no commonly accepted way of identifying who is poor. Some argue for a multidimensional poverty concept that reflects the many aspects of well-being. In this context, people deprived of social contacts (with friends and families) are described as being socially isolated, and hence poor in this dimension. Similarly, people living in squalid housing are viewed as “housing poor” and people with health deficits as “health poor”. Economists tend to prefer a concept of hardship that reflects “economic position” or “economic well-being”, somehow measured (Haveman & Mellikin, 1999:1-2).

Poverty statistics are expressed as apparently simple numbers, for example, “One in four children under five lives in a poor family”. This simplicity is deceptive. The poverty numbers are, in reality, the product of complex layers of pragmatic political and methodological compromises, extending back over three decades (Institute for Research on Poverty (IRP), 1998:1).

Most of the existing literature on the measurement of poverty is concerned with counting the number of people under a certain poverty line. However, the proportion of the population below the poverty line as such does not reflect the intensity of poverty suffered by the poor. The problem is how poor are the poor. They may have income almost near the poverty line or they may not have any income at all. If it is assumed that the deviation of a poor man's income from the poverty line is proportional to the degree of misery suffered by the man, then the sum total of these deviations divided by the number of poor may be considered a desirable measure of poverty (Kakwani, 1980:437).

The range of available poverty measures presents difficulties in deciding which is most appropriate. Goldberg and Pulkingham (1999:5) consider that whatever approach is taken, creating a poverty line requires some "arbitrary decisions". The consumption-based approach requires many decisions about what goods and services are considered in the measure. For example, should different food baskets be used based on age? Should the cost of a haircut be included? Should transportation costs include having a car or, assuming public transportation is available, should monthly public transportation passes be used in measuring the costs or should a certain number of individual fares be used to determine the cost? Similar problems exist for the mixed and equity-based approach. For example, how many percentage points should be added to average expenditures to set the poverty line? Why use only food, clothing, and shelter rather than food, shelter and transportation, which the family expenditure survey shows are the three areas of greatest expenditure for families? Should mean or median income be used in determining the average income? Should averages take into account differences based on age (experience) (Goldberg & Pulkingham, 1999:5-6)?

The reduction of poverty and inequality has been a central concern of South Africa's government since 1994. Yet, a quantitative description and analysis in this field have been slow to emerge. The main reason is that evidence had to be built up (mainly by Statistics South Africa (Stats SA)) from a very limited historical base (Simkins, 2000:1). A further problem with the measurement of poverty in South Africa was pointed out by Godsell and Buys (1992:636), namely, the fact that no national definition of poverty exists in South Africa. Much research into poverty in South Africa

has used various, mostly international measurements of poverty with little effort at national contextualisation. Estimates of the levels of poverty in the country therefore vary considerably (Mokoena, 2004:56-57).

When measuring poverty, Stats SA calculates the annual income for households by adding together the individual incomes of all members of the household. Stats SA uses income as an indicator of poverty as it is the easiest quantifiable indicator. As indicated in Table 1.1, the total income of each household is then reallocated into the relevant income category. Households are then measured, whether they are poor or not, with their allocated proxy income value against a standard poverty line (Stats SA, 2001:39). Table 1.1 indicates how these proxy income values for households in different income categories are calculated. Table 1.1 can be described by the following equations:

When the income category (i) is equal to 1, and both the lower limit of income range (y_{l_i}) and the upper limit of income range (y_{u_i}) are zero, the proxy income value allocated (yp_i) is also zero:

For $i = 1$:

$$yp_i = 0 \dots\dots\dots(1.1)$$

When the income category (i) is 2, the proxy income value allocated (yp_i) can be defined as:

For $i = 2$:

$$yp_i = y_{u_{i-1}} + [(y_{u_i} - y_{u_{i-1}}) \times 0.6667] \dots\dots\dots(1.2)$$

For the income category 2 to 11, the proxy income value allocated (yp_i) can be defined as:

For $i = 3$ to 11:

$$yp_i = y_{u_{i-1}} + [(y_{u_i} - y_{u_{i-1}}) \times 0.5] \dots\dots\dots(1.3)$$

TABLE 1.1 RANKING HOUSEHOLDS' INCOME FOR PROXY INCOME ALLOCATION

| Income category (i) | Lower limit of income range (y_{l_i}) | Upper limit of income range (y_{u_i}) | Proxy income value allocated (y_{p_i}) |
|---------------------|---|---|--|
| 1 | 0 | 0 | 0 |
| 2 | 1 | 4800 | 3200 |
| 3 | 4801 | 9600 | 7200 |
| 4 | 9601 | 19200 | 14400 |
| 5 | 19201 | 38400 | 28800 |
| 6 | 38401 | 76800 | 57600 |
| 7 | 76801 | 153600 | 115200 |
| 8 | 153601 | 307200 | 230400 |
| 9 | 307201 | 614400 | 460800 |
| 10 | 614401 | 1228800 | 921600 |
| 11 | 1228801 | 2457600 | 1843200 |
| 12 | 2457601 | 4915200 | 3686400 |

Source: Own construction, based on information from Stats SA

Stats SA's 2001 census questionnaires unfortunately did not make provision for determining the exact income of a household, but could only determine the income of a household within a certain category. The methodology used by Stats SA to determine the headcount index, therefore, does not lend itself to determine the poverty gap. Proxy income values are used instead of real income values. Therefore, this measure does not show how far the poor are below the poverty line. According to Callan and Nolan (1991:244) it is clearly rather crude to assume that a household earning R999 per month is in poverty, while the household earning R1000 is not.

According to Ravallion (1998:ix), poverty lines for families of different sizes and compositions, living in different places with different prices, or for different dates, tell what expenditures are needed in each set of circumstances to ensure that the minimum level of living needed to escape poverty is reached. The country-wide method used by Stats SA does not provide for that, and it is believed not to be accurate on a district and local level, therefore it is difficult to formulate policies at local

level. Ravallion (1996:2) also testifies to that by saying that the "best practice" in setting a poverty line is to adjust for differences in the prices faced (over time or space, in as much detail as data permits), and household demographics.

Statistics based on the mean or aggregate income of the poor are criticised for failing to reflect the distribution of income among the poor (Borooah & McGregor, 1991:358). According to Ravallion (1996:5), setting poverty lines as a constant proportion of the mean for each sub-group seems very unlikely to deliver poverty comparisons of much relevance to anti-poverty policies, since the implicit welfare indicator loses meaning in terms of absolute levels of living. Policies based on this method could easily miss the poorest of the poor, by anyone's reckoning.

Following the guidelines of the World Bank, Slabbert (1997:47; 2003:38 & 2004:41) defines a poor household as a household of which the combined income of all its members is less than the Household Subsistence Level (HSL) as determined for the specific household. Potgieter (1980:4) defines the HSL as an estimate of the theoretical income needed by an individual household to maintain a defined minimum level of health and decency in the short term. The HSL is calculated at the lowest retail cost of a basket of necessities of adequate quality. The headcount index is defined as the fraction of the population below the poverty line (Deaton, 1994:122). Slabbert adapts the headcount index to indicate the fraction of households that fall below their individual poverty lines. The poverty gap usually measures the average shortfall of the incomes of the poor from the poverty line while the poverty gap index measures the extent of the shortfall of incomes below the poverty line. Slabbert adapts the poverty gap index to be a measure of a specific household.

According to Hill and Michael (2000:2-3) for any poverty measure to be useable, it must be adjustable over time, across geographic space, and across consumer units of different sizes and structures. This study is therefore aimed at analysing the Stats SA poverty measure in comparison with Slabbert's measure to show whether or not it is adjustable in these three dimensions.

1.3 OBJECTIVE OF THE STUDY

The objective of this study is to analyse international and national methodologies for measuring poverty and then to apply, and compare specifically, the methodologies used by Stats SA and Slabbert to a set of data obtained by the candidate from a household survey conducted in 2004 in Sharpeville. The Stats SA methodology is also applied to a 10% sample of the 2001 Census data on Sharpeville. The specific objective of this study is to indicate that the current Stats SA poverty measure that is used country-wide does not accurately identify the poor population, nor does it lend itself to the measuring of the depth of poverty.

1.4 RESEARCH METHODOLOGY

According to Desai and Shah (1988:505), any attempt to measure poverty runs into some familiar questions. First is the problem of definition: "Do we mean by poverty some absolute state of existence at or below subsistence, visible to the naked eye or do we mean a state where some members of a community are relatively worse off?". If the former, what determines the shopping list of minimum subsistence needs that must be met which gives us the cut-off point, the poverty line? If the latter, is there any way to avoid sinking into the morass of relativity and end up by defining poor in terms of subjective/ideological/political criteria?

This study looks at the above questions through an overview of the concept of poverty. The theoretical background of the study is done through the use of secondary sources such as textbooks, government publications, the internet and published reports as well as unpublished information like theses. Primary sources such as newspapers and periodicals will also be consulted.

Data obtained from a Household survey (Sekatane, 2004) is used to make a comparison between the methodology used by Stats SA (whereby households are grouped into categories according to their income and measured against a standard poverty line) and the one used by Slabbert (whereby a combined income of all members of a household is measured against an individual poverty line which was determined by calculating a basket of necessities for each and every member of the household).

The Stats SA standard poverty line of R800 (2001) is used for this study when applying and comparing the Stats SA method. This poverty line is adjusted for 2004 by the inflation rate (i.e. the Consumer Price Index (CPI)) from 2002 up to 2004 to get an adjusted poverty line for 2004. The method used by Stats SA is also applied to a 10% sample of the 2001 Census-data of Sharpeville. The average poverty line for 2001 is determined by taking the average HSL of households in a 10% sample, and comparing it with the R800 poverty line.

Stats SA's 2001 Census questionnaires unfortunately did not make provision for determining the exact income of a household, but could only determine the income of a household within a certain category. The question around this practice by Stats SA is: Why not ask people/households their exact income in the census surveys? A sample of 50 people/households (25 from the non-poor population and 25 from the poor population) were interviewed in Sharpeville by means of questionnaires to determine the attitude people have towards giving their exact income compared to indicating a category.

1.4.1 Empirical study

This study makes use of data obtained from a household survey conducted in 2004 in Sharpeville township and squatter areas by means of questionnaire-interviews whereby 174 households were interviewed (see Annexure A for the 2004 survey design and Annexure B for the questionnaire).

For determining the attitude that people/households have towards revealing their income an additional household survey was conducted in Sharpeville. The candidate interviewed a total of 50 households. From the 2004 survey data it was found that from the 174 households, 75 households are poor. A sample of 50 people/households that were interviewed for the attitude that people/households have towards revealing income was randomly selected from the 174 households that were interviewed in 2004 (25 households from the poor population and the other 25 from the non-poor population). A questionnaire was designed for obtaining the desired information (see Annexure C). All the households approached were willing to partake in the survey and all 50 questionnaires were completed in June 2006.

1.5 GEOGRAPHICAL AREA OF THE STUDY

In Figure 1.1 below, Sharpeville is indicated in the Emfuleni municipal context. Sharpeville is a township situated near Vereeniging. Sharpeville together with Boipatong, Bophelong, Evaton, Loch Vaal and North Vaal rural areas, Sebokeng, Tshepiso, Vaal Oewer, Vanderbijlpark, Vereeniging and surroundings form the Emfuleni municipal area. Emfuleni together with Lesedi and Midvaal municipalities form the Sedibeng district municipality in the Southern part of Gauteng Province (Sekatane, 2004:4).

FIGURE 1.1: SHARPEVILLE'S GEOGRAPHICAL LOCATION



Source: Demarcation Board, 2006

1.6 OUTLINE OF THE STUDY

Chapter 1 (*The problem and its setting*) introduces the research problem, aim of the study, objectives thereof, research methodology and the deployment of the study. The chapter uses the research proposal as a base.

Chapter 2 (*Theoretical background of the study*) gives an overview of poverty research internationally and nationally. It also deals with the theoretical underpinnings of the study. A literature review of concepts such as poverty definitions and measurements forms part of this chapter.

Chapter 3 (*An analysis of different methodologies of measuring poverty*) describes the different methodologies (both international and national) used for measuring poverty, but pays special attention to the methodology used by Stats SA and that of Slabbert.

Chapter 4 (*Application of the methodologies by Stats SA and Slabbert in Sharpeville*) outlines a cross-sectional comparative evaluation of the methodologies on a set of data. The chapter compares the result of the methodologies when applied in Sharpeville. The purpose of this study is to indicate that the methodology used by Stats SA needs to be revised as it does not seem to be a credible measure of poverty. An overview of the attitude that people/households in Sharpeville have towards revealing their exact income compared to indicating a category is also discussed in this chapter.

Chapter 5 (*Summary, conclusion and recommendations*) presents a summary of the findings of the study. Conclusions are drawn from these outcomes. The chapter also contains recommendations.

1.7 EXPLANATION OF TERMS

The following list explains the terms and concepts used in the study.

Deprivation: Refers to things that are lacking, what is needed for well-being. Its dimensions are physical, social, economic, political and psychological or spiritual. It includes forms of disadvantage such as physical weakness, isolation, poverty, vulnerability and powerlessness.

Headcount index: Refers to the fraction of the population below the poverty line.

Inequality: Refers to relative living standards across the whole society.

Mean or median income: The median is a midpoint that separates a group into halves.

Non-poor households or people: A non-poor household is defined as a household of which the combined income of all its members is more than the Household Subsistence Level (HSL) calculated for the specific household. Persons belonging to such households are referred to as the non-poor.

Poor: Goes beyond being the adjective for poverty, referring to lack of physical necessities, assets and income, to include the broader sense of being deprived, in a bad condition and lacking basic needs.

Poor households or people: A poor household is defined as household of which the combined income of all its members is less than the Household Subsistence Level (HSL) calculated for the specific household. Persons belonging to such households are referred to as the poor.

Poverty: Refer to lack of physical necessities, assets and income. It includes, but is more than, being income-poor. Poverty can be distinguished from other dimensions of deprivation such as physical weakness, isolation, vulnerability and powerlessness with which it interacts.

Poverty gap: The poverty gap for a household is defined as the difference between the income of a poor household and the HSL for that specific household.

Poverty line: Shows the income level needed to provide a minimum subsistence level.

Poverty rate: Number of poor households expressed as a percentage of the total number of households.

Well-being: It is the experience of good quality of life.

CHAPTER 2

THEORETICAL BACKGROUND OF THE STUDY

2.1 INTRODUCTION

South Africa is classified as an upper middle income country by the World Bank, yet a vast proportion of its population is living in absolute poverty and displays a level of human development more often associated with low income countries. The Reconstruction and Development Programme (RDP) was formulated in response to this situation and aimed at alleviating poverty and reducing inequality among races and between rich and poor. The formulation of anti-poverty policies is, however, being hampered by a lack of baseline information regarding poverty. Policies cannot be formulated without a knowledge of who the poor are, how poor they are and where they are located. For these reasons, poverty research is necessary to understand poverty and equip policy makers with usable information (Human Sciences Research Council (HSRC), 1995:1). Hence this chapter, when providing the theoretical framework of this thesis, begins with reviewing the history of poverty research, both in international and national contexts.

While the question of poverty today is unavoidable and is set to play the primary role in the implementation of economic policies by developing countries in coming years, a fundamental question remains to be answered. In order to introduce effective strategies to combat poverty, it is necessary to reach an understanding on the definition of the phenomenon in order to target as precisely as possible the population concerned and to introduce arrangements for evaluation and monitoring of policies. However, consensus is far from being achieved on this point. Different concepts and indicators exist alongside each other, without the links between them being clearly set out: monetary poverty, penury or extreme poverty of capabilities, social exclusion, absolute and relative poverty and objective and subjective poverty. This confusion stems from the fact that poverty is a complex and multi faceted phenomenon. From this point of view, there is today unanimous recognition of its multidimensional character (Razafindrakoto & Roubaud, 2003:1). The second part of this chapter focuses on the concept of poverty, which is followed by an analysis of the measurement of poverty.

2.2 POVERTY RESEARCH

The philosophy of poverty research around the world is well documented by Øyen (1996:8-16). Øyen challenges the used-to-be dogma of research, namely, that the production of knowledge had its own value, independent of the use to which such knowledge was put and asks the simple question: Why are people actually doing research on poverty?

In answering the question, Øyen states that poverty research thus far has predominantly concentrated on measuring the extent of poverty in a belief that it is of great importance to know the exact numbers of the poor as well as how poor they are. This tradition stems from the World Bank's involvement in poverty studies in the late 1970s, with the aim of making well-supported statements about poverty around the world. For this reason, the World Bank started with the measurement of living standards known as its Living Standards Measurement Studies in 1979. The aim of these studies was to improve the World Bank's ability to monitor standards of living, poverty levels and inequality in developing countries. These studies permitted useful comparisons between countries (Deaton, 1994:33-34 quoted in Slabbert, 1997:2). For this purpose, a range of different measures were developed, mainly based on the income and/or expenditure of the individual and the household.

Complementary to this, Øyen (1996:8) argues that a great deal of poverty research is concerned with criticising the different measures and highlighting their shortcomings. Much effort is made to overcome faults and to increase the validity and reliability of the different measures. In this context, Wilson (1996a:20) states that global poverty research provided an important window into the economic realities of our time. However, it has been "long on measurements, but short on explanations and theories" and maybe almost silent on action. Fact-finding and the collection of basic information is, of course, fundamental to any analysis of the causes of poverty. Any attempt to reduce or eliminate the problem cannot bypass the basic process of mapping the terrain of poverty and of attempting to measure changes over time. But it seems that there is a search for yet more facts to formulate an ever more precise definition of poverty. Wilson adds that poverty research thus far has paid relatively little attention to the causes of poverty and strategies to overcome it.

In their search for a definition of poverty that makes precise measurement and comparison over time and space possible, all countries undertaking serious poverty research find themselves treading the well-worn path of researchers in India. Much of their efforts went into the defining of a poverty line that would permit an examination of trends over time and would allow for informed discussions about the impact of government policies, designed to alleviate poverty (Wilson, 1996a:21). However, beyond the collection of data there must be an analysis of the causes. Beyond that, there must also be strategies for action to solve the problem.

Samad (1994:35) is of a similar opinion. He writes that poverty research up to now has been dominated by defining concepts and designing measurements, headcounts in particular. However, the causes, consequences and explanations of poverty have not been adequately addressed. The labour market, capital market, wages and incomes have not been studied in the context of poverty. Furthermore, the current theories lack the necessary rigour and scientificity to explain the phenomenon of poverty adequately. Many hypotheses cannot stand the test of reality.

Øyen (1996:8-9) asks the following questions concerning the measurements of exact numbers: For whom is it important to know what impact these exercises had on poverty alleviation? Is the information always used for the benefit of the poor and who are the actual users of these headcount numbers?

Øyen is of the opinion that among those actively using these numbers are, firstly, the social movements, benevolent societies, pressure groups, political parties and other individuals. They use the data for the purpose of putting pressure on authorities to obtain better living conditions for the poor. Then there are also the national governments which, in their efforts to obtain or to increase foreign aid from international organisations and donor countries, need to present statistics on high poverty rates in their countries. It is therefore not uncommon that unacceptably high numbers of poor are portrayed.

According to Øyen (1996:9), the most ready users are the policy-makers and bureaucrats who are obliged to reduce the complex issue of poverty to a few manageable variables. For this purpose, the poor that deserve help have to be defined in terms of the entire population in order to set a cut-off point between deserving and

non-deserving people. A part of poverty research efforts has gone into identifying such cut-off points. Another part of the efforts has gone into determining the extent of transfers in cash or kind to the poor. When the cut-off points become institutionalised and accepted by political authorities as official poverty lines, poverty alleviation becomes visible (Øyen, 1996:10).

2.3 POVERTY RESEARCH IN SOUTH AFRICA

There can be little doubt that the nature of poverty in the South African context is a highly political issue, and as such, it is impossible to isolate the existing body of poverty research from the political environment in which it has been and is currently being performed. Since 1990 and the unbanning of the African National Congress (ANC), the transition from apartheid to a representative and democratic government has been both swift and effective. However, despite the removal of legal discrimination and oppression, and the establishment of human rights and government accountability, the old system of apartheid has bred an environment that continues to perpetuate and exacerbate both poverty and inequality (Bundy, 1992:35).

2.3.1 Research before 1980

As far back as 1906 a government commission was appointed in the Transvaal to look into the matter of "indigency" or poverty. The aim of the Commission was to prevent the growth of poverty in the Transvaal. For this reason, they regarded the methodology that deals with general, social and economic causes of poverty as important. However, in their terms of reference, the commission was limited in outlook and considered only the "indigency" of whites. Very little attention was paid to black poverty (Wilson, 1996b:228). Poverty research that followed also focused primarily on whites. The First Carnegie Commission, established in 1928 to investigate the so-called "Poor White Problem", is an example (Wilson, 1996b:229).

The findings of the first major inquiry into poverty in South Africa were published in 1932. The inquiry stemmed from a visit by the president and secretary of the Carnegie Corporation to South Africa in 1927, after which the Dutch Reformed Church requested support for an investigation into the Poor White Problem (Anon., 2001:5). A team of university and church people set up the Carnegie Commission on the Poor

White Problem in South Africa with help from a non-profit philanthropic trust, the Carnegie Corporation of New York. While successfully making use of new methods of research, the failure of the Commission lay in the extent to which the limitations of its concern to whites only meant that its findings were used to promote strategies for improving the position of poor Whites, often at the expense of poor Blacks (Wilson & Ramphela, 1989:x).

2.3.2 Research in the 1980s

The second Carnegie Inquiry into Poverty and Development in Southern Africa followed almost 50 years after the first one. The idea of another major study was suggested from time to time, including in the mid-1930s by one of the first Carnegie commissioners and in the later 1940s by the historian C. W. de Kiewiet. However, the idea lay dormant until the beginning of 1980 when it was decided to begin work on a second major inquiry into poverty and development. Unlike the first Carnegie Inquiry, this was to include all South Africans, black and white, and as most poverty occurred amongst black South Africans, the "centre of gravity of the Inquiry had to be black rather than white" (Anon., 2001:14).

In January 1980 a feasibility study was commissioned, which was followed by two years of preparatory work and consultation with various stakeholders (Anon., 2001:14). This period included time spent assessing other research around the world. Poverty studies during the 1970s in Britain, Ireland, the European Common Market, Australia and the United States were compared and contrasted not only with each other but with numerous studies, often sponsored by the World Bank or the International Labour Organisation (ILO), in Kenya, Sri Lanka, Brazil, India and elsewhere (Wilson & Ramphela, 1989:x).

According to Wilson and Ramphela (1989:x), three important findings resulted from these initial two years of preparatory work:

- Any study of poverty can only be truly meaningful if there is real inside understanding and participation of those communities that have to endure poverty. In the South African context where the vast majority of those who are poor are

Black, this meant that, as far as possible, the centre of gravity of the Inquiry had to be Black rather than White.

- It became clear that the Inquiry should be designed as an open-ended, ongoing process rather than as a once-off affair.
- Whilst the study gradually took shape in discussions around the country, a striking contrast in views became apparent. White South Africans were generally enthusiastic about the need for poverty research whereas Black South Africans were unimpressed about data-gathering, demanding instead that action be taken to alleviate that poverty already known to exist (Wilson & Ramphele, 1989:x).

Researchers involved in the Second Carnegie Inquiry were not provided with a clear definition of poverty. This was, however, criticism against the Inquiry. The Inquiry was viewed as an untidy process and was condemned by an economist of the World Bank as an inquiry that produced mere anecdotal evidence. Wilson responded to this by arguing that statistical analysis is essential and that statistics of a high quality are important. But he asked: "What is measured and what not?" (Slabbert, 2004:27).

The Second Carnegie Inquiry into poverty in South Africa therefore emerged with a concept of poverty that had many different facets (Wilson, 1996b:233). The concept of poverty research in the 1980s, therefore expanded into a three-staged process, namely, facts, causes and strategies. It was no longer acceptable to confine poverty research to collecting data and analysing the causes. Research had to focus on finding ways of preventing and alleviating poverty. In order to do so, the facts of the matter and the analysis of causes of poverty were vital (Wilson, 1996b:233).

2.3.3 Research between 1990 and 1994

In 1994, the Project for Statistics on Living Standards and Development (PSLSD) gave another major thrust to (material) poverty research in South Africa. The purpose of the survey was to collect statistical data about the conditions under which South Africans live in order to provide policy-makers with information required for planning strategies. Such data is of primary importance for the implementation of such goals as outlined in the RDP (Wilson, 1996b:230).

2.3.4 Research after 1994

With a new, democratically elected government in power, poverty studies in South Africa became less politically inclined. They now follow more or less the same pattern as international poverty studies, for instance those conducted by the World Bank (Slabbert, 1997:34).

Poverty studies in South Africa have made major contributions towards creating the right environment for poverty to be addressed at a national or macro-level. Without the necessary national data on poverty, it would have been difficult for government to budget and plan on a macro-level. However, poverty research has reached a stage where far more disaggregated data on urban and rural poverty must be produced if meaningful solutions are to be found for the alleviation of poverty in practice (Slabbert, 1997:35).

In 1994, under the new government representing all the people of the country, Stats SA, the national statistics agency, conducted its first nation-wide October household survey (OHS), including the former 'TBVC (Transkei-Bophuthatswana-Venda-Ciskei) states'. It covered a wide range of socio-economic issues related to poverty, including levels of education and employment status among individuals and access to services such as clean water and electricity among households. This initial survey was followed by similar surveys in 1995, 1996, 1997, 1998 and 1999 (Hirschowitz, Orkin & Alberts, 2000:53).

One dimension of poverty, i.e. money-related poverty, was more thoroughly measured in 1995 compared with other years, when the annual OHS was linked to the five-yearly income and expenditure survey (IES). The same households were separately visited for the 1995 OHS and IES, with the IES visits taking place shortly after the OHS. The linkage of data from the two surveys allowed for the development of a large database by means of which to compare household income and expenditure with living conditions and life circumstances (Hirschowitz *et al.*, 2000:53).

The questionnaire for the 1996 population census included several socio-economic items similar to the OHSs. This allowed South Africa's new democracy to obtain its first set of baseline statistics on the life circumstances of all South Africans down to

the level of small areas. In November 1996, shortly after enumeration, a post-enumeration survey (PES) was conducted in order to estimate and adjust for the extent of persons and/or households which are unavoidably missed in any census (Hirschowitz *et al.*, 2000:53).

2.4 THE CONCEPT OF POVERTY

Poverty is blessed with a rich vocabulary in all cultures and throughout history. From an analytical perspective, thinking about poverty can be traced back at least to the codification of poor laws in medieval England, through to the pioneering empirical studies at the turn of the century by Booth in London and by Rowntree in York. Rowntree's study, published in 1901, was the first to develop a poverty standard for individual families based on estimates of nutritional and other requirements. In the 1960s, the main focus was on the level of income, reflected in macro-economic indicators like Gross National Product (GNP) per head. This was associated with an emphasis on growth, for example in the work of the Pearson Commission, *Partners in Development* (1969). In the 1970s poverty became prominent, notably as a result of Robert MacNamara's celebrated speech to the World Bank Board of Governors in Nairobi in 1973, and the subsequent publication of *Redistribution with Growth*. Two other factors played a part. First was the emphasis on relative deprivation, inspired by work in the United Kingdom (UK) by Runciman and Townsend. According to Maxwell, (1999) Townsend, in particular, helped redefine poverty: not just as a failure to meet minimum nutrition or subsistence levels, but rather as a failure to keep up with the standards prevalent in a given society (Maxwell, 1999).

The second shift was to broaden the concept of income-poverty to a wider set of 'basic needs', including those provided socially. Thus, following ILO's pioneering work in the mid-1970s, poverty came to be defined not just as lack of income, but also as lack of access to health, education and other services. The concept of basic needs inspired policies like integrated rural development. Its influence continues to be seen in current debates about human development (Maxwell, 1999).

New layers of complexity were added in the 1980s. The principal innovations were:

- The incorporation of non-monetary aspects, particularly as a result of Robert Chambers' work on powerlessness and isolation. This helped to inspire greater attention to participation (Maxwell, 1999).
- A new interest in vulnerability, and its counterpart, security, associated with better understanding of seasonality and of the impact of shocks, notably drought. This pointed to the importance of assets as buffers and also to social relations (the moral economy, social capital). It led to new work on coping strategies (Maxwell, 1999).
- A broadening of the concept of poverty to a wider construct, livelihood. This was adopted by the Brundtland Commission on Sustainability and the Environment, which popularised the term sustainable livelihood (Maxwell, 1999).
- Theoretical work by Amartya Sen, who had earlier contributed the notion of food entitlement or access, emphasised that income was only valuable in so far as it increased the 'capabilities' of individuals and thereby permitted 'functionings' in society (Maxwell, 1999).
- Finally, the 1980s was characterised by a rapid increase in the study of gender. The debate moved from a focus on women alone (Women In Development (WID)), to wider gender relations (gender and development (GAD)). Policies followed to empower women and find ways to underpin autonomy or agency (Maxwell, 1999).

The 1990s saw further development of the poverty concept. The idea of well-being came to act as a metaphor for absence of poverty, with concomitant emphasis on how poor people themselves view their situation. At the same time, inspired by Sen, the United Nations Development Programme (UNDP) developed the idea of poverty: 'the denial of opportunities and choices to lead a long, healthy, creative life and to enjoy a decent standard of living, freedom, dignity, self-esteem and the respect of others' (Maxwell, 1999).

To complete this narrative, thinking about human development finds a counterpart in the current debate in rich countries about social exclusion. This started in France in the late 1970s, but has spread widely: for example, the UK set up a social exclusion

unit in the Cabinet Office in 1997. The focus is on multiple deprivation (low income, poor housing, poor access to education and health), but also on the process by which multiple deprivation occurs. The key arenas for exclusion include democratic and legal systems, markets, welfare state provisions, and family and community: rights, resources and relationships are all important (Maxwell, 1999).

2.4.1 Broader understandings of poverty

Other conceptions of poverty exist; the framework proposed by the Nobel Prize-winning economist and philosopher Amartya Sen, whose work has been committed to human development and social justice, is perhaps the most informative. Sen (2000) has argued for: the general need for liberating the analysis of economic inequality from confinement to the space of incomes or commodity holdings and rather for issues of social justice to: be assessed not by the incomes, resources or primary goods the persons respectively have but in terms of the freedoms they actually have to choose and between different ways of living they can have reason to value.

Much of Sen's approach has been motivated by a recognition that very often debates on inequality and poverty use a false dichotomy of arguments being between those who favour equality and those who do not. This is, Sen suggests, inappropriate, as the debates are not about whether or not equality is a goal but rather what type of equality is being sought; for example, of means, outcomes, opportunities and choice (Commonwealth Department of Family and Community Services (CDFCS), 2003:5). While much of Sen's analysis has been directed at the experience of developing countries, Sen argues that a focus on poverty from a capabilities approach has much to offer more advanced economies: the reorientation from an income centred to a capability centred view gives a better understanding of what is involved in the challenge of poverty. It provides clearer guidance on the priorities of anti-poverty policy and help to understand better the genesis of poverty in apparently unlikely circumstances (e.g. in the rich countries of Europe and America) (Sen, 1992).

The strength of Sen's analysis is that it recognises the need for institutional and societal structures not only to address the issues of individual resources and capabilities, but also, and very importantly, questions of individual choice and freedom. As Sen (2000:148) indicates: in dealing with responsible adults, it is more

appropriate to see the claims of individuals on the society (or the demands of equity or justice) in terms of freedom to achieve rather than actual achievements. In this context, a key responsibility for governments is to ensure that their policies enhance rather than regulate these freedoms, and that systems encourage personal responsibility and activity, upon which individual choice must be based. In providing a focus on the nature of capabilities it also highlights the critical questions of the responsibilities within society to provide people with these. Predominantly these reflect factors such as the quality of education and the quality of parenting available to children, the extent to which women have equal opportunities and so on. While this approach provides a powerful tool to analyse social structures, it has been less able to be developed into a measure that can be used for quantifying outcomes. Even when it has been used at a more basic level within the United Nations Human Development Report, significant problems have arisen. Nevertheless, the perspective this broader approach provides is critical if policies seek to address poverty, and most critically, its causes. This is reflected in the priorities identified in this submission concerning promoting participation, program focus on early intervention, and avoiding the narrow limitations of 'income poverty' analysis (CDFCS, 2003:6).

2.4.2 Differences between poverty and inequality

Critics can argue, successfully, that relative definitions don't really tell us about poverty but rather about inequality. The two are not the same. While there is unquestionably overlap, each has a separate place on the roster of important socioeconomic concepts. Poverty is trivialised if it is equated with inequality. The use of the relative approach may serve other goals, but it does not help the poor nor does it contribute to the understanding of poverty. It is arguable that inequality is a bad thing and that it should be reduced; but the argument should be advanced frankly, not concealed within a case for abolishing poverty without demonstrating the link between them (Fraser Institute, 1999).

The relationship between poverty and inequality is neither clear nor direct. Poverty and inequality are analytically distinct concepts. They vary independently of each other, and it is misleading beyond a point to treat the one as a marker of the other. The study of both poverty and inequality has been closely associated with an interest

in economic and social change. But poverty and inequality do not change at the same pace, and they may even change in opposite directions. It is difficult to make any meaningful statement about the relationship between the two without specifying which conception of poverty and which aspect of inequality one has in mind (Beteille, 2003).

What are the differences between these two issues? Firstly, even a society with a low level of poverty may still be a society with a high level of inequality. The United States (US) clearly has a lower level of poverty than Tanzania, but it also has inequality. Secondly, a fairly equal society may still have a high level of poverty. Many developing countries would have a lower Gini coefficient than South Africa, thus a lower level of inequality, but poverty is much worse. This will partly explain why citizens from those countries migrate to South Africa, some legally others illegally. Judging by how people vote with their feet, inequality with less poverty is more attractive than equality in poverty (EFSA, 2003:4).

Thirdly, a society in economic take-off will, whilst in the transition from poor to less poor, experience rising inequality. It is as inevitable as the night following the day. Whilst progress is being made with poverty reduction, inequality may be worsening. Fourthly, the goal of transforming the ownership and composition of the economy to reflect the country's demographics more accurately will inevitably entail a worsening of the Gini coefficient within the Black community itself. Fifthly, poverty and inequality will respond differently to growth. High growth will certainly help to roll back the one (poverty), but it might exacerbate the other (inequality). That confronts policy makers with a brutal choice: which one gets the priority. Under socialism the priority was equality which ended with everybody being equally poor and societies collapsing. Examples would include Nyerere's African socialism, the Soviet Union and countries in Eastern Europe. Under rampant growth philosophies, combating poverty is the priority. The best example of that would be present-day China, Korea, Taiwan and Malaysia (EFSA, 2003:4-5).

2.4.3 Problems encountered in defining and measuring poverty

There are a number of general questions about how to define and measure poverty, many of which were already apparent in the pioneering work of Rowntree in the late 19th and early 20th century (Laderchi, Saith & Stewart, 2003:3-6):

Firstly, a fundamental issue is the space in which deprivation or poverty is defined and how that space is captured by the indicators chosen. Different poverty definitions span different "spheres of concerns", not all of which may be easily measured. For example, should the definition of poverty be confined to material aspects of life, or include social, cultural, and political aspects? Is poverty to be measured in the space of utility or resources (broadly adopted by different versions of the monetary approach) or in terms of the freedom to live the life one values (as in the capabilities approach)? And for any approach, what type of indicators should be used? For example should indicators capture what may be achieved, given the resources available and the prevailing environment that is the ability to be and do a variety of things or what is actually achieved by individuals? (Laderchi *et al.*, 2003:3).

Secondly, there is the question of the universality of the definition of poverty. Should it be expected that definitions and measurement indicators applied in one type of society be transferable to other societies, without serious modifications, or even at all? Two approaches (the monetary approach and social exclusion) were initially devised for developed countries. In each, there are problems in translating their application to developing countries: in the monetary approach, for example, this involves heroic imputations of values for subsistence production; in social exclusion, substantial differences in societal norms lead to major differences in the defining characteristics of social exclusion. In contrast, the capabilities approach and participatory methods were first devised with developing countries in mind, and the reverse question applies. Here again it is clear that the interpretation of the approaches will differ between societies with radically different characteristics. It is not just a matter of developed versus developing countries, but also other major societal differences (e.g. between socialist and capitalist societies). To some extent methods are context specific, and may need to be reinterpreted for particular societies for operationalisation, which can make comparisons across contexts problematic (Laderchi *et al.*, 2003:3).

Thirdly, there is the question of whether methods are 'objective' or 'subjective'. Most statements about poverty suggest objectivity: i.e., it is implied that there is a certain reality 'out there' which poverty statistics capture. To the extent that value judgements affect measurement the methods are not objective, and the question then is who is making the value judgements: are they made implicitly by the researchers or

statisticians who are measuring poverty? Are they made explicit, and subject to sensitivity analysis, so that the effects of those value judgements can readily be evaluated? To which extent are these understood and shared by other stakeholders through, for example, the political process, or a participatory process involving the poor themselves? (Laderchi *et al.*, 2003:4)

Fourthly, a crucial question is how to discriminate the poor from the non-poor through the use of one, or several poverty lines. Two related issues arise: firstly, what is the justification for adopting any such line; and secondly, to what extent is the poverty line defined as relative to a given context or is it intended to reflect some absolute standards of deprivation (Laderchi *et al.*, 2003:4).

At a theoretical level, the choice of a definition of poverty relies on the crucial assumption that there is some form of discontinuity between the poor and the non-poor which can be reflected in the poverty line. Such a break can pertain to the behaviour of the poor or to some salient feature, which identifies the poor and, which either moral or political considerations suggest should be addressed. For example, one approach, justified on political or moral grounds, is to define the poverty line at a level at which people can realise a full or decent life, or more ambitiously a good society. Essentially, rights based approaches to poverty do this, and similar concerns animate the capability approaches (e.g. Nussbaum, 2000), while this type of argument is unusual in the monetary approach (e.g. Ravallion, 1998). Other types of 'natural' breaks can be found: for example, evidence on the importance of social networks for provision of informal insurance and support mechanisms, as well as from participatory research, suggests there is a 'break' at levels of resources below which people are considered unworthy of community support as they would not be able to reciprocate their obligations if needed (Howard & Milward, 1997).

Considerable attention has been devoted to the issue of whether the threshold between the poor and non-poor should be sensitive to the characteristics of the overall population. At one extreme, the poverty line between poor and non-poor is defined with reference to some summary measure of the overall distribution (as for, example, in the case of the member states of the European Union (EU), where the poverty line is set at 60% of the median of 'equivalised' income). At the other extreme a poverty

line is set in terms of minimal requirements in the dimension of interest identified in absolute terms, for example on the basis of some needs of the individual deemed as essential for survival (Laderchi *et al.*, 2003:4).

In reality it is difficult, perhaps impossible, to identify such absolute needs irrespective of societal standards. For example, in an era before the advent of writing, literacy could not be identified as an absolute requirement, yet now any definition of capability poverty would include this dimension. Further, most apparently 'absolute' indicators of poverty contain some relative element, reflecting the need to maintain the relevance of a given definition over time. For example, although he did not take an explicitly relative approach in his second study of York in the 1930s, Rowntree updated his minimum requirements for people to be non-poor to include having a bath and a garden. Sen (1976) has pointed out that even if requirements can be set as absolute in terms of needs anchored to some standards with intrinsic value, they would generally need to be interpreted as relative in terms of resources. For example, if poverty is defined in absolute terms in relation to nutritional requirements, it is likely, to some extent, to be relative in income terms, since in richer societies people generally need more money to acquire the same nutrition as cheaper foods are not available, transport is needed to shop, and so on (Laderchi *et al.*, 2003:4-5).

Nonetheless, a conceptual difference remains in the choice along the continuum between an overtly relative approach and an intended absolute approach. This choice is ultimately a matter of political and cultural sensitivity. From a political point of view, a relative standard makes sense as people's toleration of poverty and governments' willingness to take action against it is generally relative to average standards in that society. It's also true that the sense of deprivation or unhappiness caused by poverty is greatly influenced by average societal standards. In general, relative standards are mostly adopted in countries where it is assumed that all have access to the means to ensure survival, while where the availability of a survival minimum is felt as a pressing issue (i.e., generally in developing countries), absolute standards are more often adopted (Laderchi *et al.*, 2003:5).

A fifth issue concerns the unit over which poverty is defined. This is partly a question of whether poverty is defined at the level of the individual or the family, and also a

matter of the geographical unit of analysis. While it is individuals who suffer or enjoy their lives, data, particularly of a monetary kind, normally pertains to households, and some resources (not only money income, but e.g. sanitation, clean water) come via the household and it is difficult to ascertain the distribution of services they provide to the individual. The geographic unit matters in three ways: firstly, for identifying the society with respect to which the relative poverty lines are drawn; secondly, for defining the boundaries of the relevant market, for example, to obtain prices for valuations; and thirdly, in terms of targeting. For instance when geographic areas are used for targeting, how the areas are defined will affect the efficiency of targeting (Laderchi *et al.*, 2003:5).

Sixthly, a pervasive question is how to deal with multidimensionality: considering that individual well-being (and lack of it) manifests itself in multiple dimensions, should an aggregate index be developed, and how. The issue can be bypassed in a monetary approach by assuming that the monetary metrics either captures the essence of deprivation, or proxies all other deprivations. The proxying role of the monetary measures is reinforced to the extent that relevant heterogeneity between individuals can be adjusted for, so that their monetary resources become comparable across individuals. The other approaches, however, incorporate what Sen (1976) labels the constitutive plurality of a welfare assessment, and therefore do not present themselves in the form of a single index. These approaches raise two questions: how each constituent dimension is to be measured; and how they are to be aggregated. Any aggregation requires a decision on whether and how the severity of deprivation in each of the basic dimensions should be included. Aggregation is helpful to summarise societal deprivation. However, in general, there is no right way of aggregating. By definition aggregation implies a loss of information, and its influence on the final results should be appropriately tested for (Laderchi *et al.*, 2003:5-6).

Seventhly, the time horizon over which poverty is identified needs to be defined. This is commonly viewed as a technical issue concerning the period of time over which poverty should be measured, i.e., over a month, a year, or longer time. Many people move in and out of poverty over seasons and years, and therefore the longer the time perspective the less poverty will appear. Such variations are less likely the more the poor have access to income and consumption smoothing strategies (Morduch, 1995),

which suggests that in these cases, there is a case for adopting longer time periods to arrive at less accounts of living standards. Yet, these fluctuations can be of particular interest if they entail far reaching consequences for the most vulnerable individuals (consider childhood poverty's consequences for future physical and cognitive development). If poor households are credit and insurance constrained, there is a case for shorter time periods that allow a greater differentiation between the chronic poor (variously defined as those always below a poverty line, or those, on average, below a poverty line (Hulme & Shepherd, 2003)) and the transitory poor. These considerations do not apply, however, to all approaches equally, as some capability and social exclusion measures, though observed at one point in time, by their nature indicate long-term deprivation either because they have long term consequences (e.g. child malnutrition as revealed by low height for age) or because they are structural (e.g. some correlate of social exclusion, such as race) (Laderchi *et al.*, 2003:6).

Another aspect of the time horizon chosen relates to the concept of life time poverty. This could be seen as a statistical question concerning which and how many individuals are chronically poor throughout their lives. But it could also be approached in terms of life-decisions: what critical decisions or circumstances in a person's life pre-birth, in their early childhood, in their school years, as an adult, for example led to lifetime poverty (or avoided it). This approach could be useful for causal and policy analysis (Laderchi *et al.*, 2003:6).

Finally, there is a general question about the extent to which a definition of poverty offers (or should offer) a causal explanation for poverty and points to policies towards its alleviation. Some of the approaches are built on causal analysis, while others aim only at providing a description. It is believed, however, that even such descriptive exercises influence the broad thrust of policy-making (Laderchi *et al.*, 2003:6).

2.4.4 Defining poverty

The first thing to understand about poverty is that it is not a simple phenomenon that people can learn to define by adopting the correct approach. It is a series of contested definitions and complex arguments that overlap and at times contradict each other. It is differently seen as a big phenomenon or a small phenomenon, as a growing issue or a declining issue, and as an individual problem or a social problem. Thus, in

understanding poverty the task is to understand how these different visions and perceptions overlap, how they interrelate and what the implications of different approaches and definitions are (Alcock, 1997:4).

The failure to define poverty is not an academic matter: it directly impacts on delivery. If poverty is undefined, programmes lack focus: it is not clear why this or that service is being provided, or to whom, or where, and measuring progress and impact become near-impossible. As Kanbur and Squire (1999:1) summarised it, 'the definition of poverty drives the choice of policies' or should do, at any rate. An evaluation of South African school feeding schemes instituted after 1994, found differing definitions of nutrition among role-players and a consequent failure to identify or reach the supposed target group, the (undefined) 'poorest of the poor'. Programmes also err in the opposite direction, overloading themselves with principles, objectives, outcomes and the like. An evaluation of government's Community Based Public Works Programme (CBPWP) found the programme had been given successive sets of principles and objectives between 1994 and 2001 and had kept all of them, even though most were undefined and a number were contradictory (Everatt, 2004:89).

2.4.4.1 Approaches to defining poverty

There are various approaches to define poverty. Laderchi *et al.* (2003:244) state the following as the main approaches to defining poverty: the income approach, social or human approach, social exclusion, monetary approach, the capability approach, participatory approach and the human scale development approach. Classification of how poverty is defined is extremely important as different definitions imply the use of different indicators for measurement.

- **Approach in terms of income poverty:** Income poverty is usually expressed by means of ratio of declared poor to the total population. It is a fundamentally numerical approach. Individuals or households whose income or consumption is found to be below a set poverty line are defined as poor (Laderchi *et al.*, 2003:244).
- **Approach in terms of social or human poverty:** Included in this category are all approaches focusing primarily on the satisfaction of basic needs, and include not

only food and shelter, but also health, education, and sanitation. These approaches include goods and services supplied on a collective basis and consider the satisfaction of needs deemed basic at the level of their access and impact on people's lives and not at the level of their income potentialities. The Human Poverty Index (HPI) developed in recent years is probably one of the most elaborated within this approach (Laderchi *et al.*, 2003:244).

- **Approach in terms of social exclusion:** Notions and analyses of social exclusion are built of the basic hypothesis that social and economic well-being constitutes rights as the HPI does. Far from being equated with poverty, social exclusion refers to a process of social disintegration, grounded on different inter-related dimensions (Laderchi *et al.*, 2003:244).

Social exclusion is not interchangeable with the term discrimination or the term poverty. Discrimination is but one of the processes that can lead to exclusion. The concept of social exclusion provides a lens for examining the implications of acts of discrimination when that discrimination leads to the exclusion of people from participation in mainstream society. The distinction between social exclusion and poverty is an important one. All poor people are socially excluded and not all members of groups who are excluded are also poor (Laderchi *et al.*, 2003:244).

- **Monetary approach:** A poverty line is selected and households are identified as being poor on the basis of a shortfall in income related to this figure. The monetary approach is often the most dominant in the description and analysis of poverty (Laderchi *et al.*, 2003:244).
- **Capability approach:** Development is seen as the expansion of human capabilities. The approach defines poverty as the failure to achieve certain minimum or basic capabilities, for example, proper nutrition (Laderchi *et al.*, 2003:244).
- **Participatory approach:** This approach involves the poor in defining who is poor or what poverty actually means (Laderchi *et al.*, 2003:244).

- **Human scale development approach:** This approach defines poverty in far broader, holistic terms. It makes a clear distinction between needs and satisfiers of those needs. Human needs are viewed as interrelated and interactive. Needs are classified into two categories with the needs of being, having, doing and interacting on the one hand, and the needs of subsistence, protection, affection, understanding, participation, idleness, creation, identity and freedom on the other (Max-Neef, Elizalde & Hopenhayn, 1989:17). Food and shelter are not seen as needs, but as satisfiers of the need for subsistence. Education, either formal or informal, study, investigation and meditation are viewed as satisfiers of the need for understanding. The curative systems, preventive systems and health schemes in general are satisfiers of the need for protection. A satisfier may contribute simultaneously to the satisfaction of different needs, or conversely, a need may require various satisfiers in order to be met. For example, a mother breast-feeding her baby is simultaneously satisfying the infant's need for subsistence and protection, affection and identity (Max-Neef *et al.*, 1989:17).

By drawing a distinction between the concepts of needs and satisfiers, Max-Neef *et al.* (1989:20) argue that fundamental human needs are finite, few and classifiable. Furthermore, fundamental needs are the same in all cultures and in all historical periods. What changes is the way or the means to satisfy needs. Every social or political system adopts different methods to satisfy similar fundamental needs. In every system, fundamental human needs are satisfied (or not satisfied) through the generation (or non-generation) of different types of satisfiers.

2.4.4.2 Definition

Defining poverty is not an easy task. Scott (1994:17), points out that poverty is a highly contested term. Many works on the subject become so technical that it is very difficult to draw conclusions from them or to employ them in policy-making endeavours. The important factor with definitions of poverty is that definitions drive policies. How poverty is defined and measured will determine the types and direction of policies aimed at reducing it. Alcock (1997:1-2) concurs that underlying the discussions on poverty is the assumption that identifying the problem provides a basis for action upon which all will agree. In the absence of a universally accepted indicator of poverty or welfare, several measures are examined in an attempt to find common

ground. It is the issue of the definition that lies at the heart of the task of understanding poverty. It should first be known what poverty is, before it can be identified where and when it occurs, or before one attempts to measure it, and before one can begin to do anything to alleviate it.

Disagreements over the definition of poverty run deep and are closely associated with disagreements over both its causes and the solutions to it. The rationale for considering a variety of indicators originates from the multidimensional nature of the poverty phenomenon. Poverty can be defined as a lack of resources to meet basic needs such as adequate food, clothing, shelter and necessities. It also represents the inability to meet higher order needs such as the need for personal fulfilment, recreation and freedom. The determinants of poverty are often seen as income-related factors. People with sufficient income usually develop strategies to cope with the problem. The inability to implement these strategies is an important indicator of the extent of their poverty (Development Bank of Southern Africa (DBSA), 1998:37).

Many definitions of poverty are based on income or material-based poverty (Atkinson & Bourguignon, 1999:1, 5-7). This then militates in favour of income-based policies in poverty reduction. There are other dimensions to poverty though, as pointed out by Max-Neef *et al.* (1989). The following are only a few definitions of poverty proposed in some of the prominent works on the subject.

Gharajedghi (1986:44) defines poverty in terms of five elements: powerlessness, incompetence, meaningfulness, exploitation and conflicting values. These attributes could equally apply to a wealthy person and fall short of a clear definition. Gharajedghi further asserts that poverty is not just economic, but has a strong psychological dimension. "If people do not have expectations, they feel they cannot take decisions, they feel they cannot do things, and they just have to drift along".

Kanbur and Squire (1999:1) state that: "Any reasonable definition of poverty implies that significant numbers of people are living in intolerable circumstances where starvation is a constant threat, sickness is a familiar companion, and oppression is a fact of life". This approach raises some very fundamental issues with regards to poverty, *viz.* lack of command over resources, vulnerability, insecurity, social exclusion and lack of participation. Most definitions of poverty contain these issues.

According to Wilson and Ramphela (1989:15), poverty is like illness. It shows itself in different historical situations, and it has diverse causes. Treatment generally requires careful diagnosis. It is not always easy to make a clear distinction between the facts or symptoms of poverty and its origins. Not only are there several different dimensions of material and non-material poverty but there is also a complex interaction between cause and effect, which makes it difficult to describe a state of poverty without considering those factors, themselves aspects of poverty that cause further misery.

Dictionary definitions reflect common usage and popular understanding of the meaning of words. The latest versions of the most respected dictionaries state the term poverty means “without or lacking basic necessities”; “being poor, deprived of basic needs”; and “without any luxuries” (Sarlo, 2001:9). This is helpful but it does not state specifically how to use “poverty” to make a practical distinction. Where exactly on the continuum of living standards does the state of poverty lie? How deprived does one have to be to be classified legitimately as poor? More generally, is poverty all about the lack of a certain basket of necessary commodities or is it merely a particularly low position in the distribution of income? Students of poverty have struggled with these and related questions for a long time. The problem is that poverty is not a highly visible or clearly objective condition. People do not neatly sort themselves into poor and non-poor. At one time, the label “poor” was pejorative and demeaning. It was a label that people wore very reluctantly and often with shame. More recently, with the advent of a fairly elaborate social safety-net, “poor” has far less stigma attached. Despite a fairly consistent meaning of the word in common use, the condition of poverty is not easy to identify. It is not like the freezing point of water or even like the condition of unemployment (Sarlo, 2001:9).

Poverty is usually viewed as either a form of absolute deprivation or relative, but significant, deprivation. Absolute poverty is perceived as subsistence below the minimum requirements for physical well-being, generally based on a quantitative proxy indicator such as income or calories, but sometimes taking into account a broader package of goods and services. Alternatively, the relatively poor are those whose income or consumption level is a particular fraction below the national average. Relative poverty encourages an analytical focus on income inequality trends (Hulme, Shepherd & Moore, 2001:6).

According to the UN (2002:21-22), poverty is a deprivation of essential assets and opportunities to which every human should be entitled. Everyone should have access to basic education and primary health services. Poor households have the right to sustain themselves by their labour and be reasonably rewarded and have some protection from external shocks. These rights and entitlements are understood as “endowments” that people have in any society.

Hirschowitz *et al.* (2000:54), define poverty as the denial of opportunities and choices most basic to human development to lead a long, healthy, creative life and to enjoy a decent standard of living, freedom, dignity, self-esteem, and respect from others.

According to the World Bank (2000:15), to be poor is to be hungry, to lack shelter and clothing, to be sick and not cared for, to be illiterate and not schooled. But for poor people, living in poverty is more than this. Poor people are particularly vulnerable to adverse events outside their control. They are often treated badly by the institutions of state and society and excluded from voice and power in those institutions.

From a human development perspective, poverty means the denial of choices and opportunities for a tolerable life (UNDP, 1997:5).

The South African Poverty Participation Assessment (SAPPA), which was undertaken in 1998, voiced some important complementary elements of a definition of poverty by the poor themselves, such as alienation from the community and the institutions of kinship, food insecurity, crowded homes, use of basic forms of energy, lack of adequate paid and secure jobs and fragmentation of the family (May, 1998:3).

Other concepts are being used to approach poverty, such as:

- Inequality, which refers to the unequal distribution of income across a country and is measured internationally by the Gini coefficient on the one hand and by the income shares of deciles of households on the other.
- Vulnerability, particularly relevant in reflecting the phenomenon of transient poverty and in targeting those poor “who move in and out of poverty, as the negative outcome of processes of change, whether they be economic, social, environmental or political” (Anon., 2000 quoted in Sekatane, 2004:27).

More recently, a distinction has emerged between transient and chronic poverty. Jalan and Ravallion (2002:83) define transient poverty as the contribution of consumption variability over time to expected consumption poverty. Chronic poverty is the poverty that remains when inter-temporal variability in consumption has smoothed out. They identify three categories of poor households. The first category is persistently poor, that is, households that are poor at every date for which data is available. The second category does not have a consumption level below the poverty line at every date, but the average consumption is below the poverty line. This category is defined as chronically poor. The third category comprises of the transitory poor who have an average consumption level above the poverty line but who are sometimes poor.

The examples of definitions given above show that poverty may be defined either based on income or non-income dimensions. Schiller (1984:5-10 quoted in Mokoena, 2004:14) makes the point that although non-economic aspects are understood, they are not easily quantifiable. It is therefore much more convenient to employ income-based measures for ease of measurement. It has nevertheless become imperative and equally important to attempt the measuring of non-income indicators as well.

Is there a single right definition of poverty? The answer is certainly 'no', but current thinking does allow some simplification. Firstly, there is no philosophical disagreement with the statement that poverty needs to be understood first and foremost as a problem at the individual, rather than the household level, though an understanding of an individual's position within the household is essential to understanding the dimensions as well as the causes of disadvantage. Secondly, most observers would include income obtained from common property and state provided commodities, particularly social welfare payments, though not always health and education provision. Thirdly, there is again little dissent from the view that people move in and out of poverty, and that seasonal, cyclical or stochastic shocks are important. For example, the distinction between chronic and transitory food security is mirrored in writing about poverty. Fourthly, relative poverty and relative deprivation are accepted as relevant, at least in theory. In developing countries, most definitions of poverty still rely on calculation of the cost of a basket of basic needs, but distribution data are normally provided (Maxwell, 1999).

Beyond these areas of agreement, there are different views on whether assets, including social claims, should be counted in a poverty matrix, on the importance of vulnerability, and on the relative prioritisation of monetary and non-monetary variables. The most radical proponents of a participatory approach would deny the validity of standardised, so-called objective measures of poverty, whether based on income or wealth. Chambers (1995), for example, has argued that these approaches are reductionist. This can be problematic. Some researchers pointed out that there is an important trade-off between being able to identify the poor using local indicators, and being able to aggregate the results into meaningful, national or international figures: objective measures of poverty present numerous problems in terms of identifying the poor, but succeed in providing the aggregate statistics policy makers desire (Maxwell, 1999).

Recognising the multiple dimensions of poverty also directs attention to a range of factors which need to be taken into consideration in poverty studies. The most important of these factors, as indicated by Parnell and Mosdell (1999:4), are indicated in Table 2.1 below. Table 2.1 lists the five key perspectives to be considered in the study of poverty, these are the income, basic needs, social exclusion, locality, and environmental justice perspectives. Parnell and Mosdell (1999:4) indicate that poverty is more than having insufficient income, but includes other factors that might be overlooked in poverty studies. The measures mostly used are from an income perspective. This is usually achieved by drawing an income measure to aggregate the poor from the non-poor. With social exclusion the main emphasis comes from the exclusion of a certain group of the population from the general wealth or the means to obtain income. It is argued that social exclusion may lead to poverty, and at the same time social exclusion might be the outcome of poverty (Parnell & Mosdell, 1999:5). However, Durant and Christian (1990:211) point to the fact that people do not have to be living in poverty to experience social exclusion, and conversely, people who are living in poverty might not feel socially excluded. This means that the condition of poverty is caused by a combination of social, economic, spatial, environmental, and political factors. This wide approach to poverty studies embraces the diverse causes, experiences and manifestations of poverty that are outlined in the growing literature on poverty.

TABLE 2.1: FACTORS TO BE CONSIDERED IN POVERTY STUDIES

| Perspective | Type of indicator |
|--|---|
| Income perspective: People are categorised as poor if their income falls below a certain income measure. | Welfare payments, wage levels, and poverty datum lines are income measures. |
| Basic needs: This is one of the most influential international perspectives on poverty, especial in the context of the Third World where millions of people live without adequate food, shelter or sanitation. | There are a number of indicators that come out of a basic needs perspective e.g. access to water, literacy, life expectancy and nutritional levels. |
| Social exclusion: Social exclusion refers to the fact that despite the welfare and the general wealth, there remains a group of people who are excluded from the mainstream benefits of society and who are prevented in some way from gaining from the general prosperity. | Indicators of social exclusion emphasise political, social and economic components of poverty and inequality, and are thus either multi-part or composite indicators. These indicators are often qualitative in measuring, e.g. racism or sexism. |
| Locality: Space or geography is seen by some to be an independent variable in the poverty equation. | Indicators of poverty used in locality include segregation indices and transport indicators. |
| Environmental justice: Equitable access to a healthy, pollution free environment and to the environmental resources required to support a healthy life without compromising the opportunities of future generations. | Indicators typically found under these section are environment reports, including air pollution, water quality and environmental health indicators. |

Source: Adapted from Parnell & Mosdell, 1999:4

2.4.5 Types of poverty

Feuerstein (1997:5-6) suggests that there are many types of poverty in a single society. These types of poverty are given below, along with their main causes:

- **Inherited poverty:** Poor parents pass on their poverty to their children. It can be part of a seemingly unending poverty cycle.
- **Instant poverty:** Sudden hazards and circumstances like earthquakes, typhoons, drought, bankruptcy, war and refugee movements.
- **Temporary poverty:** Caused by some of the same hazards as create instant poverty, but lasting a shorter time, for instance rains come, loans are obtained, war ceases.
- **New poverty:** Income/savings of workers and pensioners are eroded by high unemployment, inflation rates, or small cash-crop farmers are ruined by high input costs and low prices of agricultural products.
- **Relative poverty:** Deprivation of opportunities, material assets and self respect regarded as normal in the community to which people belong. For example, people may be adequately fed and basically housed, but lack material possessions, educational opportunities and so on. It is based on a comparison between the standard of living of the poor and the standard of living of other members of society who are not poor. People are poor if their resources fall significantly below those of the rest of the community.
- **Hidden poverty:** Can be similar to relative poverty in that people may have adequate food and shelter, but lack other basic needs, such as sufficient heat in cold weather or access to health care and do not report such needs. Also, deprivation of remote populations may be 'hidden'.
- **Endemic poverty:** Caused by low productivity and poor resource base, reflected by low income, poor nutrition and health, often affecting smallholders on rain-fed farmlands, displaced banana workers, small-scale fishermen and herders.

- **Overcrowding poverty:** Population is heavily concentrated into area of high density, for instance rural Bangladesh.
- **Terminal poverty:** Those who are poor both at the beginning and the end of their lives.
- **Absolute poverty:** This is according to Todaro *et al.* (2003:2005) deprivation of elements necessary to sustain life and health, such as adequate food, safe drinking water, shelter, land, employment and personal security. The absolute poor are more likely to keep returning to a state of poverty despite improvements in society, such as better market conditions. The extent of absolute poverty is defined as the number of people who are unable to command sufficient resources to satisfy basic needs. They are counted as the total number living below a specified minimum level of real income an international poverty line (Todaro *et al.*, 2003:205).

2.4.6 Measuring poverty

A poverty measure is an index synthesising all information available about the poor population. Given a distribution of one or several indicators of individual's welfare and a poverty line (suitably adjusted, if need be, for differences in individual needs, family composition, and prices faced), such a measure yields a single index that summarises the extent of poverty generated by this distribution. Specifying a poverty measure is not, however, a simple task. Indeed, many conceptual and methodological issues should be addressed before, such as: What individual welfare indicators should be retained? Who is really poor and why? How can the set of information describing the poor population be synthesised into a synthetic poverty measure? The economic literature dealing with these questions emphasises that it is often hard, if not impossible, to find a consensus on the process yielding an appropriate poverty index. This diversity of opinions can be attributed to the fact that poverty is not an objective concept. On the contrary, it is a complex notion, the normative analysis of which inevitably leads to a choice of ethical criteria (Bibi, 2003:1).

Debates about the measurement of poverty revolve around a central question: should poverty be measured in relative or absolute terms? Those preferring relative definitions are concerned with the extent of economic inequality, they emphasise the

distribution of income and the problems resulting from relative deprivation. Those preferring absolute definitions are concerned with people's motivation to work, they claim that welfare eliminates want and predict that political problems will result if the poverty line is set much above the minimum required to satisfy basic needs (Beeghley, 1984:322). The official poverty line in the United States was set without much reference to this academic debate. Orshansky (1969) and colleagues in the Social Security Administration developed two possible poverty lines in 1964 and President Lyndon Johnson's advisors selected the lower one as the official threshold. And it is easy to see why, for their concern was practical: a politically acceptable cut-off was needed to provide a realistic count of the number of poor people in the United States. To achieve this goal, the poverty line was and continues to be based on the minimum amount of money families need to purchase a nutritionally adequate diet, assuming they use one-third of their income on food. As such, the threshold is an absolute measure. Academic criticisms of the poverty line are thus predictable. Liberals insist the line is too low because it does not take into account changes in the standard of living, while conservatives contend it is too high because poor people get in-kind income in the form of public aid, such as food stamps and health care (Beeghley, 1984:322).

There are many documented measures of poverty available to researchers and policy-makers that require clear sense of purpose and intent before being implemented. Many works on the subject (for example Sen (1981), Ravallion (1998), Myles & Picot (2000) and Hagenaars (1987)) have developed quite a plethora of methods each with a specific purpose for measuring poverty. Kakwani (1993:632 quoted in Mokoena, 2004:28) makes the point that to formulate an adequate program to combat poverty, it is essential to identify the poor and measure the intensity of their poverty. The following section discusses approaches for measuring poverty.

2.4.6.1 Approaches to measuring poverty

Approaches to measuring poverty can be divided into two groups. Following Ravallion (1994), these are described as the welfarist and the non-welfarist approaches. The first approach tends to concentrate in practice mainly on comparisons of "economic well-being". This approach has strong links with traditional economic theory, and it is

also widely used by economists in the operations and research work of organisations such as the World Bank, the International Monetary Fund (IMF), and Ministries of Finance and Planning of both developed and developing countries. The second approach has historically been advocated mainly by social scientists other than economists and partly as a reaction to the first approach. However, this second approach has been recently and increasingly suggested by economists and non-economists alike as a multidimensional complement to the classical standard of living approach (Duclos, 2002a:1).

2.4.6.1.1 The welfarist approach

The welfarist approach is strongly anchored in classical microeconomics, where, in the language of economists, “welfare” or “utility” are generally key in accounting for the behaviour and the well-being of individuals. Classical microeconomics usually postulates that individuals are rational and that they can be presumed to be the best judges of the sort of life and activities that maximise their utility and happiness. Given their initial endowments (including time, talent, land, and capital), individuals make production and consumption choices using their set of preferences over bundles of consumption and production activities, and taking into account the available production technology and the consumer and producer prices that prevail in the economy. Under these assumptions and constraints, a process of individual free choice will maximise the individuals’ utility; under additional (and admittedly somewhat restrictive) assumptions, a society of individuals all acting independently under this freedom of choice process will also lead to an outcome known as Pareto efficiency, in that no one’s utility could be further improved by government intervention without decreasing someone else’s utility (Duclos, 2002b:6).

Underlying the welfarist approach to poverty, there is a premise that good note should be taken of the information revealed by individual behaviour when it comes to assessing poverty. This premise holds, in particular, that the assessment of well-being should be consistent with the ordering of preferences revealed by the free choices made by individuals. For instance, a person could be observed to be poor by the total consumption or income standard of a poverty analyst. That same person could nevertheless be able (i.e., have the working capacity) to be non-poor. This could be

revealed by the observation of a deliberate and free choice on the part of the individual to work and consume little, when the capability to work and consume more nevertheless exists. By choosing to spend little (possibly for the benefit of greater leisure), the person reveals that he/she is happier than if he/she worked and spent more. Although he/she could be considered poor by the standard of a (non-welfarist) poverty analyst, a welfarist judgement would conclude that this person is not poor (Duclos, 2002a:7).

A pure welfarist approach faces important practical problems. To be operational, pure welfarism requires the observation of sufficiently informative revealed preferences. These are rarely easily observed and deciphered, however. For instance, for someone to be declared poor or not, it is not enough to know that person's current characteristics and living standard status, but it must also be inferred from the person's actions that he/she judges his/her utility status to be above a utility poverty level, as provided by a set of characteristics and a reference living standard. Another, more fundamental, problem with the pure welfarist approach is the need to measure levels of utility or "psychic happiness". How does one measure the actual pleasure derived from experiencing economic well-being? Moreover, it is highly problematic to attempt to compare that level of utility across individuals, and it is well known that such a procedure poses controversial ethical problems. Preferences are heterogeneous, personal characteristics and needs are diverse, households differ in size and composition, and prices vary across time and space. More generally, because economic well-being (in particular, utility) is typically seen as a subjective concept, most economists believe that interpersonal comparisons of economic well-being do not make sense. Supposing that these criticisms are resolved, the welfarist approach would classify as poor, an individual who is materially well-off but not content. It is certainly not clear that these individual's feelings of utilities should be accepted as ethically significant. Said differently, why should a difficult-to-satisfy rich person be judged less happy than an easily-contented poor person? Or, in the words of Sen (1983:160), why should a "grumbling rich" be judged "poorer" than a "contented peasant"? (Duclos, 2002b:7).

Hence, welfarist comparisons of poverty almost invariably use imperfect but observable proxies for utilities, such as income or consumption. The "working"

definition of poverty for the welfarist approach is therefore a lack of command over commodities, measures by low income and consumption. These money-metric indicators are often adjusted for differences in needs, prices, and household sizes and compositions, but they clearly remain imperfect indicators of utility and well-being. Indeed, economic theory says little about how to use consumption or income to make interpersonal comparisons of well-being. Besides, the consumption and income proxies are also rarely able to take full account of the role of public goods and non-market commodities, such as safety, liberty, peace, and health, in determining well-being. In principle, such commodities can be valued using reference or “shadow” prices. In practice, this is difficult to do accurately and consistently (Duclos, 2002b:8).

2.4.6.1.2 Non-welfarist approaches

There are two major non-welfarist approaches: the basic needs approach and the capability approach (Duclos, 2002a:2).

2.4.6.1.2.1 Basic needs and functionings

The first approach focuses on the need to attain some multidimensional outcomes that can be observed and monitored relatively easily. These outcomes are usually (explicitly or implicitly) linked with the concept of functionings, a concept developed in Amartya Sen's influential work.

Living may be seen as consisting of a set of interrelated “functionings”, consisting of beings and doings. A person's achievement in this respect can be seen as the vector of his or her functionings. The relevant functionings can vary from such elementary things as being adequately nourished, being in good health, avoiding escapable morbidity and premature mortality, to more complex achievements such as being happy, having self-respect, taking part in the life of the community, and so on (Sen, 1997:39).

In this view, functionings can be understood to be constitutive elements of well-being. Hence, the functioning approach would generally not attempt to measure well-being in the single space (or in terms) of utility or happiness. This is partly because utility or happiness can be thought of as a single and reductive aggregate of functionings, which are multidimensional in nature. The functioning approach thus focuses on actual

multidimensional achievements of definite, specific outcomes, such as the enjoyment of a particular type of commodity consumption or the exercise of rights. Among other things, these usually feature health, literacy, appropriate nutrition, having a shelter, not being in shame, to be well-clothed, to travel and to be involved in the community (Duclos, 2002a:3).

The functioning approach is closely linked with the well-known basic needs approach, and the two are often difficult to distinguish in their practical application. Functionings, however, are not synonymous with basic needs, at least as typically defined and used in the empirical literature. More precisely, basic needs can be understood as the means that are required for individuals to achieve some functionings. Hence, basic needs are usually defined in terms of means rather than outcomes, for instance, as living in the proximity of providers of health care services (but not necessarily being in good health), as the number of years of achieved schooling (not necessarily as participating in the life of the community), and so on (Duclos, 2002a:3).

In other words, basic needs may be interpreted in terms of minimum specified quantities of such things as food, shelter, water and sanitation that are necessary to prevent ill health, under-nourishment and the like (Streeten, 1981).

Unlike functionings, which can be commonly defined for all individuals, the specification of basic needs depends on the characteristics of individuals and of the societies in which they live. For instance, the basic commodities required for someone to be in good health and not to be undernourished will depend on the climate and on the physiological characteristics of individuals. Similarly, the clothes necessary for one not to feel ashamed will depend on the norms of the society in which one lives, the means necessary to travel, and on whether that individual is handicapped or not. Hence, although the attainment of basic needs is an important element in assessing whether someone has achieved some functionings, this assessment must also use information on the characteristics and the socio-economic environment of the individual. Human diversity is such that equality in the space of basic needs generally translates into inequality in the space of functionings (Duclos, 2002a:3).

Whether unidimensional or multidimensional in nature, most applications of both the welfarist and the non-welfarist approaches to poverty measurement do recognise the

role of needs and of the socio-economic environment in achieving well-being. Streeten (1981) and others have, nevertheless, argued that the basic needs approach is less abstract than the welfarist approach in recognising that role. As mentioned above, it can also be seen as a useful practical and operational step toward appraising the achievement of the more abstract “functionings”. Clearly, however, there are important degrees in the achievement of basic needs and functionings. For instance, what does it mean precisely to be “adequately nourished”? What degree of nutritional adequacy is relevant for poverty assessment? Should the basic needs for adequate nutrition functioning only allow for the simplest possible diet and for the highest nutritional efficiency? Such an attitude is generally said to be overly restrictive and overly physiological in nature, but it is hard to find objective evidence to agree on the proper alternative. In addition, how ought one to understand such functionings as the functioning of self-respect? The appropriate width and depth of the concept of basic needs and functionings is admittedly ambiguous, as there are degrees of functionings which make life enjoyable in addition to being purely sustainable or satisfactory (Duclos, 2002a:4).

2.4.6.1.2.2 Capability approach

A second alternative to the welfarist approach is called the capability approach, also pioneered and advocated in the last two decades by the work of Sen. The capability approach is defined by the capacity to achieve functionings, as defined above. In Sen's words (1997:40), the capability to function represents the various combinations of functionings (beings and doings) that the person can achieve. Capability is thus a set of vectors of functionings, reflecting the person's freedom to lead one type of life or another.

What matters for the capability approach is the ability of an individual to function well in society; it is not the functionings actually attained by the person. Having the capability to achieve “basic” functionings is the source of freedom to live well, and is thereby sufficient in the capability approach for one not to be poor or deprived. The capability approach thus distances itself from achievements of specific outcomes or functionings. In this, it imparts considerable value to freedom of choice: a person will not be judged poor even if he/she chooses not to achieve some functionings, as long

as he/she would be able to attain them if he/she so chose. This distinction between outcomes and the capability to achieve the outcomes also recognises the importance of preference diversity and individuality in determining functioning choices. It is, for instance, not everyone's wish to be well-clothed or to participate in society, even if the capability is present (Duclos, 2002a:4).

An interesting example of the distinction between fulfilment of basic needs, functioning achievement, and capability is given by Townsend's (1979) deprivation index. The deprivation index is built from answers to questions such as whether someone "has not had an afternoon or evening out for entertainment in the last two weeks", or "has not had a cooked breakfast most days of the week". It may be, however, that one chooses deliberately not to go out for entertainment (he/she prefers to watch television), or that he/she chooses not to have a cooked breakfast (because he/she does not have time to prepare it), although he/she does have the capacity to do both. That person therefore achieves the functioning of being entertained without meeting the basic need of going out once a fortnight, and does have the capacity to achieve the functioning of having a good breakfast, although he chooses not to (Duclos, 2002a:4).

The difference between the capability and the functioning or basic needs approach is in fact somewhat analogous to the difference between the use of income and consumption as standard-of-living indicators. Income shows the capability to consume, and "consumption functioning" can be understood as the outcome of the exercise of that capability. There is consumption only if a person chooses to enact his/her capacity to consume out of a given income. In the basic needs and functioning approach, deprivation comes from a lack of direct consumption or functioning experience; in the capability approach, poverty arises from the lack of incomes and capabilities, which are indirectly related to the actual functionings achieved (Duclos, 2002a:5).

Although the capability set is multidimensional, it thus exhibits a parallel with the unidimensional income indicator, whose size determines the size of the "budget set":

Just as the so-called “budget set” in the commodity space represents a person’s freedom to buy commodity bundles, the “capability set” in the functioning space reflects the person’s freedom to choose from possible livings (Sen, 1997:40).

This further illustrates the fundamental distinction between the space of achievements, the extents of freedoms and capabilities, and the resources required to generate these freedoms and to attain these achievements (Duclos, 2002a:5).

2.4.6.2 Four methodological decisions in measuring poverty

Various writers have noted that all poverty lines are arbitrary. This is because, although the tools of science can be used to show the characteristics of the poor under different definitions (Orshansky, 1976), the choice of a definition cannot be made scientifically (Weber, 1949); indeed, it never has been (Orshansky, 1969). The poverty line is a subjective means of counting the poor, one requiring a large number of arbitrary decisions. The four important decisions are (Beeghley, 1984:323-325):

- The criterion for need: the best criterion for need is one that is readily understood, easily measured, and has an aura of objectivity of which food meets all these political requirements. While assessing people’s nutritional needs presents some problems, primarily because of differences in taste, inadequate knowledge of nutritional requirements, individual variation in nutritional needs, and changes over time in the nutritional value of food, there are relatively precise recommended dietary allowances available for each food group (Orshansky, 1976). Because these recommendations have some scientific justification, the poverty threshold is based on the minimum cost of a nutritionally adequate diet. The use of food as a criterion for need in determining the rate of poverty is completely arbitrary, yet it was chosen over other potential indicators such as housing, because it is easily measurable and understandable (Beeghley, 1984:323-324).
- The cost of economy food plan: not only is the use of food as a criterion for need arbitrary, but so too is the particular food plan chosen. Why not select one that will provide adequate nutrition over the long term? The answer, of course, involves politics rather than science. Between 1965 and 1974, the cost of the US Department of Agriculture’s (USDA) economy food plan was used as the basis for

determining the level of poverty. Since 1974, the new Thrifty Food Plan has been used. Unfortunately, the USDA does not consider the Thrifty Food Plan to be nutritionally adequate for long-term use, a fact that is simply ignored in setting the poverty line (Beeghley, 1984:324).

- The ratio of food to non-food costs: In using food as the criterion for need, officials must also know what proportion of family income is spent on food; only then can the total cost of household's needs be estimated. The ratio selected is based on a 1995 consumer survey which found that the average U.S. family spent one out of every three dollars on food. In identifying the poor, the government assumes not only that the ratio of food to non-food costs is the same for those living poorly as it is for an average family, but also that it has remained the same since 1995. The judgments are arbitrary and inaccurate. Their only usefulness lies in the fact that a politically acceptable number of poor people is identified as a result. It is possible that the proportion of income spent on food varies by income level, although this fact is hard to determine empirically. A reasonable guess is that many poor households actually spend up to half their income on food, while the average family probably spend a fourth or fifth of its income on food, and a family with an income in excess of \$100,000 can hardly spend more than a tenth of it on food. For this reason, some observers have suggested that a more accurate ratio be used in setting the poverty line. However, this change would expand the number of respondents defined as poor to a quarter or even a third of the US population, which is obviously a politically undesirable move (Beeghley, 1984:324).
- Indexing the poverty line: indexing is necessary because the cost of surviving changes each year in a cash-based economy. The CPI has been used since 1969 to update the poverty line. While critics assail the use of the CPI as a measure of the cost of living, especially for the poor, all of the other available indexes have many problems as well. There simply is no scientific way of indexing federal income programs, whether for the poor or the non-poor. This is why the mode of indexing favoured by commentators usually corresponds to their political orientation. Politics, not science, is the issue here. Use of the CPI has resulted in the poverty line rising each year with the increase in prices. Some observers have taken this fact to mean that the poverty cutoff is a relative definition. Table 2.2

shows this is not true. In 1960, the poverty line was set at about half the median income of the US population. However, since real income relationship to prices expanded greatly during the 1960s, the poverty level fell steadily during the decade until, in 1970, it was 36% of the median. Since real income remained more or less stable during the 1970s, the poverty threshold has also stayed at about a third of the median. Should real income rise during the 1980s, then the poverty line will fall still further as a percentage of the median. Thus, even though the poverty threshold is indexed to prices, it is an absolute measure of impoverishment; those who live at or below this point have a survival level budget. Because of indexing, the poverty line keeps pace with the minimum cost of living in the United States but not prevailing standards of living (Beeghley, 1984:324-325).

TABLE 2.2: COMPARISON OF THE OFFICIAL POVERTY LINE WITH THE MEDIAN INCOME

| Year | Poverty Line | Median Income of a family of four | Poverty Line as a percentage of Median Income |
|------|--------------|-----------------------------------|---|
| 1960 | \$3,022 | \$6,295 | 48% |
| 1970 | \$3,968 | \$11,167 | 36% |
| 1980 | \$8,385 | \$24,410 | 34% |

Source: Beeghley, 1984:325

- The definition of income: the U.S. Bureau of the Census (1980:220) defines income as the sum of all money received from wages, social security payments, cash public assistance benefits, dividends, interest, rent, unemployment and workers' compensation, pensions, and all other sources of cash. This total is gross income before payment of social security or income taxes, union duties and medicare premiums. Thus, the U.S. Bureau of the Census's definition does not include the value of in-kind, or non-cash, benefits such as food stamps, public housing, school lunches, medicare and medicaid, business transportation, subsidised student loans, tax subsidies, employer payments (for such things as retirement, medical insurance, or educational expenses), and expense accounts. The question raised by conservatives then is whether the bureau's definition provides an accurate count of the number of poor people (Beeghley, 1984:325).

2.4.6.3 Ingredients for a credible approach to poverty measurement

What indicators should be used? By taking a multiple-indicator approach one does not need, or even want, each indicator to measure everything. But it should at least be clear what exactly each is measuring, and why it is needed. Four sets of indicators can be defended (Ravallion, 1996:8-9):

- A sensible poverty measure based on the distribution of real expenditure per single adult, covering all market goods and services (including those obtained from non-market sources).
- Indicators of access to non-market goods for which meaningful prices cannot be assigned, such as access to non-market education and health services.
- Indicators of distribution within households; measures of gender disparities and child nutritional status.
- Indicators of certain personal characteristics which entail unusual constraints on the ability to escape poverty, such as physical handicaps or impairments due to past chronic undernutrition (Ravallion, 1996:9).

Not all of these need be relevant in every context. It may be reasonable to concentrate on the consumption-poverty measure when assessing the effects of (say) external trade liberalisation, while this would not do when looking at the effects of (say) a cut in social-sector spending. But generally each of these is needed to capture something that is clearly missing from the others. Notice, however, that there would be no point adding (say) "housing" to the list in settings in which it is a market good already included in the consumption measure. The goal of achieving useful poverty orderings with multiple indicators is clearly not served by double counting (Ravallion, 1996:9).

2.4.6.4 Key requirements for a poverty measure

In poverty measurement the desirability of a poverty measure is evaluated by the properties (axioms) it satisfies. Sen (1976:81) identified several such axioms which are still viewed as the key requirements for a poverty measure. Over the years, researchers have also introduced several other axioms. As shown in Zheng

(1997:126), some of these axioms are ad hoc and some can be implied by others combined and hence are not independent. For a poverty measure P, the reasonable measure axioms include the following.

2.4.6.4.1 Focus axiom

This axiom requires a poverty measure to be independent of the income distribution of the non-poor. The desirability of this axiom rests upon the purpose of one's poverty measurement. If one regards poverty as an absolute deprivation of the poor as suggested by Sen, then the focus axiom is perfectly appropriate. For other definitions of poverty, the focus axiom may be inappropriate. Certainly, information on non-poor incomes can be used to determine the poverty cut-off (such as relative poverty lines), which is a completely different exercise than what is pursued here. This axiom does not assume the number of the non-poor to be relevant to the property measurement. Because of this axiom, researchers have frequently used the censored income distribution instead of the income distribution itself in the literature. A censored income distribution sets all incomes above the poverty line to the poverty line itself (Zheng, 1997:130).

2.4.6.4.2 Monotonicity axiom

The second axiom Sen (1976) proposed was the monotonicity axiom which says a drop (increase) in a poor person's income should increase (decrease) the poverty level. This axiom has two forms, i.e., the weak monotonicity axiom and the strong monotonicity axiom as Donaldson and Weymark (1986) originally distinguished. The contents of both monotonicity axioms are very appealing. However, these two axioms are not equivalent: strong monotonicity implies weak monotonicity, while the reverse is not always true. This non-equivalence arises in a situation where the increment of a small amount of income to a poor person lifts him/her out of poverty. In this case, weak monotonicity, together with continuity implies strong monotonicity. Due to the fact that continuity is very desirable for poverty measure, both weak monotonicity and strong monotonicity can be well justified (Zheng, 1997:131).

2.4.6.4.3 Transfer axiom

The third axiom Sen (1976) proposed was the transfer axiom which requires the poverty measure to be sensitive to the redistribution of income within the poor. Donaldson and Weymark (1986) distinguished four different transfer axioms by incorporating the possible effects and directions of transfers. These are: minimal transfer axiom, weak transfer axiom, regressive transfer axiom, and the progressive transfer axiom. The core of these four axioms is that an equalising transfer (from a richer person to a poor person) should decrease the poverty value, while a disequalising transfer (from a poor person to a richer person) should increase the poverty value. By definition, minimal transfer is the weakest form among these four axioms while progressive transfer is the strongest form, i.e., progressive transfer \Rightarrow regressive transfer \Rightarrow weakest transfer \Rightarrow minimal transfer (Zheng, 1997:131).

The difference between the weak forms (minimal transfer and weak transfer) and the strongest forms (regressive transfer and progressive transfer) lies in whether the transfer makes anyone cross the poverty line. The difference between minimal transfer and weak transfer is that the minimal transfer restricts the transfer within the poor ground (and of course, no one becomes non-poor from the transfer) while the weak transfer extends to include the transfer between a poor person and a non-poor person, i.e., it treats monotonicity as a transfer axiom between the poor and non-poor. In the case of transferring income from a poor person, the transferred income is 'wasted' according to the focus axiom, resulting in a pure loss to the poor. Hence weak transfer is equivalent to minimal transfer in that a progressive transfer may make the recipient non-poor while regressive transfer cannot imply progressive transfer without the additional assumption of continuity. The contents of these axioms are very appealing. However, the justification is a bit less (Zheng, 1997:132).

According to Foster (1984), Sen offered two general lines of argument for the weak form of the transfer axiom. One based upon the comparisons of utility gains and losses in a world where the marginal utility of income is positive but diminishing. The other is made in terms of a notion of relative deprivation: when a regressive transfer takes place from a more deprived poor to a less deprived poor person, in a straightforward sense the overall relative deprivation is increased (Sen, 1981:31). The

justification for regressive transfer and progressive transfer has proven to be the most 'troublesome' (Thon, 1983). Sen originally proposed a version of regressive transfer in his 1976 paper. Sen, later found that the poverty measure violated the axiom, and hence Sen maintained only minimal transfer (Zheng, 1997:133).

Sen (1981 & 1982) viewed regressive transfer as a perfectly suitable requirement for an income inequality measure, but less compelling as an axiom for a poverty measure. Any poverty measure satisfying the strong version of the transfer axioms considers 'the poverty alleviating role of crossing the poverty line less crucial'. However, Sen's arguments can hardly defend the following inconsistency: any transfer from a poor person to a richer poor person (remaining in poverty after the transfer) or to a non-poor person increases the poverty level, while the transfer may lower the poverty level if the recipient is next to the poverty line and the transfer lifts him/her out of poverty. As a matter of fact, when continuity is maintained, any poverty measure satisfying weak transfer will also satisfy regressive transfer and progressive transfer. Because continuity and weak transfer have been justified to be very reasonable, both regressive transfer and progressive transfer can therefore be justified. Subsequently, regressive transfer is used as a basic property for a distribution sensitive poverty measure.

Kakwani noticed the lack of sensitivity of the Sen measure to the income level of transfer. Kakwani argued that a poverty measure should be more sensitive to what happens among the bottom poor. Kakwani (1980) then proposed three sensitive axioms, two on income transfer and one on income increment/decrement:

- **Monotonicity-sensitivity:** This axiom implies that the poorer an individual, the larger should be the increase in poverty measure due to a reduction in his/her income. If the income of a poor person is reduced, the overall deprivation increases (monotonicity axiom), but according to this axiom, the increase in the overall deprivation should be higher if the same amount of income is taken away from a still poorer individual. The axiom can be readily justified on the grounds of a strictly concave interpersonally-comparable cardinal welfare function. Since the concern is with the intensity of poverty, the axiom seems intuitively appealing even without thinking in terms of cardinality and interpersonal comparisons. The

monotonicity sensitivity axiom is not independent of Sen's monotonicity and transfer axioms (Kakwani, 1980:438)

- **Transfer-sensitivity I:** This axiom implies that the sensitivity of the poverty measure depends on the position of the transferor in the ordering of poor people when the number of positions between the transferor and the transfer recipient is fixed. The poorer the transferor, the greater should be the increase in the poverty measure. Sen's measure violates this axiom. In deriving the poverty measure, Sen argues that ranking, rather than the income differences of the poor, is important which Sen justifies by taking a 'relativist' view of poverty viewing deprivation as an essentially relative concept. With this relativist view it seems reasonable to assume that the perception of relativities is stronger at the lower end of the income distribution, which led to this axiom. On the other hand, Sen's measure gives equal weights to transfers of income at different positions of the ranking i.e., the impact of a small transfer from the i^{th} person to say $(i + 1)^{\text{st}}$ person is the same for all values of i . This neutral position may not be a desirable thing if the poverty measure is based on the concept of relative deprivation (Kakwani, 1980:438-439).
- **Transfer-sensitivity II:** This axiom gives more weight to transfers of income at the lower end of the distribution than at higher ends. Under this axiom it is the income difference and not the number of income positions which is fixed between the transferor and the transfer recipient. Sen's measure also violates this measure. If the society is particularly averse to inequality among poor, the poverty measure must give maximum weight to a transfer from the poorest and the weight should decrease with the level of income. Sen's measure implies precisely the opposite weighting system, i.e., it gives least weight to the poorest and the weight increases with the level of income. It seems that such a weighting system is incongruent with existing social values (Kakwani, 1980:439).

2.4.6.4.4 Replication invariance axiom

Chakravarty (1983) and Thon (1983) first introduced this axiom into poverty measurement from the income inequality literature. Because any two different sized income distributions can be replicated to the same size, their inequality and poverty levels can be directly compared. For this intuitively appealing axiom, it is surprising to

find that many early proposed poverty measures (including Sen's measure) violate it (Zheng, 1997:130).

2.4.6.4.5 Continuity axiom

One consideration for requiring continuity is the inaccuracy of income data. The continuity axiom is quite reasonable. Given a very small change in a poor person's income, one should not expect a huge jump in the poverty line. The additional content of continuity over restricted continuity is the continuity of $P(y;z)$ at the poverty level. If one is at the poverty line, continuity and restricted continuity are the same for a focused poverty measure, because a focused poverty measure will always be continuous on the income of the non-poor according to the focus axiom. Watts (1968:325) may have been the first to discuss this axiom. Watts argued that 'poverty is not really a discrete condition' and one does not immediately acquire or shed the afflictions associated with the notion of poverty by crossing any particular income line'. Therefore, "it would seem appropriate to maintain the gradation provided by a continuum" (Zheng, 1997:130).

2.4.6.4.6 Symmetry axiom

This axiom says that the names of income recipients do not matter for measuring the intensity of poverty. Symmetry does not impose any real restriction as any aggregate 'snapshot' measure cannot avoid symmetry. This simple axiom enables one to use an ordered income distribution (Zheng, 1997:131).

2.4.6.4.7 Increasing poverty line

This axiom is very reasonable between two identical societies; the one with the higher poverty line must also have a higher poverty level. The first authors to list it, implicitly and explicitly, as a requirement for a poverty measure, were Clark, Hemming and Ulph (1981) and Chakravarty (1983) respectively. Although this axiom is not demanding at all, surprisingly, several measures of poverty violate it. Since this axiom is the one regarding the behaviour of a poverty measure when the poverty line changes, it is listed as a basic property for a poverty measure. For either relative or absolute poverty measures this axiom may be automatically satisfied because it can be easily shown

that for both relative and absolute measures, strong monotonicity and the focus axiom will necessarily lead to increasing poverty line (Zheng, 1997:140).

2.4.7 Choosing among different measures of poverty

Maggetti (2002:6-14) identifies three criteria that could be used for choosing among different poverty measures: values, outcomes, and custom.

2.4.7.1 Values

Whatever poverty measure one chooses, the choice will reflect one's values. This is the case whether or not the values are explicitly stated. In fact, the very discussion about poverty measures assumes a value decision that there is something wrong with poverty (Maggetti, 2002:6).

Whether one defines poverty in terms of a given level of income compared to the average (an income line) or in terms of the cost of a basket of goods and services compared to the average, one still have to settle on how great a distance one wants there to exist between 'the poor' and others who live in the same society, observes the Canadian Council on Social Development (CCSD, 2001). It is really a matter of values, i.e., how great a distance people are prepared to accept between 'the poor' and the rest of society. The principle of social justice is defined as the right of all persons and communities to full participation in the life and decision making, and to adequate access to the resources necessary for a full life, including access to adequate education, health care, housing and child care, and our communal duty to use such resources responsibly. The principle of economic equity is similarly defined as: the right of all persons and communities to adequate access to the resources necessary for a full life, including worthwhile work, fair employment conditions and income security provisions, and our communal duty to use such resources responsibly (CCSD, 2001).

In a position paper on poverty, the Evangelical Fellowship of Canada (EFC, 1999) states:

"Poverty exists when persons, associations or institutions lack the resources and space they need to fulfil their God-given responsibilities and callings." The EFC paper

explains that the proposed definition offers a variety of advantages. It recognises that poverty is multi-dimensional. It allows for a distinction between needs and wants. It reminds us that we must discern who is poor in a context. People did not need the same types of resources and space to live their lives in 1000 AD as they do in 2000 AD, nor do people living in the inner city of Edmonton need the same resources and space as people living on a small farm in China. The definition acknowledges that the needs and resources people or institutions require will differ according to their specific callings. Finally it recognises that poverty is a “human, social and relational reality”.

These core values embraced by the EFC’s definition of poverty clearly reflect the biblical foundations of Christian faith which also inspires the work of the Public Justice Resource Centre. The emphasis on adequate access to the resources necessary for a full life echoes the words of Jesus Christ when he proclaims in John 10:10 “I have come in order that you might have life, life in all its fullness (Bible, 1981:131)”.

Christians understand that people will only have life to the full when Christ comes again (Maggetti, 2002:7). In the meantime, Christians are commissioned to bear witness to the reign of God even as they pray in the words of Jesus, “your kingdom come, your will be done on earth as it is in heaven (Bible, 1981:9)”.

2.4.7.1.1 A biblical perspective on poverty

These core values present a vision of full participation and incline towards an inclusive measure of poverty. They favour a definition that is generous in its scope. Moreover, this follows from Jesus’ teaching about the reign of God, particularly as seen in the parable of the vineyard workers (Maggetti, 2002:8). In that parable, the owner of the vineyard goes to the market to hire labourers, returning several times to hire all the workers who have not found work. At the end of the day, when it comes time to pay the workers, the owner orders that the last who are hired be paid first and gives them a full day’s pay. When the workers who were hired at the beginning of the day grumble at getting the same pay, the owner respond: “Listen friend, I have not cheated you. After all, you agreed to do a day’s work for one silver coin. Now take your pay and go home. I want to give this man who was hired last as much as I have given you. Don’t I have the right to do as I wish with my own money? Or are you jealous because I am generous?” (Bible, 1981:29). Most people today, even many Christians, sympathise

with the workers in the story who were hired at the beginning of the day. It reflects how thoroughly we are imbued with the values of the present age, where it is presumed that one's worth is measured by the amount or type of work one does (Maggetti, 2002:8).

Yet, the story must be seen in its context. It relates back to laws in the books of Leviticus and Deuteronomy. In Jesus' parable, the owner pays the wages at the end of the day just as the law in Leviticus stipulates: "Do not hold back the wages of someone you have hired, not even for one night (Bible, 1981:119)". Deuteronomy elaborates on the reason for the law. "Do not cheat a poor and needy hired servant, whether he is a fellow-Israelite or a foreigner living in one of your towns. Each day before sunset pay him for that day's work; he needs the money and has counted on getting it (Bible, 1981:194)".

The parable of the vineyard workers is about poverty. The owner hires all the workers to ensure that they will have employment that day. He pays the full day's wage even to those who only worked a short time because they are poor and need the money to meet their needs and carry out their responsibilities towards those who depend on them (Maggetti, 2002:8).

The attitude of generosity toward the poor expressed in the parable of the vineyard workers shows that the reign of God proclaimed by Jesus fulfils the law laid out in the Hebrew Scriptures. "There will always be some Israelites who are poor and in need, and so I command you to be generous to them (Bible, 1981:186)".

The principle of human dignity likewise derives directly from biblical faith. The book of Genesis, at the very beginning of the bible, affirms the dignity of the human person. So God created human beings, making them to be like himself. He created them male and female (Bible, 1981:4). The dignity of the human person comes from being created in the image of God. And Jesus explains that whatever we do to fellow humans we do to God. "I tell you, whenever you did this for one of the least important of these brothers of mine, you did it for me". Also "I tell you, whenever you refused to help one of these least important ones, you refused to help me (Bible, 1981:38)". If one approaches the question of present-day poverty lines from the perspective of the biblical values above, one is bound to favour a more inclusive measure, a measure

that allows for full participation in the life of the community, not merely physical survival (Maggetti, 2002:9).

2.4.7.2 Outcomes

A second criterion for judging among poverty measures is to examine how each measure relates to desired social outcomes.

Sarlo (1996:49) offers the following definition of poverty. Someone is in a state of poverty if he/she lacks any item required to maintain long-term physical well-being. Poverty means a genuine deprivation of life's basic necessities. It means that people cannot obtain a nutritious diet, warm, dry and safe housing, and clean clothing appropriate to climate, sufficient personal hygiene items and health care. The absence of one or more of these "necessities" compromises long-term physical well-being. Sarlo constructs a market basket measure on the basis of a set basket of such necessities ruling out that inequality provides any meaningful measure of poverty. Therefore, Sarlo makes no effort to see whether there is any correlation between inequality and long-term health (Sarlo, 1996:27).

However, there is extensive literature which shows a strong correlation between inequality and poor health and which suggests that poverty has a relational dimension (Maggetti, 2002:9). "Income and social status are the most important determinants of health", reports Health Canada (1999:9). There is conclusive evidence that people at each level of the income scale are healthier and live longer than those at the level below. Moreover, countries in which incomes are more evenly distributed have a healthier population in terms of life expectancy, quality of life and mortality rates.

What poses a threat to the long-term physical health of a person? Beyond a certain level of social wealth, i.e. when a nation's per capita income is above \$5,000 roughly, it is not simply the lack of one or another specific thing. "It is the extent of their social distance down the rank of the (social and economic) hierarchy that is the high risk condition", (Novick, 1997:40).

Novick (1997:38) reviews some of the research findings of international studies on the relationship between inequality and health. Comparing two countries in which the poor have equal incomes, the one in which the rich are wealthier is likely to have a higher

infant mortality rate. Novick (1997:38) concludes that the persistence of income inequalities in developed countries would explain why 'social class differences' in health have not narrowed despite growing affluence and the fall of absolute poverty.

Novick (1997:38) explains that mortality, morbidity and incarceration have become the hard outcome measures used to examine the social impacts of national economies on given populations. Novick provides several examples to illustrate the connection between inequality and social outcomes. The United States is a world example of a wealthy nation with deep economic and social inequalities. The impacts of these inequalities are evident in social outcomes. Cuba, with a GNP per capita of \$1,200, and the US with a GNP per capita rate of \$26,000, both have the same under-five child mortality rates of 10 per 1000. Germany's rate is 7 per 1000. If the US rate were that of the Germans, 12,000 fewer children would die each year in the United States. Imprisonment rates in the United States are the highest in the developed world at 529 per 100,000. Canada's rate is 130 per 100,000. The rate in most European countries is 60-90 per 100,000 (Novick, 1997:38-39).

Inequality as well as physical poverty obviously affects the well-being of people. And as the examples above demonstrate, high levels of inequality have significant social costs. More detailed research into the link between income and health provides greater direction for effective public policy. Hay (1993:32) concludes that it seems likely that current health status depends more on the cumulative effect of income over time than the effect of present income on present health status. The consequence Hay draws for policy making is that the improvement of the social conditions of children in lower income families is a public policy challenge. If lifetime income trajectories, and particularly family conditions during childhood, are important determinants of health status, then we may need long-term programs to raise lower income levels, rather than short-term attempts to improve health status (Hay, 1993:32). Novick (1997:49) refers to this long-term task as one of developing social cohesion.

2.4.7.3 Custom

The Market Basket Measure, following Adam Smith, defines necessities as whatever the custom of the country renders it indecent for creditable people, even of the lowest order, to be without (Human Resources Development Canada, 2000:2). This definition

is not unlike the one proposed by Galbraith (1958:32324): people are poverty-stricken when their income, even if adequate for survival, falls markedly behind that of the community. Then they cannot have what the larger community regards as the minimum necessary for decency; and they cannot wholly escape, therefore, the judgement of the larger community that they are indecent. They are degraded for, in a literal sense, they live outside the grades or categories which the community regards as acceptable.

Sarlo (1996:27) likewise refers to a customary understanding of poverty when developing a poverty measure: The understanding that most people retain of the term poverty, in spite of efforts to redefine it, is the traditional one. Poverty means a genuine deprivation of life's basic necessities. It means that people cannot obtain a nutritious diet, warm, dry and safe housing, and clean clothing appropriate to climate, sufficient personal hygiene items, and care. The absence of one or more of these "necessities" compromises long-term physical well-being.

The Gallup polling company has conducted public opinion polls to determine what custom would define as a poverty measure. People were asked "What is the minimum weekly amount of income required for a family of four, consisting of two adults and two children?" The responses were then translated into annual income needs. The resulting measure of necessary annual income for a family of four in Canada in 1996 was \$29,637 (Poverty Profile, 1996). This common sense measure of poverty falls much closer to the Statistics Canada LICO for a family of four in a large city (\$32,238 in 1996) than to Sarlo's poverty line for Canada (\$19,517). Apparently people's understanding of poverty means more than a "deprivation of life's basic necessities."

The examples given by children reflect both absolute needs ("not having breakfast sometimes", for instance) and the sense of exclusion from not having enough to participate in activities that their peers can ("not being able to go to Cubs or play soccer", for example). The custom of our time reflected in the opinions of children as well as adults presents a broader grasp of poverty that reflects an understanding that social exclusion, not just lack of basic necessities, is an important dimension of poverty (Maggetti, 2002:14).

BOX 2.1 RESPONSES BY CHILDREN AS TO THE MEANING OF POVERTY

Poverty is...

Not being able to go to McDonald's

Getting a basket from the Santa Fund

Feeling ashamed when my dad can't get a job

Not buying books at the book fair

Not getting to go to birthday parties

Hearing my mom and dad fight over money

Not ever getting a pet because it costs too much

Wishing you had a nice house

Not being able to go camping

Not getting a hot dog on hot dog day

Not getting pizza on pizza day

Not being able to have your friends sleep over

Pretending that you forgot your lunch

Being afraid to tell your mom that you need gym shoes

Not having breakfast sometimes

Not being able to play hockey

Sometimes really hard because my mom gets scared and she cries

Not being able to go to Cubs or play soccer

Source: Maggetti, 2002:13

2.4.8 Measuring poverty and differences in family composition

In the measurement of poverty, differences in family composition are typically treated through the use of an equivalent scale, which determines the relationship between poverty lines for different types of family. There has been an extensive discussion of different methods of calculating such scales and of their ethical significance. The methods employed include the analysis of observed consumption behaviour, expert judgment about nutritional and other requirements, the revealed preferences of governments in setting benefit levels or tax allowances, and questionnaire studies of people's view as to the adequacy of different incomes (Atkinson, 1991:1).

Whatever the relative merits of the varied approaches, it is clear that they can lead to very different results. The survey by Whiteford (1985) tabulates 44 estimates of the scale for a single person, taking that for a couple these estimates vary from 49% to 94%. For a couple with two children, the same survey shows 59 estimates ranging from 111% to 193%. The geometric mean of the latter estimates is 138%, but the Organisation for Economic Co-operation and Development (OECD), for example, uses a figure of 159%. Buhmann *et al.* (1988) summarise 34 equivalence scales in terms of the (approximate) elasticity of the scale with respect to size, a value of 1 to taking a per capita poverty scale. They find a tendency for different types of scale to be clustered in different segments of the range [0, 1]; for example, scales based on subjective evaluations of different income levels tend to be centred around an elasticity of 0.25, whereas expert statistical scales tend to be centred around 0.72 (Atkinson, 1991:1).

These large differences in equivalence scales may well affect the conclusions drawn with respect to the extent of poverty and to the conclusions of the impoverished population. Different scales may reverse the conclusions drawn about the desirability of policies to redistribute income, where these affect differently families of various types (for example, increases in child benefits financed by general income tax). Where the fortunes of different types of family have been changing differentially over time, alternative equivalence scales may lead to alternative findings as to whether poverty is increasing or decreasing (Atkinson, 1991:1).

2.4.9 Poverty lines

Poverty alleviation efforts are best founded on a sound diagnosis of the underlying causes and dimensions of poverty. Across different countries, regions, communities or even families, the identity of the poor, the degree of their poverty, and its causes, will differ. In order to develop realistic policies for poverty alleviation in a given setting, it is essential to understand the nature of poverty in that specific setting. A common component in virtually all approaches to poverty analysis is the setting of a poverty line. The most obvious purpose of a poverty line is to distinguish the poor from the non-poor. This function, as a threshold, also has other applications (Lanjouw & Lanjouw, 1997:1).

A poverty line helps focus the attention of governments and civil society on the living conditions of the poor and has a great impact on policy decisions. In practice, there is typically not one monetary poverty line but many, reflecting the fact that poverty lines serve two distinct roles. One role is to determine what the minimum level of living is before a person is no longer deemed to be "poor". The other role is to make interpersonal comparisons; poverty lines for families of different sizes and compositions, living in different places, or for different dates, to tell us what expenditures are needed in each set of circumstances to ensure that the minimum level of living needed to escape poverty is reached. Both roles matter to the credibility of the resulting poverty measures, such as the popular "headcount index", given by the proportion of the population living below the relevant poverty line (Ravallion, 1998:ix).

Economists have given surprisingly little attention to the first role. While they have studied the problem of how data on the distribution of welfare should be aggregated into a single measure of poverty, e.g. a poverty line (and the weaknesses of the headcount index are becoming well understood), the problem of how one sets a poverty line has been largely ignored. Economists have given a great deal of attention to the second role, in the context of the general issue of welfare measurement, though the lessons learned have often been ignored by practitioners measuring poverty. Experience suggests that the choices made in setting poverty lines can matter greatly to the measures obtained, and to the inferences drawn for policy (Ravallion, 1998:ix).

There are mainly two types of poverty line definitions reflecting different views of poverty: relative and absolute. The absolute definition is when poverty is seen as a situation of insufficient command over resources, independent of the welfare level of the society. A relative definition comes from the idea of the relative deprivation felt by someone according with social conventions and contemporary living standards of a particular society (Diaz, 2003:3).

2.4.9.1 Defining a poverty line

Following common practice, the poor are defined as those who lack command over basic consumption needs, including food and non-food components. Thus, the poverty line is obtained by specifying a consumption bundle considered adequate for basic consumption needs and then by estimating the cost of these basic needs. In other words, the poverty line may be thought of as the minimum expenditure required by an individual to fulfill his or her basic food and non-food needs (World Bank, 2005:43).

Ravallion (1998:3) defines a poverty line as the monetary cost to a given person, at a given place and time, of a reference level of welfare. People who do not attain that level of welfare are deemed poor, and those who do are not. But how then do we assess "welfare"? The most widely used characterisation of welfare in economics postulates a utility function, defined over consumptions of commodities, such that the function reproduces consumer preferences over alternative consumption bundles. Following this approach, the poverty line can be interpreted as a point on the consumer's expenditure function, giving the minimum cost to a household of attaining a given level of utility at the prevailing prices and for given household characteristics (Ravallion, 1998:3).

To see how this works more formally, consider a household with characteristics x (a vector) consuming a bundle of goods in quantities q (also a vector). It is assumed that the household's preferences over all the affordable consumption bundles can be represented by a utility function $u(q,x)$ which assigns a single number to each possible q , given x . The consumer's expenditure function is $e(p,x,u)$, which is the minimum cost to a household with characteristics x of a level of utility u when facing the price vector p . (When evaluated at the actual utility level, $e(p,x,u)$ is simply the

actual total expenditure on consumption, $y = pq$ for a utility-maximizing household.)
 Let u_z denote the reference utility level needed to escape poverty, then the poverty line is:

$$z = e(p, x, u_z) \dots \dots \dots (2.1)$$

In words, the poverty line is the minimum cost of the poverty level of utility at prevailing prices and household characteristics. This tells us how to go from poverty in terms of utility to poverty in terms of money; but it does not tell us how to define the poverty level of utility (Ravallion, 1998:3).

2.4.9.2 Deriving a poverty line

Modern interest in poverty can be traced to the concern of social observers such as Booth and Rowntree in Britain in the late 19th century. From those times social policy analysts have found it useful to focus debate through reference to a minimum desirable level of income or a poverty line (Johnson, 1996:110). A poverty line divides the population into two groups on the basis of some measure: below the line a household/individual is considered to be poor, and above the line it is considered non-poor. Clearly, poverty lines are extremely useful for descriptions of poverty. By defining a line that is regarded as some kind of minimum living level, we are able to get a handle on the number of poor people, as well as the depth and severity of poverty. However, the point at which one draws the line is always somewhat arbitrary and often highly contentious (Woolard & Leibbrandt, 1999:8). After all, it is clearly rather crude to assume that a household earning R999 per month is in poverty, while the household earning R1000 is not. A poverty line will always be an imperfect measure, but for purposes of analysis one needs to draw the line somewhere in order to go forward in understanding the nature of poverty. Many approaches to identifying the poor begin with the specification of a set of basic needs. If one specifies minimum levels for certain consumption items (e.g. food, clothing, housing) then an individual who does not meet these minimum levels for each commodity is clearly poor. The difficulty arises that a person may be, for example, "food-poor" but not "energy-poor" making this a cumbersome measurement to use in practice. This can be termed the "direct approach" (Callan & Nolan, 1991:244).

An alternative to the direct approach is to work out the cost of a minimum basket of goods and use the required expenditure level as the poverty line. This is what Sen (1976:219) terms the "income approach". A variant on this approach is to build in a factor for waste and inefficient expenditure, i.e., if it costs Rx to purchase the minimum set of commodities, the poverty line could be set at $Rx(1+y)$ where y represents the proportion in excess of the strict minimum cost budget. The conceptual distinction between the direct and income approaches is significant. While the direct approach identifies those individuals or households who fail to meet some minimum standard of living, the latter approach identifies those that are unable to do so. Out of respect for individual choice and in accordance with convention, it is better to rely on the "income approach" (Woolard & Leibbrandt, 1999:8).

According to Pradhan and Ravallion (1998:2) the most common practice in drawing a poverty line starts with "objective" predetermined nutritional requirements for good health and an active life. The poverty line is then defined as the value of a monetary measure of individual economic welfare, such as expenditure on all goods and services (with imputed values when necessary), at which these nutritional requirements are met given prices and reference tastes. People are deemed to be poor if and only if their welfare indicator is below this line, and a poverty measure is estimated on the censored distribution (such as the "headcount index" given by the proportion below the line). Methodological differences within this approach are known to yield different poverty measures.

However (as has been noted before), there is an inherent subjectivity and social specificity to any notion of "basic needs", including nutritional requirements. For example, psychologists, sociologists and others have argued that the circumstances of the individual relative to others in some reference group, influences perceptions of well-being at any given level of individual command over commodities. By this view, "the dividing line between necessities and luxuries turns out to be not objective and immutable, but socially determined and ever changing" (Scitovsky, 1978:108). Some have taken this view so far as to abandon any attempt to rigorously quantify "poverty". Poverty analysis (particularly, but not only, for developing countries) has become polarised between the "objective-quantitative" schools and "subjective-qualitative" schools, with rather little effort at cross-fertilisation (Pradhan & Ravallion, 1998:3).

An intermediate approach has emerged in a segment of the developed country literature on poverty. "Subjective poverty lines" have been based on answers to the "minimum income question" (MIQ), such as the following (paraphrased from Kapteyn *et al.*, 1988): "What income level do you personally consider to be absolutely minimal? That is to say that with less you could not make ends meet", (Pradhan & Ravallion, 1998:3).

One might define everyone whose income is less than the amount they give as an answer to this question as poor. However, this would almost certainly lead to inconsistencies in the resulting poverty measures, in that people with the same income, or some other agreed measure of economic welfare, will be treated differently. Clearly an allowance must be made for heterogeneity, such that people at the same level of living may well give different answers to the MIQ, but must be considered equally "poor" for consistency. Past empirical work has found that the expected value of the answer to the MIQ conditional on income tends to be an increasing function of income (Pradhan & Ravallion, 1998:3-4).

Although various ways of setting a poverty line have been developed upon alternative concepts of poverty, "a feature common to all proposed methods is a significant degree of arbitrariness in the value assigned to the poverty standards", (Foster & Shorrocks, 1988). Even if a poverty line is regarded as the minimum nutritional need, the arbitrariness remains because there is no one level of food intake required for substance, but rather a range where physical efficiency declines with a falling intake of calories and protein (Atkinson, 1983:226). Since a poverty measure may produce contradictory conclusions at two different, yet equally reasonable poverty lines, the use of any single poverty line, like the use of a single poverty measure, is also arbitrary and so is the conclusions based upon this single line. Naturally, this arbitrariness can be greatly reduced if the verdict of poverty comparisons holds for all reasonable poverty lines. Thus, it is useful to describe situations where two distributions can be unanimously ranked for all possible lines by a given poverty measure (Zheng, 2000:429).

2.4.9.3 The usefulness of a poverty line

A well-defined poverty line is the cornerstone of poverty measurement. A classic definition of the poverty line is “the cut-off living standard level below which a person is classified as poor” (World Bank, 1991:13). Anyone on or below the poverty line is defined as poor, and is covered by the poverty index; the rest of the population is ignored (Yitzhaki, 2002:63).

In assessing the need for an official poverty line it is useful to distinguish between political, administrative and social-welfare-measurement points of view. Declaring an official poverty line and preparing a yearly report on the status of the poor may have political implications (Sen, 1979). Obviously, any administration needs a poverty line (or a cut-off point), because it lets welfare departments define their constituencies, it reduces arbitrary decisions, and it enables welfare departments to evaluate the success or failure of their programs. It is not at all clear, however, whether all welfare programs should necessarily employ the same cut-off point. Having a single cut-off point (i.e., an official poverty line) might be useful if cash transfers were deemed a satisfactory solution to the poverty problem and if the poor were easily identifiable. But if society is differentially sensitive to different dimensions of inequality, and/or if markets are incomplete, and/or if not all people are rational (or even share the same tastes), then a case could be made in favour of different cut-off levels for different programs or different groups (Yitzhaki, 2002:64).

In fact, both theory and practice suggest precisely such differentiation. Tobin (1970) argues that society may be more sensitive to inequality in some areas (health, children) than in others, which can be handled by cash transfers. Society will probably be less tolerant to inequality in the opportunities open to “naive” individuals (e.g., children’s education) than to “self-inflicted” poverty (e.g., as a result of gambling or drinking). This means that the poverty line, which can be interpreted as the income below which an individual is entitled to help, may differ depending on the issue at hand. In practice, the US National School Lunch Program and the School Breakfast Program provide free meals to families with incomes under 130% of the official poverty line. Another example is the Earned Income Tax Credit (EITC) scheme, designed to increase the incentive to work among poor families: beneficiaries of this

program are entitled to have an income of up to 170% of the poverty line (Yitzhaki, 2002:64).

Even if a poverty line is a necessary administrative device and an effective political tool, it does not necessarily follow that it serves any useful purpose from a social welfare function point of view. There are several arguments against classifying persons as either poor or rich (Yitzhaki, 2002:64):

- The theoretical justification of the poverty line can be found in the Focus axiom (Sen, 1976) that a poverty index should meet. Poverty measures that obey the Focus axiom concentrate on incidence among the poor and ignore the rich. Concentrating on the poor is good strategy for welfare departments, because they are required to evaluate the relative neediness of the individuals they deal with. In practice, however, since the adoption of poverty alleviation as the official target of international institutes, poverty measures have increasingly served to evaluate policies that affect the population as a whole, rich and poor (Yitzhaki, 2002:65).

Focusing on poverty alleviation need not necessarily imply ignoring the rich; rather, it implies that one is unconcerned with redistribution among the rich. But this argument should be modeled as implying a positive constant social evaluation of the marginal utility of income among the rich, not that the rich should be ignored. Ignoring the rich violates Pareto's principle of economic efficiency and hence may lead to Pareto inefficient policies. To see this, consider two alternative poverty alleviation policies with identical effects on the poor but different effects on the rich. Concentrating exclusively on the poor may lead the policy maker to the conclusion that the programs are equivalent, leading to the choice of an inefficient program (Yitzhaki, 2002:65).

- Since there is no substantive difference between someone who is just an epsilon above the poverty line and someone who is just an epsilon below it, it would appear that a continuous function would describe the impact of poverty alleviation better than a discontinuous one. To see the kind of problems that may arise as a result of discontinuity at the poverty line, consider an economist who advises a government on how to reduce the number of poor people, subject to a revenue constraint. The economist, by design or otherwise, will naturally be inclined to

recommend helping those who are close to the poverty line and ignoring (or possibly taxing) those who are even worse off, because such an “optimal” policy yields the largest decrease in the target function subject to given resources. Note that anyone who evaluates policies according to their effectiveness may fall into this trap of applying an inappropriate (implicit) social welfare function (Yitzhaki, 2002:65).

- Since it is the rich who pay for alleviating poverty, one cannot close the model without taking them into account. Closing the system requires a model that includes the whole economy (Yitzhaki, 2002:65).
- Most countries do not rely exclusively on means-tested programs (instruments directed solely at the poor) for poverty alleviation. Instead, they use fiscal instruments directed at the entire population. The interest of the analyst in analysing the effect of a general fiscal instrument should also be focused on differential incidence, which requires comparison of the incidence between the poor and rich. Truncating the distribution at the poverty line inhibits such analysis (Yitzhaki, 2002:66).

It is evident that a poverty line is useful in poverty indices for identifying the poor population from the non-poor. The main problem with this is that poverty indices ignore the population above the poverty line. There are two viable substitutes for poverty indices.

One is to use inequality indices that can stress the lower portion of the income distribution; these include Atkinson's index of inequality (Atkinson, 1970) and the extended Gini coefficient (Chakravarty, 1990; Donaldson and Weymark, 1983; Yitzhaki, 1983). The main property of these indices is that by changing a parameter one can increase the sensitivity of the index to transfers at the lower end of the income distribution. Such inequality indices can be useful measures of poverty without having to cope with the drawbacks entailed in truncating the income distribution. However, this alternative is not useful for someone who wishes to single out the poor as a distinct group (Yitzhaki, 2002:63).

The other substitute for poverty indices is to decompose an index of income inequality by poor, non-poor (rich), and poor-versus-rich inequality (which is referred to as “between-group” inequality). If inequality among the rich is not a consideration, one can simply ignore that component. This approach has several advantages (Yitzhaki, 2002:66):

- It provides more information than using poverty indices alone, because it enables the investigator to also look at differential incidence. No piece of information is lost in the process of decomposition.
- Poverty lines are arbitrary in the sense that one can rarely determine poverty with precision, and one has to allow for inadvertent changes over time. When the poverty line is not adjusted correctly, having information about the rich enables the investigator to determine whether a change in the incidence of poverty was caused by an inadvertent shift in the poverty line or by a change in the income distribution proper (Yitzhaki, 2002:66).

The role played by the poverty line is different under the two approaches. Under the poverty measurement approach whether an observation is above or below the poverty line is crucial. Under the decomposition approach, the only thing that is determined by the poverty line is the classification of the observation into poor or non-poor. An error in misclassification does not affect the overall inequality and therefore, the analysis is less sensitive to the poverty line (Yitzhaki, 2002:66).

2.4.9.4 Absolute and relative poverty lines

Two major issues arise in the discussion of poverty lines. Firstly, defining the space in which poverty is measured. This can be the space of utility, basic needs, functionings, or capabilities. Secondly, determining whether one is interested in an absolute or in a relative poverty line in the space considered (Duclos, 2002a:9).

An absolute poverty line can be interpreted as fixed in any of the above spaces. A relative poverty line depends on the distribution of the living conditions (including the utilities, functionings, and capabilities) found in a society. Considerable controversy exists over whether absoluteness or relativity is a better property for a poverty threshold. Most analysts would nevertheless agree that a poverty threshold defined in

the space of functionings and capabilities should be absolute (but even on this there is no unanimity). An absolute threshold in these spaces would, however, imply relativity of the corresponding thresholds in the space of the commodities and in the level of basic needs required to achieve these functionings (Duclos, 2002a:9).

There are two main reasons for this. Firstly, the relative prices and the availability of commodities depend on the distribution of living standards. For instance, as a society initially develops, the affordability and accessibility of public transportation usually first increases as rising numbers of people need to travel to work and to trade, without first being able to afford the costs of private transportation. As societies become richer on average, however, their citizens make increasing use of private forms of transportation, which causes a drop in the supply and availability of public transportation, and an increase in its price. This makes the capacity to travel (arguably an important functioning) more or less costly, depending on the state of economic development. Secondly, not to be deprived of some capability may require the absence of relative deprivation in the space of some commodities. In support of this, there is Adam Smith's famous statement that the commodities needed to go without shame (an oft-mentioned basic functioning) can be to some extent relative to the distribution of living standards in a society (Duclos, 2002a:9).

"By necessities, I understand not only the commodities which are indispensably necessary for the support of life but whatever the custom of the country renders it indecent for creditable people, even of the lowest order, to be without" (Smith, 1776).

Sen (1983:335) reinforces this by distinguishing clearly, the two dimensions of capabilities and commodities. Poverty is an absolute notion in the space of capabilities, but very often it will take a relative form in the space of commodities and characteristics. This has led some writers (particularly in developed countries) to conclude that attempts to preserve some degree of absoluteness in the space of commodities are untenable.

According to Saunders (1994:227), it does not seem possible to develop an approach to poverty measurement which is linked to absolute standards. While some analysts are uneasy with relativist concepts of poverty on the grounds that they are difficult to

comprehend and can be seen as somewhat arbitrary and open to manipulation, no real practical alternative to relativist concepts exists.

There is no consensus in the definition of the poverty line. Sen (1983) points out an irreducible core in the idea of poverty that is absolute. Moreover, it may be the case that some people are much less deprived with a given amount of attributes, while some others are much more deprived; then relative poverty lines are justified (Diaz, 2003:3).

In some sense, it seems reasonable that a poverty measure involves both views of poverty. Sen (1981) pointed out that "comparing poverty across distributions may involve different standards of minimum necessities and that absolute deprivation in terms of a person's capabilities relates to relative deprivation in terms of commodities, income and resources". Reflections on these arguments led Ravallion (1998) to argue that a poverty line should be absolute in terms of welfare, but sometimes welfare is expressed in terms of relative expenditure which justifies in a sense the relative poverty lines.

There has been some research in the unidimensional framework that tries to involve both concepts when drawing poverty lines. Some examples are: Chen *et al.* (1994) who assesses poverty using a poverty line, which is absolute, but determined for a range. Citro and Michel (1995) set a poverty line which is relative with respect to the median expenditure on certain basic goods. This latter approach is referred to as a hybrid measurement by Foster (1998), since it uses a relative poverty line; however, median expenditures on basic goods do not rise as much as the median total expenditures. It seems that adding needs and commodities into a single variable does not help to discriminate between different relative and absolute aspects of poverty (Diaz, 2003:3).

In the multidimensional approach one poverty line is established for each attribute and these are determined independently of the distribution. All the multidimensional poverty analyses proposed, so far, have used absolute poverty lines, among others Bourguignon and Chakravarty (1999, 2000 and 2002), and Chakravarty *et al.* (1988). They argued that an absolute poverty line is more viable in a multidimensional analysis, because relative poverty lines become essentially ambiguous in some

dimensions. However, a multidimensional approach opens the possibility to express attributes in a relative or absolute way according to the nature of the good under consideration. Some attributes such as expectancy of life, education, and access to basic public services are better expressed in absolute terms, while other dimensions summarised in a composite good, usually income, are intended to express a relative living standard of a particular society, and therefore, are better expressed in a relative way (Diaz, 2003:4).

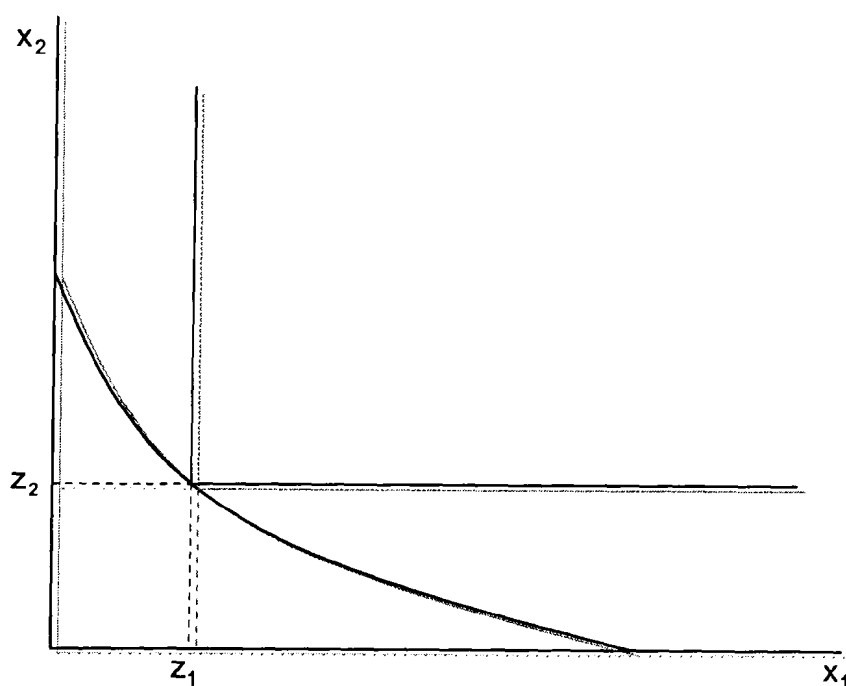
For a multidimensional analysis, assume a population of size n , person i possesses a vector of m attributes, $x_i \in R_+^m$, where R_+^m is the non-negative orthant of the Euclidean m -space R^m . The matrix X is a $n \times m$ matrix, where M is the set of all $n \times m$ basic need matrices whose entries are non-negative reals. The entry ij of matrix X gives the quantity of attribute j possessed by person i . The vector x_i is a column of $x \in M$ and gives a distribution of attribute j among the n persons. The vector x_j is a row of $x \in M$ and gives the distribution of m attributes possessed by person i . The median of each attribute is denoted by μ_j . Let $z_j \in Z$ be a vector of poverty lines for different attributes, where Z is a non empty subset of R_+^m . Suppose z_j can be absolute or relative according to the nature of attribute j , then a relative poverty line is denoted by $z_j^r = \tau \mu_j$, where $0 \leq \tau < 1$. An absolute poverty line is defined as $z_j^a = c$, where c is a minimum sufficient level of basic need which is exogenously determined (Diaz, 2003:4).

There are two definitions of the poor in a multidimensional approach in which poverty lines play an important role: the intersection and union definitions of poverty as named by Duclos *et al.* (2002). The intersection definition considers a person poor if he/she falls below the subsistence levels of all attributes, i.e. $x_{ij} < z_j$ for all j . This is denoted in Figure 2.1 by the area within the dashed rectangle for the particular case of two attributes. This approach identifies the neediest persons, but it may not exhaust the entire set of poor persons, as Bourguignon and Chakravarty (1999) indicate. Under these circumstances, it is possible for an old beggar to be excluded from the set of poor just because of his longevity, which has motivated researchers to look for a more general definition of poverty (Diaz, 2003:4).

The union definition of poverty considers a person poor if he/she falls below the subsistence level of at least one attribute, person i is poor if $x_{ij} < z_j$ for at least one j , which can be seen in Figure 2.1 as the area under the L-shaped dotted line when just two attributes are under consideration. Multidimensional poverty measurement offers many different ways to define poverty. The union and intersection poverty concept are the extreme definitions of poverty but not the only ones (Diaz, 2003:4).

Duclos *et al.* (2002) also proposed an inter-mediate case in which the poverty domain is defined by a decreasing poverty frontier as in Figure 2.1, a person can be considered poor even if he/she has more than the poverty line in one dimension, but sufficiently low in the other to fall in the poverty region. For the reason considered above, the union definition is the one that has been mainly used in the multidimensional poverty measurement literature.

FIGURE 2.1 UNION AND INTERSECTION POVERTY MEASURES



Source : Duclos *et al.*, 2002

However, the intersection definition can be the answer for different types of poverty at different stages. One can define, at one stage, just income poverty. At a second stage, capabilities poverty, which may include income, health, and education. Finally a wider definition of poverty, say patrimony poverty, which may include income, health,

education, and public services. In each of these definitions the analysis is done using an intersection definition of poverty; however, the stages procedure may help to mitigate the arbitrariness of putting all the dimensions under consideration at one stage and doing the analysis with an intersection definition of poverty (Diaz, 2003:5).

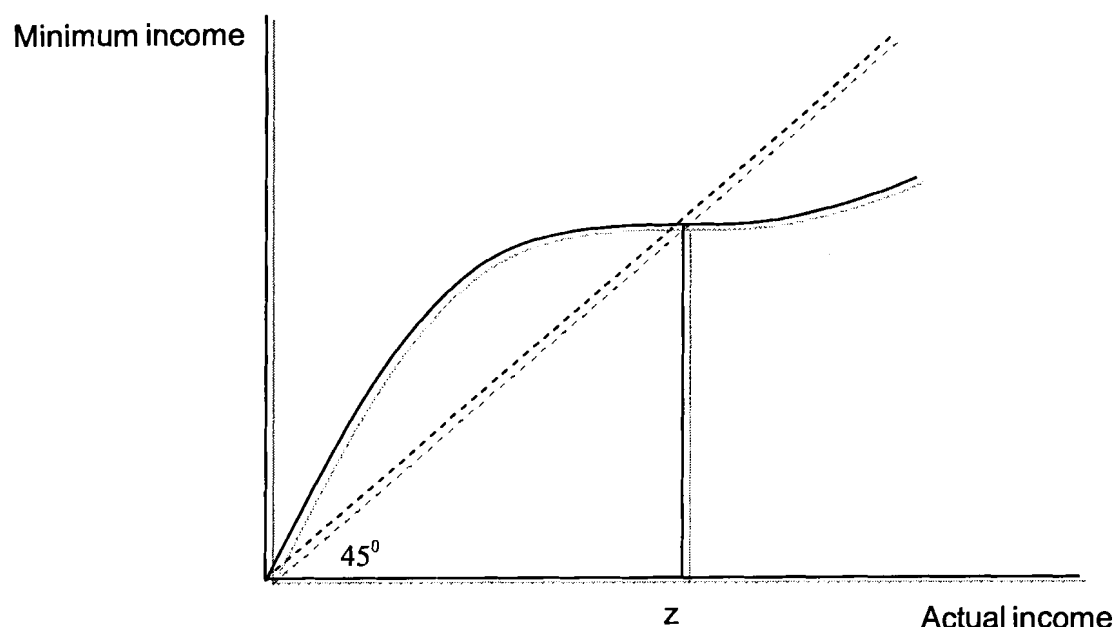
2.4.9.5 Subjective poverty lines

This approach explicitly recognises that poverty lines are inherently subjective to the judgements people make about what constitutes a socially acceptable, minimum standard of living in a particular society. Different countries tend to use different poverty lines, and richer countries tend to have higher poverty lines, so too with individuals (Ravallion, 1992:33). This approach is often based on survey responses to a question such as the following (paraphrased from Kapteyn *et al.*, 1988):

“What income level do you personally consider to be absolutely minimal? That is to say, that with less you could not make ends meet”.

The answer tends to be an increasing function of actual income. Furthermore the studies that have included this question (mainly for Europe) have tended to find a relationship as depicted in Figure 2.2 (Kapteyn *et al.*, 1988). The point z in the figure is an obvious candidate for a poverty line; people with income above z tend to feel that their income is adequate, while those below z tend to feel that it is not. This is an interesting approach to setting a poverty line, though there are no known attempts to apply it in a developing country. It would not be surprising if it gave higher poverty lines than the basic needs approach. Future household surveys for developing countries, such as the LSMS, should consider including subjective poverty line questions (Ravallion, 1992:33).

FIGURE 2.2 THE SUBJECTIVE POVERTY LINE



Source: Kapteyn *et al.*, 1998

2.4.9.6 Dual poverty lines

Good practice, in any of the approaches to setting a poverty line discussed above, is to consider at least two possible poverty lines. The lower one may be interpretable as an ultra-poverty line, such that persons with consumption expenditures below that point are unable to meet their food energy needs, let alone other food and non-food needs. Indeed, given the arbitrariness involved, there is a good case for considering quite a wide range of the whole distribution of consumption or income. This is the basic idea behind the "dominance approach". By combining the concepts of "absolute" and "relative" poverty lines, there is one straightforward way of setting multiple poverty lines in making poverty comparisons. In each of the situations being compared, say each of two dates, one sets two poverty lines, one of which is fixed in terms of the living standards indicator across both dates, while the other is a relative poverty line reflecting any changes in overall living standards and, hence, perceptions of what constitutes "poverty" in the society. Thus, across any two dates, one can always make distinct comparisons of the changes in both absolute and relative poverty (Ravallion, 1992:34).

2.4.9.7 Measures of poverty based on poverty lines

Poverty lines are commonly used to assess poverty at the household level. Money metric poverty lines are usually determined by some level of consumption, expenditure or income that is adequate enough to meet primary human needs. The most commonly used determinant of poverty lines is income (Gray, Lyne & Ferrer, 2004:2). Alternatives to using income as the basis for poverty lines include household consumption, per capita food expenditure, budget share of food expenditure (food ratio), average educational level of adult household members, quality of housing, access to clean water and sanitation, employment and wealth (Hirschowitz *et al.*, 2000). The point at which a poverty line is drawn is somewhat subjective and often controversial. Nevertheless, single dimensional poverty lines are widely used to assess welfare despite their imprecision (Greeley, 1994 in Gray *et al.*, 2004:2-3).

According to Ravallion (1996:2), common practice starts by identifying a single monetary indicator of household welfare; let the indicator value for the i^{th} household be denoted y_i . This tends to be either total expenditure on consumption or total income over some period. Next a set of poverty lines, denoted z_i , are defined. These estimate the cost to the household of the level of welfare needed to escape poverty i.e., it is agreed, at least implicitly, that lower values of y_i/z_i mean that a typical member of the household is absolutely poorer.

Practice varies in terms of the information used in setting the z 's. According to Ravallion (1996:2), "best practice" is to adjust for differences in the prices faced (over time or space, in as much detail as data permit) and household demographics. Alternatively one can introduce the deflators at the first stage of defining y and have only one z ; poverty measures found in practice are homogeneous so that the order of these steps makes no difference. Another method is to set the z_i 's as a constant proportion of the mean for some sub-group to which i belongs, or each date. Finally an aggregate poverty measure is identified, which summarises the information contained in the measured y 's and z 's. The most common measure is the headcount index, given by the proportion of the population for whom $y_i/z_i < 1$. A seminal paper by Sen (1976), drew attention to the undesirable properties of this measure, such as the fact that when a poor person becomes poorer the headcount index of poverty will not

increase (indeed, if the person dies, the index will fall). A large literature has since proposed and studied enumerable alternative measures, though as yet no single measure has toppled the headcount index from public attention (Ravallion, 1996:2).

Multi-faceted indexes of poverty also classify households on the basis of poverty lines. Two poverty indexes have been developed by Stats SA, namely, the household infrastructure index (HII) and the household circumstances index (HCI). Principal component (PC) loadings indicate which variables define the two indexes. Variables with high loadings in the HII include: living in formal housing, access to electricity, tap water inside the dwelling, a flush or chemical toilet, a telephone or cellular telephone, refuse removal at least once a week, level of education of the household head, and monthly household expenditure. The HCI is defined by: household unemployment rate, average household size, and number of children under the age of five years. Stats SA applies cut-off points on these indexes to separate their sample into 'developmental groups'. However, these cut-off points are arbitrary as they have no theoretical or empirical basis (Gray *et al.*, 2004:3).

Carter and May (2001, quoted in Gray *et al.*, 2004:3) present a dynamic approach to measuring poverty based on underlying household assets. Time gives people the opportunity to escape from poverty, but also increases the possibility of experiencing negative shocks that decrease income or assets. If household i at time t has a vector of assets A_{it} , then at every period the household chooses consumption (c_{it}) and investment (I_{it}) in order to maximise a discounted stream of expected well-being. Carter and May (2001) begin with the standard money metric poverty line c and consider a person poor if $c_{it} \leq c$. Households that are poor due to $c_{it} \leq c$ at each point in time are termed chronically poor, while households that move between poor and non-poor are termed transitorily poor. The structure or asset base of poverty is explored in terms of a poverty line which is interpreted as a cut-off point between households that fall above or below a certain asset base.

Carter and May (2001, in Gray *et al.*, 2004:3) then introduce a dynamic poverty line J , where J is the present value of sequences of poverty lines. Households can then be reclassified as falling above or below the discounted poverty line to indicate which households are in a poverty trap. A household is considered dynamically poor if

$J(A_{oi}) < J$. This means that the long-term expected stream of well-being is less than the certain equivalence value of a stream of single-period poverty living standards (Carter & May, 2001). By expressing the poverty line in terms of income predicted from observed asset holdings, this approach has more in common with the view that poverty is multidimensional and has both qualitative and quantitative indicator variables. Expected income is regressed on the asset base of households to obtain an estimate of their permanent income. If there is a good fit, the predicted income is used to classify households above or below an income poverty line. Data on durable assets, such as livestock and vehicles, drawn from panel surveys are used to predict real income per adult equivalent for each household in each year. Absolute poverty is then assessed by comparing these predicted incomes with a poverty line. This method does not take into account that the poverty line chosen has an effect on the classification of households and therefore the resulting poverty profile may be over- or underestimated (Gray *et al.*, 2004:3).

2.4.10 Indexes of poverty

The level of poverty depends on the index selected for its measurement. The most common and simplest index of poverty is the headcount measure. It is the proportion of the population living in income units with income lower than their respective poverty lines. Notwithstanding the definitional difficulties related to specifying the level of resources to indicate poverty, and the determination of the appropriate poverty line, the calculation of such an index is both feasible and simple. Additionally, such a measure is well understood and easily interpreted by the general public, thus increasing its level of acceptability. The headcount approach, however, gives no indication of the depth or severity of poverty and no account is taken of the income distribution of those in poverty. The headcount measure is also very sensitive to small movements in the poverty line, which may result in large numbers being either in or out of poverty. This is particularly the case if the level of the poverty line is similar to the levels of social security benefits (Trigger, 2003:8).

An alternative indicator, the poverty gap index, measures the total difference between the actual incomes of poor families and their respective poverty lines. This approach is less sensitive to movements in the poverty line and can allow for better targeting of

income support than the headcount index. The poverty gap index, however, also gives no indication of the distribution of income among the poor (Trigger, 2003:8). Sen (1976:219) sought to address the issue of income distribution among the poor. Sen noted that the measurement of poverty can be broken down into two distinct steps. These are: (a) identifying the poor among the total population, and (b) constructing an index of poverty using the available information on the poor. This aggregation step involves combining the basic information on the poor to obtain a number that reflects the overall level of poverty. Sen considered this second step to be as important as the first and proposed certain properties or axioms that a measure of poverty should satisfy. These were the monotonicity axiom and the transfer axiom. The monotonicity axiom suggests that a fall in the income of a person below the poverty line, while everything else stays the same, must increase measured poverty, while the transfer axiom holds if a transfer of income from one person in poverty to anyone who is richer will increase measured poverty. Sen formulated an index to satisfy these criteria. Sen's index comprises a combination of the proportion of the population who are poor (as given by the headcount measure), the depth of poverty (as represented by the income gap index) and the level of inequality among the poor (as reflected in the Gini coefficient). Sen's general approach is open to variation and, as such, many alternative axiomatic indexes of poverty have been proposed. However, in the survey of aggregate poverty measures, Foster (1984:242) concluded that no one index of poverty was clearly superior to all others and that the choice of a single poverty measure involves a certain degree of arbitrariness.

Since Sen proposed a new poverty index and a set of desirable axioms for evaluating a poverty index, research on poverty indices has received considerable attention. As the Sen index is not replication invariant, not continuous in individual incomes, and fails to satisfy the strong transfer axiom, Shorrocks (1995) proposed a modified Sen index which is identical to the limit of Thon's (1979) modified Sen index as the number of observations goes to infinity (which Osberg (2001) refers to as the Sen-Shorrocks-Thon (SST) index of poverty intensity). Hagenaars (1986, 1991) and Zheng (1997) have summarised the properties that an ethically defensible index of poverty should possess. A particularly important consideration is that an acceptable measure of poverty should always register an increase in poverty whenever a pure transfer of

income is made from someone below the poverty line to someone who has more income. This property is not possessed by the poverty rate (Osberg, 2001:6).

According to Osberg (2001:6), the poverty rate is a bad index on axiomatic grounds and there are several important policy implications of its deficiencies. When decreases in the poverty rate are used as the criterion for social policy, administrators who want to demonstrate “success” will be tempted by the option of “creaming” the poverty population. By redistributing benefits or services away from the very poorest (who are so far below the poverty line they are likely to stay poor anyhow) to those just below the poverty line (who have the greatest chance of being moved over the line). Administrators can improve the poverty rate, even while deepening the deprivation of the worst off which is surely not a socially desirable outcome (Osberg, 2001:6).

Use of the poverty rate criterion may also affect measurement choices. Myles and Picot (2000:4) commented that: “A typical frustration of policy-makers is that incremental efforts to raise the incomes of the most indigent often have little impact on the poverty rate. The temptation in this situation is to move the goal posts to a lower poverty standard in the (usually misguided) hope that a lower cut-off will register the change. Changes that affect the most indigent are reflected in measures of poverty intensity “.

The use of a better measure of outcomes may obviate the tendency to “move the goalposts” and it may also reduce false pessimism about anti-poverty policy. As Focus (1998:4), commented: “According to conventional wisdom, US anti-poverty programs have not worked”. However, this perception was driven by trends in the poverty rate. In practice, policy makers are under pressure both to “show results” and to provide aid to the most indigent. If they follow Rawls (1971), and focus programmes on the least well off, their successes will be often statistically invisible, since the poverty rate does not reflect the improvement in well-being that comes with a reduction in the poverty gap. A better measure of poverty, like poverty intensity, may therefore also be important in avoiding “false negatives” in policy analysis. Osberg (2001:7) advocates the use of the SST index of poverty intensity, which combines the poverty rate, average poverty gap ratio and inequality in poverty gaps.

2.4.11 Issues in measurement practices

Important issues in the measurement of poverty include, among others, multidimensional poverty measurement and partial poverty orderings which arise from the multiplicity of poverty measures, poverty lines and equivalence scales. The concept of poverty is essentially multidimensional; income is only one of many factors in the identification of the poor. If poverty is defined as “the failure of basic capabilities to reach minimally acceptable levels” (Sen, 1992:109), and capacity is a function of income, health, housing, and the provision of public goods, then poverty should be measured from a multidimensional perspective. In fact Sen (1981) viewed the capability method to be ‘superior to the income method’ and ‘the income method is at most a second best’. While the research on the unidimensional poverty measurement has flourished in the last two decades, the multidimensional measurement of poverty remains an area to be explored (Zheng, 1997:126).

Since the publication of Sen (1976), researchers have adopted the axiomatic approach to formulate new poverty measures. Unfortunately the axiomatic characterisation of any particular poverty measure is somewhat ad hoc in that it is either built upon a prior functional form or based upon some arguable axioms. For each set of reasonable axioms there exist multiple poverty measures, and poverty comparisons based upon different ‘equally good’ poverty measures may lead to conflict conclusions about what has happened to poverty. Hence, the poverty comparison based upon any single poverty measure is not robust. If all poverty measures satisfying certain axioms lead to the same conclusion, then the poverty comparison will be more robust (Zheng, 1997: 126).

The first dimension of partial poverty ordering research is to determine the precise circumstances in which two distributions can be unambiguously ranked according to an entire class of poverty measures. The application of a poverty measure requires one to specify the poverty line which distinguishes the group of poor people from the rest of the population. As is well recognised, the choice of any specific poverty line is apt to be arbitrary and so is the poverty comparison based on a single poverty line. The second dimension of partial poverty ordering research is to describe situations in

which a measure or a class of measures will indicate a consistent poverty ordering for all possible poverty lines (Zheng, 1997: 126).

The measurement of poverty also needs to consider the difference in family composition. Typically, this consideration is accomplished by the use of an equivalence scale which determines the relationship between the poverty lines for different type of families. Several methods, including minimum nutritional needs, expert judgement and questionnaires, have been used to determine a proper equivalence scale. However, the choice of a particular equivalence scale, much like the use of a single poverty line, is somewhat arbitrary and so is the comparison based upon a single equivalence scale. The third dimension of partial poverty ordering research is to find conditions under which two distributions can be unanimously ranked by a set of equivalence scales. Atkinson (1987) focused on the first dimension of partial poverty orderings and provided very useful ordering conditions (Zheng, 1997:126).

Another important issue is the welfare indicator. There has been disputes over the welfare indicator (such as whether it should be consumption or income, and what should be included and how it should be valued), the poverty line (how it should vary by sub-groups or dates, and at what level it should be set on average), and the poverty measure (whether it should be additive, whether it needs to penalise inequality amongst the poor, how the resulting measure relates to "social welfare functions") (Ravallion, 1996:3).

There are some issues which seem to be still poorly resolved, but would appear to have considerable bearing on the policy-oriented uses of these measures. Why has the headcount index remained so popular, despite the trenchant critiques of Sen (1976) and others, in a long list of papers in *Econometrica* and elsewhere? Its simplicity is clearly the main reason; for something of such public interest as a poverty measure, the seemingly esoteric rationales and formulae of other measures can be difficult to digest. Nonetheless, policy analysis has started to be more aware of the need to consider impacts below the line, and to allow a potentially wide range above and below. This is evident in the more widespread use of headcount indices for multiple poverty lines, echoing both the emphasis of Lipton (1983) and others on the

"ultra-poor" as well as concerns about "vulnerable" households just above the line. Once the concept of a headcount index for one line is understood, it is often easier to appeal to multiple lines rather than "higher-order" measures when assessing impacts elsewhere in the distribution (Ravallion, 1996:3).

The existence of a "jump" at the poverty line has been an issue. The fact that some measures (including the headcount index) register a discontinuous change as one crosses the poverty line has been cited by some as an advantage (those who believe a jump in welfare occurs at this point) and by others as a disadvantage (who do not think such jumps exist, or do not want to identify them with a particular poverty line, or do not like the extra sensitivity of the measure to the location of the poverty line and welfare measurement errors near it). From the point of view of anti-poverty policy, a jump attaches a premium to gains for the least poor amongst the poor (in the extreme case of the single headcount index, that person should be the first to gain). If one starts instead from the value judgement that (subject to information and incentive constraints) the poorest in terms of the agreed welfare measure (y_i/z_i) should get highest priority, then jumps are ruled out. Unlike Sen's own index, "distribution sensitive" measures such as the squared poverty gap index of Foster *et al.* (1984) are continuous at the poverty line, as is Shorrocks's (1995) modification to the Sen index (obtained by a simple re-normalisation) (Ravallion, 1996:4).

For policy purposes, the method of setting poverty lines can matter greatly to the interpersonal welfare comparisons being made and the structure of the resulting poverty profile. Results, looking closely at the "rule of thumb" methods used in practice can often leave one sceptical as to whether the outcome will guide policies in the right direction. For example, a worrying problem in much current practice is that the poverty lines used as deflators do not account well for the actual cost-of-living differences facing the poor due to (inter alia) spatial differences in the prices faced (Ravallion, 1994). This can bias both the structure of the poverty profile and the aggregate measure obtained. It is often the case that a reasonably credible solution to such problems can be implemented with the data available (Ravallion, 1996:4-5).

According to Ravallion (1996:5), setting poverty lines as a constant proportion of the mean for each sub-group or date seems very unlikely to deliver poverty comparisons

of much relevance to anti-poverty policies, since the implicit welfare indicator loses meaning in terms of absolute levels of living. Policies based on this method could easily miss the poorest of the poor, by anyone's reckoning. A better way of introducing "relative poverty" considerations is to start with an individual welfare measure which is a combination of both individual consumption and consumption relative to the mean, and increasing in both. (Some methods of setting the non-food component of the poverty line do this implicitly.) The poverty line should then be fixed in terms of this composite welfare indicator.

2.5 SUMMARY AND CONCLUSION

The theoretical underpinnings of this study were presented in this chapter. This was done through a literature survey which was aimed at developing a framework for the rest of the study. The chapter focussed on the following issues:

The formulation of anti-poverty policies is being hampered by a lack of baseline information regarding poverty. Policies cannot be formulated without a knowledge of who the poor are, how poor they are and where they are located. For these reasons poverty research is necessary to understand poverty and equip policy makers with usable information. The philosophy of poverty research around the world states that poverty research thus far has predominantly concentrated on measuring the extent of poverty in a belief that it is of great importance to know the exact numbers of the poor as well as how poor they are. This tradition stems from the World Bank's involvement in poverty studies in the late 1970s, with the aim of making well-supported statements about poverty around the world. A great deal of poverty research is concerned with criticising the different measures and highlighting their shortcomings. Much effort is made to overcome faults and to increase the validity and reliability of the different measures. Poverty research globally provided an important window into the economic realities of our time. However, it has been "long on measurements, but short on explanations and theories" and maybe almost silent on action.

Poverty studies in South Africa initially followed a more political approach in that poverty in South Africa was studied from a racial (white) perspective. Later poverty studies supported the anti-apartheid struggle as they endeavoured to cast light on the policies of the Apartheid government which caused poverty among blacks. When the

1994 government came to power, poverty studies in South Africa began following international trends by studying poverty at a national level.

The first thing to understand about poverty is that it is not a simple phenomenon that people can learn to define by adopting the correct approach. It is a series of contested definitions and complex arguments that overlap and at times contradict each other. It is differently seen as a big phenomenon or a small phenomenon, as a growing issue or a declining issue, and as an individual problem or a social problem. The vast majority of the existing analyses of the subject are concerned with identifying the best criterion or criteria to use in defining the concept of poverty and with the difficulties in its measurement.

In the 1960s poverty was defined by income; in the 1970s, relative deprivation and the basic needs approach became dominant; in the 1980s, non-monetary concepts were added, including powerlessness, vulnerability, livelihoods, capabilities and gender. The 1990s saw the use of well-being and 'voice' in defining poverty, while the rights based approach has dominated the first years of the new millennium. Each has its own (differing) indicators, each following among its own governments and donors, programme managers and Non-Governmental Organisations (NGOs) although few stop to make sure they are talking about the same thing. However the question remains: Is there a single right definition of poverty? The answer is certainly 'no', but current thinking does allow some simplification.

Specifying a poverty measure is not, however, a simple task. Indeed, many conceptual and methodological issues should be addressed before specifying a certain poverty measure, such as: What individual welfare indicators should be retained? Who is really poor and why? How can the set of information describing the poor population be synthesised into a synthetic poverty measure? The economic literature dealing with these questions emphasises that it is often hard, if not impossible, to find a consensus on the process yielding an appropriate poverty index. Approaches to measuring poverty can be divided into two groups, described as the welfarist and the non-welfarist approaches. The first approach tends to concentrate in practice mainly on comparisons of "economic well-being". The second approach has

also been recently and increasingly suggested by economists and non-economists alike as a multidimensional complement to the classical standard of living approach.

In poverty measurement the desirability of a poverty measure is evaluated by the properties (axioms) it satisfies. Over the years, researchers have introduced several axioms, such as the focus axiom, monotonicity axiom, transfer axiom, monotonicity-sensitive, transfer-sensitive I, transfer-sensitive II, replication invariance axiom, continuity axiom, symmetry axiom and increasing poverty line. Some of these axioms are believed to be ad hoc and some can be implied as combined by others, and hence are not independent.

In the measurement of poverty, differences in family composition are typically treated through the use of an equivalent scale, which determines the relationship between poverty lines for different types of family. Different scales may reverse the conclusions drawn about the desirability of policies to redistribute income, where these affect differently families of various types (for example, increases in child benefits financed by general income tax). Where the fortunes of different types of family have been changing differentially over time, alternative equivalence scales may lead to different findings as to whether poverty is increasing or decreasing.

Three criteria that could be used for choosing among different poverty lines were identified as: (a) Values: whatever poverty line one chooses, the choice will reflect one's values. This is the case whether or not the values are explicitly stated. In fact, the very discussion about poverty lines assumes a value decision that there is something wrong with poverty. (b) Outcomes: a second criterion for judging among poverty lines is to examine how each measure relates to desired social outcomes. (c) Custom: The Market Basket Measure, following Adam Smith, defines necessities as whatever the custom of the country renders it indecent for creditable people, even of the lowest order, to be without.

A poverty line helps focus the attention of governments and civil society on the living conditions of the poor and has a great impact on policy decisions. A well-defined poverty line is the cornerstone of poverty measurement. A classic definition of the poverty line is "the cut-off living standard level below which a person is classified as

poor". Anyone on or below the poverty line is defined as poor, and is covered by the poverty index; the rest of the population is ignored.

From all the information above one can conclude that the concept of poverty is essentially multidimensional; income is only one of many factors in the identification of the poor. If poverty is defined as 'the failure of basic capabilities to reach minimally acceptable levels', and capacity is a function of income, health, housing, and the provision of public goods, then poverty should be measured from a multidimensional perspective. Important issues in the measurement of poverty include among others multidimensional poverty measurement and partial poverty orderings which arise from the multiplicity of poverty measures, poverty lines and equivalence scales.

CHAPTER 3

ANALYSIS OF DIFFERENT METHODOLOGIES IN MEASURING POVERTY

3.1 INTRODUCTION

Any attempt to measure the adequacy of resources or the prevalence of poverty requires that a threshold be established against which the living standards of an individual, family or household can be measured. This threshold is necessary to determine whether they are in poverty (poverty rate) and/or how far below the poverty threshold they are (poverty gap). A large variety of thresholds have been established since a century ago in 1901. Seebohm Rowntree, in his pioneering study of poverty in York, fixed his primary poverty threshold as the income required to purchase mere physical necessities. This minimum budget standards approach dominated conceptions of poverty in the first half of the twentieth century. However, in the second half, a wider range of methods have been developed to establish thresholds, many in response to the advance in our conceptual understanding of poverty, not as an absolute or physical lack of basic necessities, but as a socially determined or relative lack of resources, as relative deprivation (Bradshaw, 2001:2).

Measuring poverty has proved crucial for anti-poverty policy. However, it requires research that goes beyond incidence and beyond counting the poor. It is necessary also to assess the intensity and distribution of poverty. At a global level, such assessments show where the problem is greatest, where and when it is increasing or decreasing, and perhaps what its correlates are. At national and regional levels, attributing poverty (as between incidence, intensity, and intra-poor distribution) tells a lot about appropriate steps toward curing it. Lack of such measurement in much of Africa (until recently) helps explain the weakness of anti-poverty policy there. Poverty measures and profiles allow analysts to identify groups of poor people, to assess the size of the groups and the severity of their poverty, and hence to model and track how changes in their "world" influence their poverty. This enables policymakers to see how their choices, by inducing such changes, are likely to affect poverty, and if they wish to change the choices accordingly (Lipton & Van Der Gaag, 1993).

Chapter two of this study presented the underpinning theory of this thesis. It discussed the concept of poverty, how it is defined and measured. This chapter narrows the discussion down to the essentials of this thesis, the analysis of different methodologies for measuring poverty.

3.2 WHY MEASURE POVERTY?

It takes time, energy and money to measure poverty, since it can only be done properly by gathering survey data directly from households. The World Bank (2005:10-13) describes four good reasons for measuring poverty:

3.2.1 To keep the poor on the agenda

Perhaps the strongest justification is that provided by Ravallion (1998), who argues, "A credible measure of poverty can be a powerful instrument for focusing the attention of policy makers on the living conditions of the poor". Put in another way, it is easy to ignore the poor if they are statistically invisible. The measurement of poverty is thus necessary if it is to appear on the political and economic agenda (World Bank, 2005:10).

3.2.2 To target interventions, domestically and worldwide

A second reason for measuring poverty is in order to target interventions. Clearly, one cannot help the poor without at least knowing who they are. This is the purpose of a poverty profile, which sets out the major facts on poverty (and, typically, inequality), and then examines the pattern of poverty, to see how it varies by geography (by region, urban/rural, and mountain/plain), by community characteristics (e.g. in communities with and without a school), and by household characteristics (e.g. by education of household head, by size of household). A well-presented poverty profile is invaluable, even though it typically uses rather basic techniques, such as tables and graphs (World Bank, 2005:10).

Probably the most important operational use of the poverty profile is to support efforts to target development resources towards poorer areas. A good poverty profile also makes employment targeting possible. The relationship between poverty and education is particularly important because of the key role played by education in

raising economic growth and reducing poverty. The better educated have higher incomes and thus are much less likely to be poor. Raising education attainment is clearly a high priority in order to improve living standards and reduce poverty (World Bank, 2005:11).

Targeting is also important at a world-wide level. Institutions, such as the World Bank and aid agencies, have limited resources, and would like to know how best to deploy those resources in order to combat poverty. For this, they need to know where in the world the poor are located, and this in turn requires viable information on poverty in every country. All developed countries, and about two-thirds of developing countries, have undertaken nationally representative household surveys to collect information on consumption and/or income; in many cases, these surveys have been repeated over time (World Bank, 2005:11-12).

3.2.3 To monitor and evaluate projects and policy interventions geared towards the poor

More generally, the third reason for measuring poverty is to be able to predict the effects of, and then evaluate, policies and programs designed to help the poor. Policies that look good on paper such as new opportunities for micro credit for the poor, for instance may, in practice, not work as well as expected. To judge the effects, one would ideally like to monitor the effects of a policy on the poor, and evaluate the outcomes in comparison with a control group. Rigorous analysis of this kind is needed both to improve the design of projects and programs, and to weed out ones that are not working. Information on poverty is also helpful in understanding the politics of many government policies (World Bank, 2005:12).

By collecting information on households and their economic status, one can assess who uses public services and who gains from government subsidies. If programs are cut or there is retrenchment of the public sector, poverty data helps inform us of the effects of these plans on the poor. Using information on poverty, one can simulate the impact of different policies. The identification of the gainers and losers goes a long way towards determining who will support, or oppose, a given policy (World Bank, 2005:12).

3.2.4 To evaluate the effectiveness of institutions whose goal is to help the poor

The fourth reason for measuring poverty is to help evaluate institutions. One cannot tell if a government is doing a good job of combating poverty unless there is good information on poverty. This does not only apply to governments. "Our dream is a world free of poverty", writes the World Bank, and its first mission statement is "to fight poverty with passion and professionalism for lasting results." The institution's success in pursuing this goal can only be judged if there are adequate measures of poverty (World Bank, 2005:12-13).

3.3 MEASUREMENT INDICATOR

Defining poverty is one thing. Measuring poverty involves a whole range of additional problems. For example, it must be decided how poverty, as one has defined it, is manifested in society. Is poverty a problem of low consumption or is it a problem of low income? If one believes it is the former, one would measure poverty by surveying household consumption and determining for how much consumption was deficient according to the operational definition. This approach has much to commend it. It directly examines living standards, which is really the essence of poverty research. It is the lack of adequate housing, nourishing food, and other consumption needs after all that constitutes poverty. One difficulty with this approach is that some households may lack necessities but be consuming some non-necessities. How should such cases be classified? The major problem, however, with the use of consumption levels as indicators of poverty is a very pragmatic one. Should an individual measure consumption by volume or expenditure? The latter is easier to do but using it does not tell if consumption levels are adequate. Even if one uses a volume approach, it does not tell whether the quality is appropriate. A detailed examination of consumption (quantities and qualities) would, in general, be prohibitively expensive, and therefore, this approach is not widely regarded as a practical one (Sarlo, 1996).

Overwhelmingly, income is used as a proxy indicator of the level of well-being in poverty studies. An income cut-off below which a household is judged to be poor is determined and is referred to as a poverty line. Society is then divided in two groups, those with incomes below the line (the poor) and those whose incomes take them

above the line (the non-poor). The problem is that income and standard of living may be quite different even for those with very low incomes. In-kind income, wealth, do-it-yourself activities and thrifty practices are not easily accounted for when income is used as an indicator of well-being. The consumption approach, reflecting what people actually have, is better able to account for these things and represent living standards despite its other disadvantages. Ultimately, the major advantage of the income approach is the great volume of information that is available about income and income distributions. While income is acknowledged as an imperfect indicator of well-being for individual cases, in aggregate it is a reasonably good proxy for the consumption choices available to households (Sarlo, 1996).

3.4 MEANINGFUL METHODOLOGIES FOR POVERTY MEASUREMENT

This section focuses discussion on the measurement, especially the methodologies for the measurement, of poverty. Wright (1996:3) claims that there is much debate concerning how one measures poverty. To arrive at an estimate of poverty, a series of difficult measurement choices must be made. There seems to be generally no disagreement over the fact that poverty needs to be measured. Twohey (2000:1216) also points out that everyone in social policy and politics recognises the importance of poverty measurements and that, in fact, their impact has stirred a vigorous debate within the social science community. It is therefore important to measure poverty. The World Bank (2001:3) points out that an analysis of poverty is an attempt at addressing the following questions (also see Lamale (1965:822) and Kakwani (1993:632)):

- How many are poor and what is the extent of this poverty? This question calls for the measurement of poverty and its severity.
- Who is poor? This question calls for a development of a poverty profile.
- Why are they poor? This question raises the need for investigation into the determinants and causes of poverty.
- What happens to poverty if...? This question points to policy implications and alternatives in dealing with poverty.

In the past few decades, the measurement of poverty traditionally took place by determining whether an individual or household could be classified as poor depending on whether their income was above or below a specific value, the poverty line (Naidoo *et al.*, 2005:67). According to Naidoo *et al.* (2005:67), a major limitation of the poverty line approach is that income is the only poverty indicator used, and this is unsatisfactory for several reasons. Firstly, income is not accurately collected in surveys and census. Secondly, poverty is a multifaceted and complex phenomenon that cannot be simply reduced to a monetary dimension. Thirdly, the poverty line measurement of poverty does not measure the severity of poverty. Clearly there is a need to move away from the traditional approach of measuring poverty to a multidimensional approach that would include a range of lifestyle indicators.

The headcount and the poverty gap are set apart from other poverty measures by being “meaningful”, i.e., there is particular interest in the cardinal representations of the indices themselves (Foster, 1994). Squaring, cubing, or positively transforming these indices in any other way makes them much less informative measures. Their popularity suggests that for many purposes this cardinal meaningfulness outweighs other disadvantages of the two measures (Morduch, 1998:389).

Like the poverty gap, the average exit time is meaningful through describing an interesting “if then” relationship. The poverty gap indicates if there is perfectly targeted, costless redistribution, then how much money will be required to completely eliminate poverty. These assumptions are clearly unrealistic as redistribution will never be perfectly targeted or costless, but the poverty gap nevertheless conveys useful information (Morduch, 1998:389).

Similarly, the average exit time is also based on “best case” assumptions. Even though growth is unlikely to be constant or uniform across households, the average exit time provides a simple metric of the potential for poverty alleviation through growth. By using “best case” assumptions rather than context-specific assumptions, the average exit time is simple and comparable across regions and time periods. Achieving broad-based economic growth is firmly on policy agendas, and the accumulating evidence shows that achieving growth and reducing poverty can be strongly complementary (e.g., Deininger & Squire, 1996). Developing analytical tools

to consider poverty and growth jointly is thus important. The usefulness of this particular measure depends on the relevance of the hypothetical question. While the index is built around the dimension of time, it remains a measure of static conditions. It does not measure the actual duration of poverty or average expected duration based on individual specific factors. Raising the hypothetical growth rate (g) here, trivially reduces the average exit time, so comparisons across measures with different hypothetical growth rates shed little light (Morduch, 1998:389).

The value of the index is in mapping an income distribution into a simple metric that conveys information about the nature of poverty. If an individual earns \$1000 per year, it would take him/her 22 years to reach a poverty line of \$3000 if his/her income were to grow at a real rate of 5% annually. It would take just 8 years for someone starting at \$2000 per year. These differences in exit time reflect a potentially important dimension by which to gauge what it means to have an annual income of \$1000 versus \$2000. The average exit time presents one simple way to begin incorporating these dimensions into poverty analyses (Morduch, 1998:389).

3.4.1 The lack of a unique measurement yardstick

Any integral approach to the measurement of living standards, poverty and development (or alternative bases to Gross Domestic Product (GDP)), confronts the problem of the lack of a unique measurement yardstick. This problem is avoided in national accounting, where money plays the role of a unique and universal yardstick. This is achieved by national accounting systems at the cost of measuring only those objects which the economic process measures in terms of value: commodities or bought-use values (i.e., use values acquired through the market). Can money be adopted as the sole measuring rod in the study of poverty and of the standard of living? Those who use the indirect approach and identify the poor using the poverty line give a positive answer. In many countries, this is the official method for measuring poverty and the one most frequently used. It is the method promoted by the World Bank. It is also utilised by the Economic Commission for Latin America and the Caribbean (CEPAL by its name in Spanish) (Boltvinik, 2000:5).

In practice, then, poverty is most commonly measured in money-metric terms, while social indicators are used side-by-side, unintegrated. A sort of social schizophrenia

prevails. Development is assessed by growth in GDP, the aggregate of goods and services measurable with money. Poverty, under the same logic, is measured with income, again a sum of money. In parallel, a non-structured and variable list of social indicators is handled, which are not directly or immediately incorporated in the measurement of poverty or development. Even though poverty is measured only in money-metric terms, strategies to alleviate it focus on human capital (interpreted as investing in education, nutrition and health). This generalised social schizophrenia is an expression of the disassociation of the economic and social realms, of production and consumption, of use values and exchange values, of what is measured by money and what is not (Boltvinik, 2000:5).

Although the three elements (GDP, poverty and social indicators) form part of the analytic universe of governments and international organisations, at the end of the day appraisals and decision making are based on GDP behaviour and poverty is measured in money-metric terms. Given the overwhelmingly institutionalised acceptance of the poverty line method, one might wonder about the role which could be played by social indicators, like literacy rates or drinking water availability, most of which are obviously linked with the standard of living and deprivation but expressed in terms very different from money (Boltvinik, 2000:5-6).

Some alternative approaches to the measurement of poverty, the standard of living and development, have been constructed starting from the explicit rejection of the possibility of finding a unique and universal measuring rod, and thus inevitably become multidimensional approaches. It should be noted that UNDP has adopted exactly this position as can be seen in its Human Development Reports (1990–1997). Although there are many variants of this approach, they usually start with the “natural” units of measurement of each indicator, as does the Human Development Index (HDI) (Boltvinik, 2000:6).

3.4.2 Statistical instruments used by different countries in the measurement of poverty

The methodologies used for the measurement of poverty can be very complex, and require data sets that are more frequently found in rich countries, where the problems of poverty are less severe, than in poorer ones, where they are more significant.

Depending on the objectives, the following statistical instruments have been used by different countries in these measurements (Schwartzman, 1998:4):

3.4.2.1 Surveys on eating habits

Surveys on eating habits of the population, the nutritional contents of different types of food, and their relation with health indicators are conducted. This kind of study is not usually part of the work of statistical offices, but is essential for the measurement of basic needs (Schwartzman, 1998:4).

3.4.2.2 Surveys on family and dwelling budgets

These surveys are carried on by statistical offices with some regularity, in order to ascertain the consumption baskets of different social groups, to be used in the calculation of cost of living indexes. They provide information on the resources going to the acquisition of essential goods (food, housing, shelter), and eventually on the access of the population to non-monetary services and money transfers (Schwartzman, 1998:4-5).

3.4.2.3 Household surveys

Most countries carry periodical household surveys every year or over longer intervals, covering aspects such as housing conditions, labour, employment, education, income, and other subjects. These surveys are more detailed and broader than the continuous employment and consumer price surveys, and large enough to represent major groups and regions in a country. Household surveys are the basic instrument to follow the conditions of the population in terms of living conditions, income and employment. They have, however, some limitations: they are usually not representative of small regions or population groups; they may not be frequent enough; and they should be combined with information on family budgets, expenditures and prices (Schwartzman, 1998:5).

3.4.2.4 Continuous employment and price surveys

These are usually well targeted; monthly surveys designed to follow the short-term fluctuations of employment and prices, and, when combined with information from

other surveys, can also provide information on the fluctuation of the poverty conditions of the population (Schwartzman, 1998:5).

3.4.2.5 Living standards surveys

This methodology, applied in several countries with the support of the World Bank. It consists of very extensive questionnaires applied to relatively small samples of households. The attempt is to combine, in the same survey, all main dimensions related to living conditions, especially of the poor: consumption patterns, household budgets, anthropometric indicators, income, non-monetary benefits and transfers, and so forth. This type of survey seems to be of special interest for in-depth analysis of the conditions of poverty and their correlates. Because they are usually based on a fairly large questionnaire for a small sample, it is not possible to use the results for the analysis of sub-regions within countries, or narrowly targeted groups, unless special efforts are made to focus on these groups (Schwartzman, 1998:5).

3.4.2.6 Census data

Census information is essential when there is the need to measure poverty at the local level. Two difficulties, however, are apparent. The first is the long period, typically ten years, between censuses; the second is the limited number of variables in census questionnaires. Income is usually under reported in census data, and there is no or little information on non-monetary transfers. There are many ways, however, to combine and calibrate the census information through the use of household surveys of different kinds, as a way to overcome their limitations (Schwartzman, 1998:5).

3.4.2.7 Administrative registers

When governments deliver benefits associated with poverty conditions, they can develop administrative records which inform, by definition, the number and other characteristics of the population considered poor. This information should be combined with data derived from household surveys and similar sources, so that it may be possible to gauge the actual coverage of these benefits (Schwartzman, 1998:5).

In short, there is a large array of instruments used in the measurement of poverty, and it is the responsibility of statistical offices to identify those that are more adequate to their specific purposes, and practical in terms of their financial resources and technical and administrative skills (Schwartzman, 1998:5).

3.5 MEASURES OF POVERTY

After having identified who is poor, the next step on the measure of poverty is to choose the indicator or combination of indicators that better characterises different dimensions of poverty: How many are poor? How poor are they? (Berenguela, & Pescetto, 2003:5) According to Trigger (2003:8), the level of poverty depends on the index selected for its measurement. Three main measures, all of which are members of the class of measures proposed by Foster, Greer and Thorbecke (1984) are: the head-count index (H), the poverty-gap index (PG), and the Foster- Greer-Thorbecke (P_2) measure. The headcount index is a measure of the prevalence of poverty; the poverty-gap index is a measure of the depth of poverty, while the P_2 measures the severity of poverty (Ravallion, 1992:35). However, the headcount index has been under severe attack. Thirty eight years ago, Watts (1968:326) noted that it had "little but its simplicity to recommend it". Sen (1979:295) remarked that the degree of support commanded by this measure is quite astonishing and criticised Bowley for the identification of the measurement of poverty with the use of H. Watts, Sen and a variety of subsequent authors, have therefore proposed alternatives, opening the door for the sceptic to claim that these can lead to conflicting conclusions (Atkinson, 1987:754). The H, PG, P_2 measures and other proposed alternatives are discussed in this section.

3.5.1 Headcount index

Most of the time there is only a single indicator of resources that can be relied on when measuring poverty, such as income or expenditure. In such cases, the most popular approach consists of counting the number of poor individuals that is, the number of persons who fall below a predetermined poverty line and expressing that number as a percentage of the whole population. The resulting measure of poverty is called the headcount ratio. More formally, it can be defined with the following expression (Miceli, 1998:17):

$$H(x,z) = \frac{q}{n} \dots\dots\dots(3.1)$$

Where $x \in \mathbb{R}_+^n$ is the variable indicating the level of resources for the n individuals forming the total population $z > 0$ is the poverty line and q is the number of individuals whose indicator of resources takes a value inferior to the poverty line. The headcount ratio has a very simple interpretation. Obviously it takes its values in the interval $[0,1]$, the bounds being reached in the extreme situations where there is no poverty at all and where the whole population is in poverty (Miceli, 1998:17).

Is this a good measure of poverty? For some purposes, the answer is yes. Notwithstanding the definitional difficulties related to specifying the level of resources to indicate poverty, and the determination of the appropriate poverty line, the calculation of such an index is both feasible and simple. Additionally, such a measure is well understood and easily interpreted by the general public, thus increasing its level of acceptability (Trigger, 2003:8). According to Ravallion (1992:36), for certain sorts of poverty comparisons, such as assessing overall progress in reducing poverty, the headcount index may be quite adequate (though preferably always calculated for at least two poverty lines).

Despite the simplicity and the wide use of this index, the headcount ratio has some drawbacks (Miceli, 1998:17). For some purposes, including analyses of the impacts on the poor of specific policies, the headcount index has a serious drawback. To see why, suppose that a poor person suddenly becomes much poorer. What will happen to measured poverty? The answer is nothing. The headcount index is totally insensitive to differences in the depth of poverty (Ravallion, 1992:36). Trigger (2003:8) indicates another drawback of the headcount approach, saying it gives no indication of the depth or severity of poverty and no account is taken of the income distribution of those in poverty. The headcount measure is also very sensitive to small movements in the poverty line, which may result in large numbers being either in or out of poverty. This is particularly the case if the level of the poverty line is similar to the levels of social security benefits (Trigger, 2003:8).

The headcount ratio takes into account only the number of individuals whose indicator of resources is inferior to the poverty line. This is not a desirable property. It would be better if it were able to distinguish between a situation where all the individuals are close to the poverty line and another situation where, with the same number of poor people, the indicator of resources takes lower values for all the individuals. This feature is sometimes referred to in the literature as the monotonicity axiom, (as discussed in Section 2.4.6.4.2) which is clearly violated by the headcount ratio, as pointed out by Sen (1976), for example. Another criticism of the headcount ratio made by Sen is that it does not satisfy the transfer axiom. This means that the headcount ratio is insensitive to transfers of resources from one individual to another, unless one of them crosses the poverty line as a result of the transfer. A suitable poverty index would be expected to show a decrease in poverty when a transfer occurs from a richer person to a poorer one, even if their relative ranking in the distribution remains unchanged (Miceli, 1998:17-18).

The objection of Watts (1968:325) to the headcount is that poverty is not really a discrete condition. One does not immediately acquire or shed the afflictions one associates with the notion of poverty by crossing any particular income line. Here is room for difference of opinion. There are those who agree with Watts, that there is a continuous gradation as one crosses the poverty line. There are also people who see poverty as an either or condition. A minimum income may be seen as a basic right, in which case the headcount may be quite acceptable as a measure of the number deprived of that right. The same position may be taken if the income level z is interpreted as that necessary for survival, although if the probability of survival varies continuously with income one may be back with the position of Watts (Atkinson, 1987:754-755).

3.5.2 Poverty gap and the squared poverty gap indices

A better measure is the poverty gap, based on the aggregate poverty deficit of the poor relative to the poverty line. This gives a good indication of the depth of poverty, in that it depends on the distances of the poor below the poverty line. To see how this measure is defined, let consumptions be arranged in ascending order, the poorest has y_1 , the next poorest y_2 , etc., with the least poor having y_q which is (by definition) no

greater than the poverty line z . Then the poverty gap index can be defined as follows (Ravallion, 1992:36):

$$PG = \frac{1}{n} \sum_{i=1}^q \left[\frac{z - y_i}{z} \right] = \text{mean proportionate poverty gap across the whole population (zero gap for non-poor)} \dots\dots\dots(3.2)$$

This can also be written as:

$$PG = I.H \dots\dots\dots(3.3)$$

where I is often referred to as the "income gap ratio", and is defined by:

$$I = \frac{z - y^p}{z} = \text{mean depth of poverty as a proportion of the poverty line} \dots\dots\dots(3.4)$$

where y^p denotes the mean consumption of the poor.

However the income gap ratio defined by the equation (3.4) above is not a good poverty measure. To see why, suppose that someone just below the poverty line is made sufficiently better off to escape poverty. The mean of the remaining poor will fall, and so the income gap ratio will increase. And yet one of the poor has become better off, and none are worse off; one would be loathe saying that there is not less poverty, and yet that is what the income gap ratio would suggest. This problem does not arise if the income gap ratio is multiplied by the headcount index to yield PG; under the same circumstances, that measure will register a decrease in poverty (Ravallion, 1992:37).

PG also has an interpretation as an indicator of the potential for eliminating poverty by targeting transfers to the poor. The minimum cost of eliminating poverty using targeted transfers is simply the sum of all the poverty gaps in a population; every poverty gap is filled up to the poverty line. The cost would be:

$$\sum_{i=1}^q [z - y_i] \dots\dots\dots(3.5)$$

Clearly this assumes that the policy maker has a lot of information; it would not be surprising to find that even a very "pro-poor" government would spend far more than this in the name of poverty reduction. At the other extreme, one can consider the

maximum cost of eliminating poverty, assuming that the policy maker knows nothing about who is poor and who is not. Then the policy maker would have to give z to everyone to be sure that none are poor; the cost is $z.n$. By inspecting equation (3.2) it can be seen that the ratio of the minimum cost of eliminating poverty with perfect targeting to the maximum cost with no targeting is simply PG . Thus, this poverty measure is also an indicator of the potential saving to the poverty alleviation budget from targeting (Ravallion, 1992:38). According to Trigger (2003:8), this approach is less sensitive to movements in the poverty line and can allow for better targeting of income support than the headcount index.

One drawback of the poverty gap measure is that it may not convincingly capture differences in the severity of poverty (Ravallion, 1992:38). For example, consider two distributions of consumption for four persons; the A distribution is (1,2,3,4) and the B is (2,2,2,4). For a poverty line $z = 3$ (so that $H = .75$ in both cases), A and B have the same value of $PG = .25$. However, the poorest person in A has only half the consumption of the poorest in B. The poverty gap will be unaffected by a transfer from a poor person to someone who is less poor (Ravallion, 1992:38).

The poverty gap index, however, also gives no indication of the distribution of income among the poor (Trigger, 2003:8). Sen (1976:219) sought to address the issue of income distribution among the poor. Sen noted that the measurement of poverty can be broken down into two distinct steps. These are: (a) identifying the poor among the total population, and (b) constructing an index of poverty using the available information on the poor. This aggregation step involves combining the basic information on the poor to obtain a number that reflects the overall level of poverty. Sen considered this second step to be as important as the first and proposed certain properties or axioms that a measure of poverty should satisfy. These were the monotonicity axiom and the transfer axiom. The monotonicity axiom suggests that a fall in the income of a person below the poverty line, while everything else stays the same, must increase measured poverty, while the transfer axiom holds if a transfer of income from one person in poverty to anyone who is richer will increase measured poverty. Sen formulated an index (which is discussed in the following section) to satisfy these criteria (Sen, 1976:219). Further, the average poverty gap ratios are not

sensitive to whether poverty alleviation targets the poorest of the poor and those who are only marginally poor (Osberg & Xu, 2005:9).

A measure related to the poverty gap index is what is termed the squared poverty gap index. The use of this measure is in highlighting the inequality among the poor themselves. It is the weighted poverty gap index, using the poverty gap as the weighting index. It is expressed as follows (Mokoena, 2004:30):

$$I_2 = \frac{1}{N} \sum_{i=1}^N \left[\frac{(z - y_i) \cdot b(y_i \leq z)}{z} \right]^2 \dots\dots\dots(3.6)$$

This measure is not as widely used as the two above mainly due to its difficulty of interpretation.

3.5.3 Sen index

Sen's index comprises of a combination of the proportion of the population who are poor (as given by the headcount measure), the depth of poverty (as represented by the income gap index) and the level of inequality among the poor (as reflected in the Gini coefficient). Sen's general approach is open to variation and, as such, many alternative axiomatic indexes of poverty have been proposed (Trigger, 2003:9). However, in Foster's survey of aggregate poverty measures, Foster (1984:242) concluded that no one index of poverty was clearly superior to all others and that the choice of a single poverty measure involves a certain degree of arbitrariness.

Xu and Osberg (2002:2-3) point out that the Sen indices are based on a set of well-justified and commonly agreed axioms. However, although from a policy point of view it is also desirable to understand the meaning of the Sen indices in terms of social welfare evaluation, the social evaluation function that the Sen indices jointly share has not yet been explicitly summarised in the literature. The Sen index takes the following form:

$$P_s = P_0 (1 - (1 - G^P) \frac{\mu^P}{z}) \dots\dots\dots(3.7)$$

Where P_0 represents the headcount index, μ^P is the mean income of the poor, z is the poverty line and G^P is the Gini coefficient of inequality of income among the poor. There are other indices within this class which are variations of this basic index.

To make the Sen indices more understandable to policy makers, it is also desirable to examine the relationship between the Sen indices and their contributing components. Additive decomposability is a property of the Foster, Greer and Thorbecke (1984) index of poverty. While the Sen indices do not have this property in general, they do have the property of multiplicative decomposability. Bourguignon and Fields (1997) noted that some additive poverty measures may bias anti-poverty policy to paying attention to the richest of the poor and that an appropriate poverty measure should facilitate a comprehensive evaluation of anti-poverty policy actions. Since these indices have desirable ethical properties and are multiplicatively decomposable, they and their decomposed components can be readily used to measure the multidimensional impacts of anti-poverty policy actions (Xu & Osberg, 2002:3). The Sen indices do not lend themselves readily to interpretation and are therefore primarily academic.

In the literature on income inequality, the Gini coefficient is perhaps the mostly used index of inequality, partly because it has a useful and intuitive geometric interpretation. The Sen-Shorrocks-Thon (SST) index also has a useful and intuitive geometric interpretation. But the geometric interpretation of the Sen index is less intuitive (Sen, 1976:226). The common multiplicative decomposability of the Sen indices suggests that the decompositions must have similar useful and intuitive geometric interpretations (Osberg & Xu, 2002:3).

3.5.4 Foster, Greer and Thorbecke index

Following Sen's (1976, 1981) axiomatic framework, many authors claim that reasonable aggregation schemes should minimally include both the depth of poverty and income inequality among the poor (relative deprivation), in addition to the headcount. Various indexes satisfying these criteria exist, developed in response to Sen's important work, among them the family of measures introduced by Foster, Greer, and Thorbecke (1984) [henceforth, FGT]. The FGT indexes are notable for their intuitive structure, ease of calculation, and attractive theoretical properties. They

are well known and have been used in a wide array of poverty measurements. Consequently, they are employed both for exposition and computation (DeFina, 2002:4-5).

Foster, Greer, and Thorbecke's P_2 measure is a measure of the severity of poverty which is additive, whereby the poverty gaps of the poor are weighted by those poverty gaps in assessing aggregate poverty (Ravallion, 1992:38-39). Thus:

$$P_2 = \frac{1}{n} \sum_{i=1}^q \left[\frac{z - y_i}{z} \right]^2 = \text{mean of squared proportionate poverty gaps} \dots\dots\dots(3.8)$$

In the example of A and B distributions (on page 108), the value of P_2 is 0.14 for A and 0.08 for B, indicating the greater severity of poverty in A. While this measure has clear advantages for some purposes, such as comparing policies which are aiming to reach the poorest, it is not easy to interpret. The measure can be thought of as the sum of two components: an amount due to the poverty gap, and an amount due to inequality amongst the poor. Letting CV_p^2 denote the squared coefficient of variation of consumption amongst the poor, the formulae for P_2 can also be written as the sum of two components:

$$P_2 = \frac{PG^2}{H} + \frac{(H-PG)^2}{H} \cdot CV_p^2 \dots\dots\dots(3.9)$$

Contribution of poverty gap P_2 Contribution of inequality amongst the poor to P_2

This interpretation may help, but clearly P_2 is not as easy to interpret as PG or (especially) H. That is a drawback for expository purposes. For poverty comparisons, however, the key point is that a ranking of dates, places, or policies in terms of P_2 should reflect well their ranking in terms of the severity of poverty. It is the ability of the measure to order distributions in a better way than the alternatives that makes it useful, not the precise numbers obtained. On comparing the above formulae for H, PG and P_2 a common structure is evident. This suggests a generic class of additive measures (Ravallion, 1992:39):

$$P_{\alpha}(y; z) = \frac{1}{n} \sum_{i=1}^q \left(\frac{z - y_i}{z} \right)^{\alpha} \dots\dots\dots(3.10)$$

Where n is the total number within the expenditure/income distribution y, z is the level of the poverty line, and q is the number of people in poverty.

When $\alpha = 0$ the index is the headcount index that is (Trigger, 2003:9):

$$P_0(y; z) = \frac{q}{n} \dots\dots\dots(3.11)$$

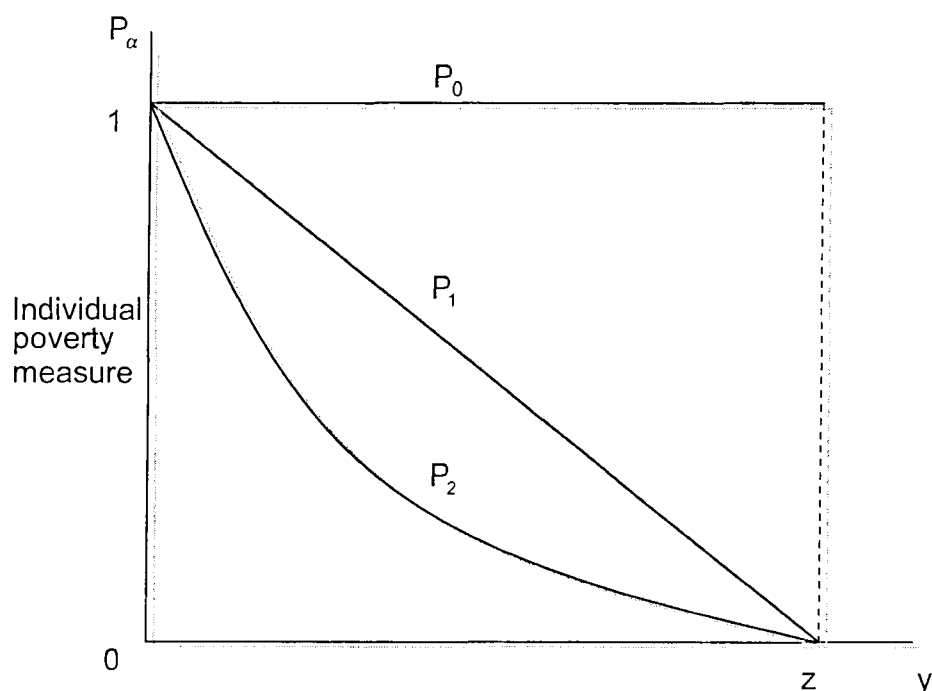
When $\alpha = 1$ the index calculates the average poverty gap expressed as a proportion of the poverty line that is (Trigger, 2003:9):

$$P_1(y; z) = \frac{1}{n} \sum_{i=1}^q \frac{z - y_i}{z} \dots\dots\dots(3.12)$$

When $\alpha > 1$, increased emphasis is given to the poorest members of the community. In this respect the parameter α can be viewed as a measure of poverty aversion. Foster *et al.* (1984) advocated an α value of 2 where the income shortfalls of the poor are weighted by the shortfall itself.

Figure 3.1 shows how the relationship between individual poverty measure and income varies across the different values of α . The figure depicts the P_{α} measure in relation to income for one individual. For P_0 , the relation with income is constant. The measure accords the same weight to the richest of the poor as it does to the poorest of the poor. Thus, the sum of each individual's P_0 is simply the headcount ratio. The second measure, P_1 , has a linear and decreasing relation with income. Since the income gap grows larger, more importance is given to the poorest and less to the richest in the poverty measure. The last measure quantifies the aversion of the society towards poverty; from the figure, P_2 is strictly convex in income. This implies that the measure attaches greater importance to the poorest and less to the wealthy in a quadratic fashion (Ravallion, 1992:35).

FIGURE 3.1 INDIVIDUAL POVERTY MEASURES



Source : Ravallion, 1992 : 35

Researchers however often face the question as to what value should be assigned to α . It is unclear how to weight each of the FGT indices in terms of their importance. This family of indices themselves do not provide any guidance on this issue. However, as Osberg (2004) has noted, in the FGT family of indices, when Luxembourg Income Study data on affluent countries are used, it appears that over the range $\alpha = 2, 3 \dots 6$ index values tend to be clustered and there is not much additional gain of information (Osberg & Xu, 2005:11-12).

It is somewhat surprising to see that the FGT indices are applied more widely in empirical poverty studies than the Sen indices, although the latter were proposed earlier and have been improved upon over time. Fields (1980:170) noted that it is sometimes impossible to calculate S because of the unavailability of data on income inequality. Although the FGT index of order $\alpha < 2$ does not satisfy many of the important axioms, the FGT indices are considered attractive by many analysts, in particular for their additive subgroup decomposability (Osberg & Xu, 2005:12).

3.5.5 Watts measure

In 1968, Harold Watts proposed a simple alternative measure that is distributionally-sensitive and decomposable as the weighted sum of poverty measures of population subgroups. The index has appealing ordinal properties, and below it is shown that a simple linear transformation of the index gives it cardinal properties that can be useful as well. This modified Watts measure is termed the "average exit time". The original Watts measure is defined as (Morduch, 1998:385; Zheng, 1997:151):

$$W = \frac{1}{N} \sum_{i=1}^q [1n(z) - 1n(y_i)], \quad \dots\dots\dots(3.13)$$

Where there are i individuals in the population indexed from 1 to N in ascending order of income and q is the number of people with income y below the poverty line z . The average exit time, T_g , is simply W/g , where $g > 0$ is a hypothetical growth rate of incomes of g the poor population. The index reflects the average number of years that it would take the population to exit poverty if it were possible to ensure that all incomes grow at rate $g > 0$ (Morduch, 1998:385).

According to Zheng (1997:151), the Watts' measure can also be given as:

$$W(x;y) = H(x;y)(1n z - 1n \xi_p) = 1n z - 1n \zeta_z \quad \dots\dots\dots(3.14)$$

Where ξ_p is the representative income of the poor and ζ_z is the representative income of the censored income distribution. However, Watts' criticism of the headcount ratio as well as the new distribution-sensitive measure Watts proposed have been largely neglected in the literature, although most people have adopted Watts' definition of poverty. None of the previous surveys have explicitly documented this measure. This neglect is due partly to the fact that the Watts measure does not have an axiomatic characterisation, which makes it (the Watts measure) difficult to be compared to other distribution-sensitive measures. Zheng (1993) provided such a characterisation for the Watts measure: the Watts measure is the only measure under a set of axioms if a poverty index is regarded as the absolute social welfare loss due to poverty (Zheng, 1997:151).

3.5.6 Sen-Shorrocks-Thon (SST) index

Given that the original version of the S index $I_{so}(y_p)$ does not satisfy several axioms (as mentioned in Section 2.4.6.4), Shorrocks (1995) proposed the modified Sen index which is identical to the limiting case of the Thon index (1979, 1983), and can be called the Sen-Shorrocks-Thon (SST) index of poverty. The SST index satisfies the strong upward transfer, continuity, and replication invariance axioms (Xu & Osberg, 2002:7).

The SST index is defined as a function of the censored income distribution y^* :

$$I_{SST}(y^*) = \frac{1}{n^2} \sum_{i=1}^n (2n - 2i + 1)x_i \dots\dots\dots(3.15)$$

The censored income vector y^* , is obtained by setting $y^* = y_i$ if $y_i < z$ and $y^* = z$ otherwise, that is $Y^* = [y_1^*, y_2^*, \dots, y_n^*]$.

Osberg and Xu (1997) found that the SST index can be viewed as a product of three commonly used poverty and inequality measures: the poverty rate, average poverty gap ratio, and the Gini index of the poverty gap ratios of the population. This simplifies the understanding and use of the SST index. Osberg and Xu (1997, 1999, & 2000) applied this multiplicative decomposition for the SST index to international and regional comparative studies. Economists at Statistics Canada have also adopted this methodology to analyse low-income intensity among Canadian children (Myles & Picot, 2000).

3.5.7 Costa's index of deprivation

Costa (2002:3) has developed a measure that should carry appeal due to the fact that it measures not only relative deprivation, but social exclusion as well. The measure is shown by (3.16).

$$\mu_B(a_i) = \frac{\sum_{j=1}^m x_{ij} w_j}{\sum_{j=1}^m w_j} \dots\dots\dots(3.16)$$

The poverty ratio of the i^{th} household μ_B , *i.e.*, the degree of membership of the i^{th} household to the fuzzy set B is defined as the weighted average of x_{ij} , where w_j is the weight attached to the j^{th} attribute. The poverty ratio μ_B measures the degree of poverty of the i^{th} household as a weighting function of the m attributes. Hence, it measures the relative deprivation, degree of social exclusion, and insufficient capability of the i^{th} household to reach a living standard of the society to which it belongs (Costa, 2002:3).

3.5.8 Atkinson class of indices

There are other additive poverty measures that are distribution sensitive. Following Atkinson (1987), one can characterise a general class of additive measures, encompassing Watts index, the FGT class of measures, and some other measures (such as the second measure proposed by Clark, Hemming & Ulph, 1981), as taking the following form:

$$P = \frac{1}{N} \sum_{i=1}^N p(z, y_i) \dots\dots\dots(3.17)$$

Where $p(z, y_i)$ is zero for the non-poor (*i.e.* where $y_i \geq z$) and some positive number for the poor, the value of which is a function of both the poverty line and the individual living standard, non-decreasing in the former and non-increasing in the latter (World Bank, 2000).

3.5.9 Equivalence scales

An equivalence scale is a measure by which the needs of a particular income unit are equated with the needs of others. Equivalence scales therefore represent measures of the relative incomes needed by different types of families to attain a similar standard of living (Whiteford, 1985:1) and are usually expressed as a set of numbers. Many techniques for constructing equivalence scales have been proposed. In a review of equivalence scales used in the 10 Luxembourg Income Study countries, Buhmann *et*

al. (1988:139) concluded that no clear-cut winner or theoretically most satisfying equivalence scale has yet emerged. Whiteford (1985), in surveying a large number of these scales, also emphasised the diversity of estimates of equivalence. Whiteford (1985:130) then concluded that there were no set of equivalence scales in use (in Australia), these can be said to combine theoretical, empirical and consensual validity. While individual approaches may have been preferable in some aspects, no one technique or equivalence scale was entirely satisfactory or superior to all others.

In addition, Buhmann *et al.* (1988), Coulter, Cowell and Jenkins (1992), and Atkinson (1992), noted that the choice of an equivalence scale may affect both the extent of poverty and the composition of the poor. It is, therefore, appropriate to use a range of equivalence scales to attempt to minimise the impact on estimated levels of poverty or at least to highlight the potential for alternative interpretations based on the use of alternative scales (Trigger, 2003:2). The economies of scale have been incorporated into the equivalence scale by raising the number of equivalent adults to the power *e*. The value of *e* ranges from 0 to 1. As *e* increases the economies of scale assumed by the equivalence scale decrease, so that when *e* equals 1 there are no economies of scale and the equivalence scale is purely per person. This family of equivalence scales can be represented mathematically as (Trigger, 2003:3):

$$M_{e,y} = S_y^e \dots\dots\dots(3.18)$$

Where *M_{e,y}* is the equivalence scale value given the values of *y* and *e*, and *S_y* is the number of adults in the household plus the number of children multiplied by *y*.

Jenkins and Cowell (1994:891) defined such a parametric equivalence scale as a set of scales sharing a common functional form, and for which parametric variations change the scale rate relativities for households of different types and noted further that the rationale for employing parametric equivalence scales is very straight forward: they allow us to compare, using a common framework, the vast range of real world equivalence scales, each of which may be defined in a different way (Jenkins & Cowell, 1994: 891-2). Once calculated, the equivalence scales are used to adjust the raw data to derive equivalent expenditure/income (Trigger, 2003:3). Therefore, equivalent expenditure/income (*W*) can be equated with unadjusted expenditure/income (*D*) in the following way (Trigger, 2003:3-4):

$$W = \frac{D}{S_y^e} \dots\dots\dots(3.19)$$

For each different combination of y and e (that is, unique equivalence scale), W is calculated for each household within the expenditure/income distribution (Trigger, 2003:4).

3.5.10 Basic needs approach

These basic needs can be translated into financial requirement as poverty line. The basic needs approach is a measurement on consumption-related aspect of poverty base on a poverty line expressed in terms of per capita consumption expenditure and also the minimum consumption of non-food supplies, such as clothing and housing (Sharma, 2004). According to Ravallion and Bidani (1994) basic needs refers to “a social determined normative minimum for avoiding poverty” and “the nutritional requirement for good health” (Ravallion cited in Deaton, 2001). Minimum consumption was estimated base on calorie requirement of 2100 kilo calories per capita per day (Maksum, 2004).

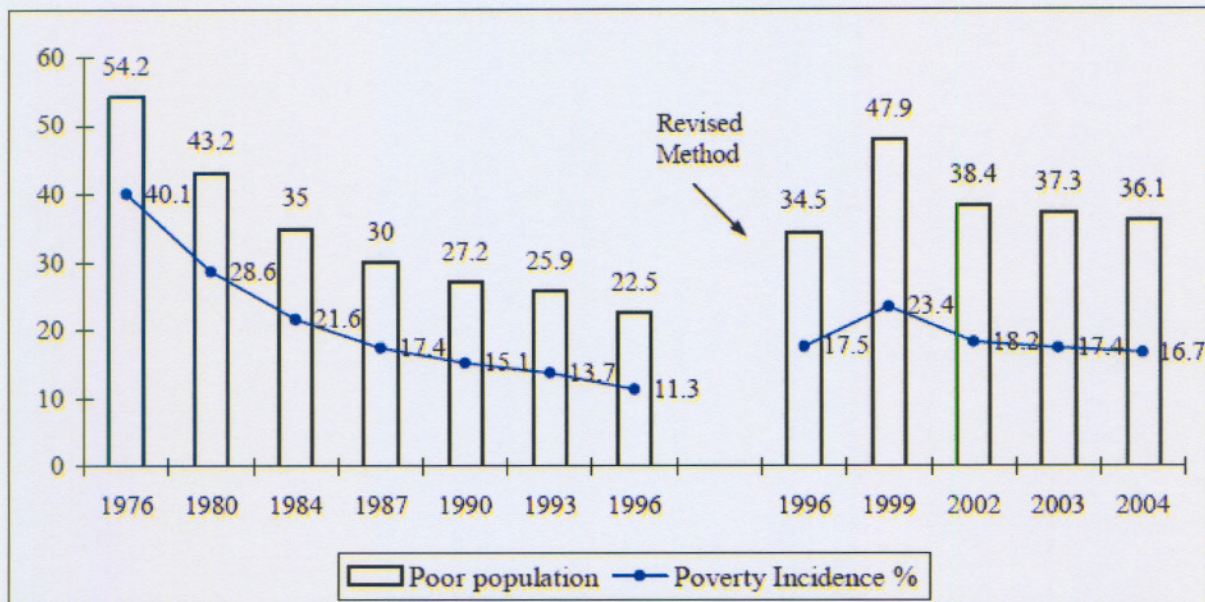
Relating to the measure of poverty, the World Bank measures the poverty with the current US\$1/day (Purchasing power parity (PPP)) poverty count in the international stage and then uses the household survey for the domestic stage. However the differences in the measurement of poverty (by using survey) and growth (by using national accounts) have failed to explain the correlation between growth and poverty reduction (Deaton, 2001). According to Ravallion and Chen (1997 cited in Deaton, 2001) the result of measuring poverty has some significant changes by using the same data with different methods in PPP. It happens because the change of the methods in measuring poverty affected the result even using the same data. The method of PPP fails to explain the differences between the countries to count the household expenditure in food, because every country has different kinds of food as their main diet. The weakness of survey methods is the scope of the survey that usually does not cover all the poor people accurately (Deaton, 2001).

3.5.11 Income inequality

Gini index is the method to measure inequality, but not exactly to measure the level of poverty. The standard measure of inequality is the Gini coefficient, which varies from 0 (absolute equality) to 1 (high degree of inequality). A small value of the Gini index shows the smooth level of the gap from income distribution. High inequality shows the problem in income distribution that indicated the poverty in a country or region (UNDP 2004).

According to the data from Statistic Indonesia in UNDP (2004), Indonesia's standard Gini coefficient has remained steady over recent decades (1970 – 2004) in the range between 0.30 and 0.38. The economic crises in 1998 had no significant impact on the change of Gini coefficient in Indonesia. The Gini Coefficient during the crises 1998 was 0.32, which is close to the historical average since 1980s (Asra, 2002). The trend of poverty in Indonesia shows the similar changes with the trend of Gini coefficient in the similar periods as can be seen from Figure 3.2 below. As the consequence of the crisis, poverty also increased significantly in Indonesia. The main source for assessing poverty in Indonesia is the National Socio-Economic Surveys (Survei Sosial Ekonomi Nasional or SUSENAS), which include detailed information on household consumption expenditures. Susenas data shows the increasing number of poor people from 22.5 million in 1996 to 47.9 million in 1999 and then, in 2004, decreased to 36.1 million. There were two different result of poverty in 1996 because the official measurement of poverty had changed the method. The government added more indicators to measure poverty, for example, the change in the definition of basic education and the shift in consumption patterns. As a consequence, the poverty number increased by using the new method from 22.5 million to 34.5 million in 1996 (Maksum, 2004).

FIGURE 3.2 TRENDS OF POVERTY INCIDENCE AND POOR POPULATION IN INDONESIA, 1976 – 2004



Source: Maksum, 2004

The other measures used to reflect income inequality is the World Bank's criterion. The World Bank classifies the overall population into three population groups according to their income: 40% of the population with low income, 40% of the population with middle income, and 20% of the population with high income. The inequality in income distribution is measured by calculating the percentage share of income earned by the lowest 40%. The income inequality is categorised high if the lowest 40% of the population earn less than 12% of the total income, inequality is moderate if they earn between 12%-17% and inequality is low if they earn more than 17% of the total income (Maksum, 2004).

3.5.12 Human development index (HDI)

The HDI measures the overall achievements in a country in three basic dimensions of human development which are longevity, knowledge and a decent standard of living. It is measured by the indicators of life expectancy, education achievement and adjusted income. HDI measures the level of a country's achievement in the context of human development. The UNDP calculates the HDI every year in its Human Development Report. This measure does not only measure poverty from an economic point of view

but also the social condition in a single measurement. However, the HDI also has weaknesses, i.e., it does not exactly measure the number of poor people. Furthermore, the indicator of social condition is not perfectly correlated with income (in the short-run). For example, the change in life expectancy and the illiteracy rate is slower than the change in income annually (UNDP, 2004).

3.5.13 Human poverty index (HPI)

The HPI measures poverty in developing countries by using some indicators as the variable. The global HPI is a combination of four measures: the probability of not living to age 40; the adult illiteracy rate; the proportion of people without access to safe water, and the percentage of children who are malnourished (UNDP, 2004). UNDP has also made efforts therefore to broaden the human poverty index (HPI). In the case of Indonesia, the HPI includes the proportion without ready access to health facilities. Generally, the changes in the components of the HPI reflect the improvements in all of the HPI indicators related to the problems that are faced by poor people. However, the value of HPI does not really mean to indicate the population in poverty. There should be a convention of the definition of HPI components, for example, the illiteracy rate, is it illiteracy of roman letters only or of other types of letters. The measurement of poverty by using the HPI should, therefore, use a fixed standard in order to find accurate data (UNDP, 2004).

3.5.14 Measuring poverty using Fuzzy sets

In the work on fuzzy sets, Zadeh (1965:338) mentions that some 'classes of objects encountered do not have precisely defined criteria of membership'. They do not constitute classes or sets in the usual way in mathematics. The concept of fuzzy sets provides an ideal framework to deal with problems in which these classes or sets does not exist, a definite criterion for discerning what elements belong or do not belong to a given set. This is thus a very attractive notion for solving the problem of identifying the poor. With this kind of approach, it is not necessary to specify a poverty line (Miceli, 1998:4-5).

3.5.14.1 Definition of a fuzzy set

Let X be a set and x some element of X . A fuzzy subset A of X is defined as the set of couples (Miceli, 1998:5):

$$A = \{X, \mu_A(X)\} \dots\dots\dots(3.20)$$

For all $x \in X$ and where μ_A , called a membership function, is an application from X in $[0,1]$. In other words, the fuzzy subset A of X is characterised by a membership function, $\mu_A(X)$ associating a real number in the interval $[0,1]$ to each point of X . The value $\mu_A(x)$ represents the degree of belonging of x to A . If A is an ordinary set, its membership function can then take only the values 0 and 1. In that case (Miceli, 1998:5):

$$\mu_A(X) = \begin{cases} 1, & \text{if } X \in A \\ 0, & \text{if } X \notin A \end{cases} \dots\dots\dots(3.21)$$

Similarly, when A is a fuzzy set, $\mu_A(x)=1$ if x belongs entirely too A , whereas $\mu_A(x)=0$ if x is not a member of A . On the other hand, if x belongs only partly to A , then $0 < \mu_A < 1$. The degree of membership of x too A rises as the values of $\mu_A(X)$ get closer to 1. Due to the fact that the concept of poverty is not as sharp as it is sometimes assumed to be, the same procedure can be used to define the fuzzy set of the poor. Let $N = \{1, \dots, n\}$ be the set of individuals or households in a population and P be the fuzzy subset of the poor, defined as follows (Miceli, 1998:5):

$$P = \{i, \mu_p(i)\} \dots\dots\dots(3.22)$$

With $i = 1, \dots, n$ and where μ_p represents the degree of membership of each individual i to the fuzzy subset of the poor. The membership function can take one of the following values (Miceli, 1998:6):

$$\begin{cases} \mu_p(i) = 0 \\ \mu_p(i) = 1 \\ 0 < \mu_p(i) < 1 \end{cases} \dots\dots\dots(3.23)$$

Depending on whether an individual is absolutely not poor, belongs completely to the set of poor or is only poor to a certain extent.

3.5.14.2 Fuzzy index of poverty

Ceroli and Zani (1990 quoted in Miceli, 1998:12) define the degree of belonging of each individual to the fuzzy subset of the poor by taking the weighted arithmetic mean of their degrees of membership to the set of deprived people, according to the k indicators. So:

$$\mu_p(i) = \sum_{j=1}^k \omega_j \mu_{z_j}(i) \dots\dots\dots(3.24)$$

Equation 3.24 above describes how to evaluate the degree of poverty of each individual or household; the next step is to define a summary measure for the whole population. Ceroli and Zani (1990 quoted in Miceli, 1998:15-16) construct a general index of poverty by averaging the individual membership functions:

$$FIP = \frac{1}{n} \sum_{i=1}^k \mu_p(i) \dots\dots\dots(3.25)$$

With $FIP \in [0,1]$. According to them, FIP ‘represents the proportion of individuals “belonging”, in a fuzzy sense, to the poor subset’, (Ceroli & Zani, 1990:282). Of course, $FIP=0$ if and only if $\mu_p(i)=0$ for each individual, that is, if there is no poverty whatever indicator of privation is considered. The fuzzy index of poverty reaches its maximum value if and only if $\sum \mu_p(i)=1$ for each individual, which means conditions of extreme hardship for the whole population on all the indicators of deprivation. Nevertheless, both of these situations are rather unusual and in general $0 < FIP < 1$, index FIP being a monotonic increasing function of the degree of poverty of each individual. Therefore, a deterioration of an individual’s living conditions, other things remaining unchanged, results in an increase in FIP (Miceli, 1998:16).

Finally, as Ceroli and Zani (1990:282) point out, ‘FIP provides a generalisation of traditional indices for the measurement of poverty’. Those indices include the Foster-Greer-Thorbecke class of poverty indices or Dalton-type poverty indices as special cases. In addition, the fuzzy index of poverty, FIP, belongs to the class of additively

decomposable indices of poverty. This implies that, if the population is broken down into several subgroups, overall poverty should diminish as a result of a decrease in poverty in one of the subgroups, the situation remaining unchanged in the other subgroups. For this interesting property to apply, the various indicators of deprivation should receive the same weights across the whole population. Of course, separate weights could be calculated within each subgroup. This would indicate that the relative importance of each indicator is not the same in different subgroups. While some arguments could be found for assigning different weights to each subgroup, this latter solution tends to complicate comparisons between the subgroups and is not in accordance with the totally relative definition of poverty (Miceli, 1998:16-17).

3.5.15 Stochastic dominance

When poverty is measured by resorting to a unique indicator of resources, such as income or expenditure, generally two major problems have to be solved. The first problem is the identification of the poor, which consists of selecting a suitable poverty line dividing the population into poor and non-poor. The second problem relates to the aggregation of poverty, supposed to provide information about the percentage of the poor, the intensity of poverty and the inequality in the distribution of the indicator of resources among the poor. Obviously, it is extremely difficult to determine a poverty line and to choose a poverty index that is widely accepted. Moreover, when poverty is compared at two points in time, between countries or between subgroups of a population, different rankings of the elements of the comparison could be obtained, depending on where the poverty line is set and which index of poverty is used (Miceli, 1998:18). These reflections have led some authors to investigate alternative ways of measuring poverty and to propose ordinal approaches. Atkinson (1987) insists that it is almost impossible to determine a unique poverty line because setting such a limit is always subject to controversy. However, suppose that the poverty line lies in a certain interval, given by $[Z_{\min}, Z_{\max}]$, Atkinson's approach consists then of examining whether the same ranking of poverty is obtained, whatever the value taken by the poverty line in the predefined range (Miceli, 1998:18-19).

In the case of the headcount ratio, the technique proposed by Atkinson reduces to comparisons of cumulative distributions. Let x and y be two distributions for a given

indicator of resources, with $F_x(t)$ and $F_y(t)$ their respective probability density functions, the cumulative density functions being given by $F_x(t)$ and $F_y(t)$. To compare these two distributions, their lower tails are contrasted by calculating the difference $\Delta F(t) = F_x(t) - F_y(t)$. This amounts to comparing the percentage of the poor in the distributions. Atkinson states a first order stochastic dominance condition, saying that if $\Delta F(Z) \leq 0$, whatever the value taken by the poverty line in the interval $[Z_{\min}, Z_{\max}]$, then it can be concluded that distribution y shows more poverty than distribution x, according to the headcount ratio. This means that the cumulative distribution function for y is always above that for x. The cumulative distribution can be represented graphically by displaying the cumulative percentage of population on the vertical axis and the indicator of resources on the horizontal axis. The resulting graph is referred to as the incidence curve in the literature. A dominance relationship between two distributions cannot take place if the incidence curves intersect on the predetermined interval (Miceli, 1998:19).

Obviously the headcount ratio is not the only possible index of poverty that can be used for applying this method. In particular, the normalised income gap ratio can be used as a measure of poverty, multiplied by the poverty line. The terms of the comparison are then the areas below the cumulative distribution functions. The following difference $\Delta\Phi(z) = \int_0^z \Delta F(t) dt$ is now defined. Atkinson gives a second order stochastic dominance condition, stating that if $\Delta\Phi(z) \leq 0$, whatever the value of the poverty line in the predetermined range, then it can be concluded that poverty is higher in distribution y than in distribution x. It can be proven that the first order stochastic dominance implies the second order stochastic dominance, but the converse is not true. Consequently, when the incidence curves for two distributions intersect, first order stochastic dominance is excluded, but not necessarily second order stochastic dominance. Again, the second order stochastic dominance can be represented graphically by displaying the areas below the incidence curve against the indicator of resources. The resulting graph is called the poverty deficit curve (Miceli, 1998:19-20).

The preceding paragraphs have shown how to eliminate, at least in part, the ambiguity concerning the ranking of distributions when there is an uncertainty about the level of

the poverty line. Another question is whether the ranking of the distributions remains unchanged whichever index of poverty is chosen. Of course this does not always occur. Nevertheless, some authors, such as Atkinson (1987), Foster and Shorrocks (1988) and Jenkins and Lambert (1997), investigate stochastic dominance conditions that are valid for a wide range of indices. When poverty is measured by resorting to a unique indicator of resources, such as income or expenditure, stochastic dominance is considered to be more efficient and powerful than single indices (Miceli, 1998:20). In fact, when a dominance relationship can be proven between two distributions, then their ranking is valid for a wide range of poverty lines and of poverty indices (see, for example, Atkinson 1987 or Foster & Shorrocks, 1988).

3.6 DIFFERENT METHODOLOGIES FOR THE MEASUREMENT OF POVERTY BY DIFFERENT COUNTRIES

An evaluation of currently used poverty measurement methodologies indicates that the dominant and the most frequently employed approach to measuring poverty is by defining a poverty line based on monetary or other material indicators. In the majority of countries, poverty lines are calculated on the basis of value of income or expenditure per capita or per household. Such poverty lines are often based on absolute criteria, such as the estimated minimum subsistence level. Other possibilities are also examined. They include setting a relative poverty line, subjective poverty line or a structural poverty line calculated on the basis of share of expenditure per person or household assigned to food. The most frequent sources of data are the results of standard research into households' budgets, usually carried out as national surveys by statistical offices of the central government or by special research projects supported by international donors (Baker, 2000; Boltvinik, 2000).

In many countries policy-makers are particularly sensitive about methodological choices involved in setting poverty lines, since these lines are crucial in determining the level of financial and social support for the population in question. Therefore, to a large extent, all poverty lines are arbitrary, and countries are struggling with the need to come up with a set of measures that not only accurately reflect the incidence of poverty in their societies, but also are politically acceptable as a basis for policy decisions. As a result, poverty researchers in many countries consider various

alternative approaches before recommending to the government the one or two that seem to be best suited for their country (UN, 2000). There are cases when a particular country may adopt more than one method for determining the poverty line. Obviously, the poverty prevalence measured by these alternative methods differs and depending on the government's political agenda, a more acceptable set of data is used (Shakarishvili, 2002:6).

This section analyses the measurement of poverty in different countries.

3.6.1 Methodology for measuring poverty in the United States

The United States is one of the few developed countries with an official measure of poverty. The concept of poverty (absolute poverty) was originally developed in the early 1960s, as an indicator of the number and proportion of people with inadequate family incomes (resources) for needed consumption of food and other goods and services. The poverty thresholds were defined as the cost of a minimum diet (food) times three to allow for expenditures on all other goods and services. A set of thresholds (in dollars) is estimated and updated annually using the CPI. Poverty thresholds differ by the number of adults and children in a family, and for one-person or two-person families, by whether the family head is over or under 65 years of age. A family's poverty status is established by comparing its poverty threshold to its resources: annual before-tax money income, which is obtained for the preceding calendar year from the March income supplement to the Current Population Survey (CPS). If a family's total income is less than that family's threshold, then that family, and every individual in it, is considered poor. The poverty thresholds do not vary geographically, but they are updated annually for inflation using the CPI. The official poverty definition counts money income before taxes and does not include capital gains and non-cash benefits (such as public housing, medicaid, and food stamps). Poverty is not defined for people in military barracks, institutional group quarters, or for unrelated individuals under the age of 15 (such as foster children). They are excluded from the poverty universe that is, they are considered neither as "poor" nor as "non-poor" (Dalaker, 1998:v). This methodology, officially adopted in 1965, has not been changed in essence since then, despite increasing concerns about some identified limitations (Berenguela & Pescetto, 2003:6):

- By defining families' resources as gross before-tax money income, the current measure does not reflect the effect in the extent of poverty over time of government policies that alter the families' disposable income (i.e. food stamp benefits, Social Security payroll taxes increase, Earned Income Tax Credit, etc.).
- It does not distinguish between the needs of families in which the parents do or do not work (i.e. child care costs).
- It does not take account the differences in health status and health insurance coverage that affect different population groups facing different medical costs.
- It does not take account of the significant price variations across geographic areas.
- The family size adjustments in the poverty thresholds do not represent the changing demographic and family characteristics over time.

3.6.2 Methodology for measuring poverty in Canada

Canada, like most industrialised countries excepting the United States, has no official government mandated poverty line. However, Statistics Canada has produced information on poverty; since the 1960s, using low income cut-offs (LICO) concept. In practice the LICO estimates are used as semi-official poverty lines. The LICOs are thresholds of income with reference to the average of what a family spends in a year on food, shelter and clothing as a proportion of their annual income. A family unit with income below the cut-off for its family size and urbanisation classification is considered a "low income" family. A family's low income status depends solely on its income, not on its spending (Berenguela & Pescetto, 2003:10).

Expenditure survey data is used in order to find the average spending on the three basics. Once this percentage is defined, twenty percentage points are added to this number on the rationale that a family spending over that total percentage of its income on these essentials would be in profound disadvantage in relation to the average. The resulting threshold is then converted to a set of low income cut-offs that varies by family size and community size. This set is composed of 35 cut-offs produced for seven family sizes and five sizes of area of residence ranging from rural areas to cities

of 500,000 or more. Criticisms were raised about the concepts and methodologies underlying the construction of LICOs as well as its appropriateness for evaluating the effectiveness of poverty-reduction policies and programs. Some of these issues are (Berenguela & Pescetto, 2003:11):

- LICOs are actually a “relative” measure of poverty. It rises with increases in average spending, therefore, it identifies those who are substantially worse-off than the average, but it does not mean that they are poor. Thus, LICOs could be thought of as an inequality measure instead of a poverty measure.
- Its resulting value is considered as too high to be an “impoverishment” threshold.
- It fails to consider regional differential costs, such as housing costs, even though rent is a major proportion of people’s living costs.
- LICOs are not sensitive to age differences in income.

3.7 METHODOLOGIES OF MEASURING POVERTY IN SOUTH AFRICA

South Africa is an upper middle-income country with social indicators suggesting living standards closer to those of lower-middle income or even low-income countries. This difference between its economic status and social development can largely be ascribed to high levels of material inequality that have left inordinately large numbers of people outside the economic mainstream. This implies that the society is highly inefficient in converting economic resources into social welfare. As is well known, the cause of this lies mainly in the long history of segregation and discrimination that has left a legacy of inequality and poverty and also, in more recent decades, low economic growth (Van der Berg & Borat, 1999:1).

One consequence of apartheid has been a lack of comprehensive social indicator data that could assist in policy formulation. For example, between 1976 and 1994 official data excluded the supposedly ‘independent’ Transkei, Bophuthatswana, Venda and Ciskei (TBVC) territories, thus excluding many poor South Africans. The Poverty and Inequality Report (PIR) accordingly made use of the 1993 Project for Statistics on Living Standards and Development (PSLSD), which provided a baseline survey, the 1995 OHS, and the 1995 Income and Expenditure Survey (IES), supplemented

qualitatively by the South African Participatory Poverty Assessment (SAPPA) (Van der Berg & Bhorat, 1999:1).

This section provides a broad description of the instruments that are being used to measure poverty in South Africa, more specifically instruments used by Stats SA and Slabbert.

3.7.1 Definition of a poverty line

Slabbert (1997:43) urges that a poverty line shows the income level needed to provide a minimum subsistence level. The use of poverty lines to measure poverty is an old practice. Some of these lines are antiquated and irrelevant in modern societies. Generally, they demarcate a group of households whose income or consumption is too low in comparison to that of the general population (Mokoena, 2001:21).

Mokoena (2001:21) ascertains that poverty lines are income and price elastic, which means they are adjusted to changes in the median or mean income or consumption of the general population as well in the general price level. The reason for this is that, as technology progresses and new products are introduced, these new products may initially be bought by the upper income households, but will generally diffuse to lower income households. This causes the income elasticity of these goods. The goods may initially be seen as conveniences, but end up as the necessities. For example, cell phones are slowly becoming necessities in modern society. The price elasticity occurs as a result of inflation. Thus, poverty lines are normally adjusted upwards with the passage of time due to technology and inflation.

Until 1973, the term Poverty Datum Line (PDL) was generally used to describe a theoretical minimum cost of living in South Africa. It was based on a calculation of the lowest possible cost of maintaining a person (household) in good health and decency by Western standards, but in the short-run only (Potgieter, 1980:11). Since 1973, in addition to the PDL, several other poverty lines were developed by different institutions. They are the Minimum Living Level (MLL) and the Minimum Humane Standard of Living (MHSL) by the Bureau of Market Research (Nel *et al.*, 1973), the Household Subsistence Level (HSL) and the Household Effective Level (HEL) by Potgieter of the University of Port Elizabeth (Potgieter, 1980).

The PDL is used widely by sociologists, as well as by labour unions and employers in the determination of minimum wage levels. Lowest-cost, calorie-adequate and nutritionally-balanced food as well as such necessities as shelter, transport, clothing, fuel and lighting, and cleaning materials are commonly used in such measures. The PDL is used mainly to measure absolute poverty, based on the ability of a person to afford basic needs with available income. The PDL was first introduced to South Africa during the Second World War to measure the extent of poverty in the growing townships and slums of the Western Cape (Wilson & Ramphele, 1991:16). The PDL in South Africa today encompasses different measurements, depending on different researchers and circumstances.

The MLL and the MHSL are used by the Bureau of Market Research (Nel *et al.*, 1973). The MLL is the minimum level at which "a non-white family would be able to maintain the health of its members and conform to Western standards of decency". It includes the cost of items such as tax, medical expenses, education and household equipment in addition to the items included in the PDL (Wilson & Ramphele, 1991:17). The MHS is a modest low-level standard of living index.

The HSL and the HEL were developed by Potgieter (1980). Potgieter (1980:4) defines the HSL as an estimate of the theoretical income needed by an individual household to maintain a defined minimum level of health and decency in the short-term. The HSL is calculated at the lowest retail cost of a basket of necessities of adequate quality. This comprises the total food, clothing, fuel, lighting, and washing and cleaning materials required for each person, together with fuel, lighting and cleaning materials needed by the household as a whole, and the cost of rent and transport. A comparable calculation can thus be made for any household of any given size and composition.

The two most widely used poverty lines in South Africa today are the HSL and the MLL. The first reason for selecting the HSL as a poverty line for this study is because it is the only measure available for all the major centres in South Africa. Unlike the HSL, the MLL does not specify separate poverty lines for the urban and rural populations (May *et al.*, 1995:7). The second reason is that the HSL has been the

most frequently used measure in recent years (Whiteford *et al.*, 1995:2; World Bank, 1995:7; May *et al.*, 1995). This allows for meaningful comparisons.

The third reason is that the method of calculating the HSL as employed by Potgieter (1994:63), and the publication of the details, makes it possible to calculate a unique HSL for individual households. Potgieter gives a breakdown of the subsistence cost for the different age groups of the different genders, as well as certain costs for a household as a whole. By calculating the HSL for an individual household, and comparing this figure with the combined income of the different members of the same household, the degree of poverty can be measured at a micro-level or a household level.

Max-Neef, Elizalde and Hopenhayn (1989:41) emphasise that the components of the HSL are limited to the short-term satisfaction of basic needs and make no provision for such essential requirements for decent living as medical expenses, education, savings, hire purchases and replacements of household equipment, and incidental transport. This implies that there are other poverties as well, not only the "material poverty of subsistence". The Max-Neef approach will be very helpful in identifying and categorising the "other poverties". Slabbert (1997:46) urges that, although the HSL indicates the cost of a theoretical budget of necessities, it does not suggest an adequate income. In practice, one third of a total income equivalent to an HSL budget will be diverted from specified items to the other immediate essentials. In the case of the HSL, the income is not effective in enabling the household to maintain the standards of long-term health and decency. Slabbert (1997:46) therefore defines the HEL which is 150% of the HSL.

3.7.2 Stats SA's measure of poverty

Unlike most sample surveys, census data does not suffer from small sample problems. However, they typically contain little direct information on household resources. The lack of income or expenditure information in such data sets has often prompted policy makers to explore alternative welfare indicators to derive the required geographic dimension of poverty and inequality. Many countries have developed sometimes crude, sometimes more sophisticated basic needs indicators for this

purpose, but these indicators do not always conform well to consumption or income welfare indicators (Grosh & Glinskaya, 1997; Hentschel *et al.*, 2000).

In South Africa, as well as in other countries, like Australia, income classifications are obtained in the census by using broad ranges. The classification of individual or household income into such ranges seldom conveys to the respondent a clear definition of income. Thus, even abstracting from the nearly universal tendency of households to conceal income from interviewers, a respondent may fail to consider key components of income for typically poor households, such as agricultural profits (either from sale or own consumption) or informal sector profits and casual wages. Again, this measure of income may not be a fair indicator of income and consumption (Alderman *et al.*, 2000:5).

This motivates the interest in seeking ways to combine the detailed information obtained in household surveys with the more extensive coverage of a census to derive detailed geographic poverty estimates based on a consumption welfare indicator. This has been explored by Hentschel *et al.* (2000) and Elbers *et al.* (2000), who both model consumption behaviour from a household survey in Ecuador, using a set of explanatory variables that are restricted to those also available in the Ecuadorian census. Applying the resulting parameter estimates to the census, both papers show how the probability that a given household in the census is in poverty can be derived. These authors also show how detailed geographical poverty rates can be calculated. Elbers *et al.* (200) also provides a comprehensive description of the methodology they used in their study.

Information on aspects of living standards at a disaggregated level has a particular function in South Africa since the constitution requires parliament to pass legislation providing for the equitable division of nationally raised revenue among provincial and local spheres of governments. In terms of the Division of Revenue Act (Act 28 of 1998) passed in March 1998, provision is made for the distribution of a grant to municipalities (which was R843 in 2000) based on levels of poverty. This equitable shares grant is an unconditional grant to the municipality and is not a transfer to households intended to bring their incomes up to a target level. Nevertheless, the grant is based, in part, on the number of households within the jurisdiction which have

an income of less than R800 per month. However, there is no direct means of assessing the number of individuals in this category. This key allocation must be performed using incomplete or indirect information. As a general rule, central governments may not have the capacity to obtain this type of information directly and local governments may not have the incentive to transmit it (Alderman, 1999).

Alderman *et al.* (2000) built the study (combining census and survey data to construct a poverty map of South Africa) on the approach described above in order to utilise information from the 1995 South Africa October household survey (OHS) and the related income and expenditure survey (IES) in conjunction with the 1996 population census. Alderman *et al.* (2000) presented evidence that income and poverty rates reported in the census differ systematically from those obtained in the household survey. Alderman *et al.* (2000) further provided an alternative imputed expenditure estimate that is both consistent with the survey estimates, and available for virtually all households which appear in the census. Thus, the methodology illustrates a means to obtain expected poverty estimates at any sub-national level of administration for which the information is desired. The next section provides more details on the methodology and its links to the literature (Alderman *et al.*, 2000:6).

3.7.2.1 Methodology

The basic methodology applied in linking surveys and census-type data sets is very similar to that of synthetic estimation used in small-area geography. Prediction models are derived for consumption or income as the endogenous variable, on the basis of the survey. The selection of exogenous variables is restricted to those variables that can also be found in the census (or some other large data set). The parameter estimates are then applied to the census data and expected poverty and inequality statistics are derived. Simple performance tests can be conducted which compare basic poverty or inequality statistics across the two data sets. For Ecuador, Hentschel *et al.* (2000) show that regional poverty estimates, calculated on the basis of imputed household consumption in the census, are very similar to those derived from consumption measured directly in the household survey (Alderman *et al.*, 2000:7).

The calculation of expected poverty and inequality statistics using predicted income or consumption has to take into account that each individual household income or

consumption value has been predicted and has standard errors associated with it. Elbers *et al.* (2000) show that the approach yields estimates of the incidence of poverty and of inequality that are unbiased, and that the standard errors are small. Furthermore, the Ecuador case study demonstrates that these estimates are quite precise to permit meaningful comparisons across regions and that the confidence intervals do not widen further with higher levels of spatial disaggregation provided that the population of the unit of disaggregation remains sufficiently large (Alderman *et al.*, 2000:7).

The combination of information from different data sets has sparked interest in the literature, e.g. Arellano and Meghir (1992), Angrist and Krueger (1992) and Lusardi (1996). Typically, however, these studies combine several household surveys rather than surveys with census data, and so far they have not been used to study spatial dimensions of poverty. While within-sample imputation of missing observations is a quite common procedure, e.g. Paulin and Ferraro (1994), out-of-sample imputation, which combines different data sets, is less frequent. One study that does combine an expenditure survey with census information to estimate local income distributions is Bramley and Smart (1996). However, this study differs from the approach used by Alderman *et al.*, (2000) in that Bramley and Smart did not have access to unit level data from both data sources and hence derived local income distributions not from predicted household incomes, but from estimates of mean incomes of different locale and distribution characteristics (Alderman *et al.*, 2000:7).

The study done by Alderman *et al.* (2000), differs from other studies in the literature in that, while Alderman *et al.* was inputting values for consumption which were not present in the census, Alderman *et al.* also substituted them for a variable, i.e. income, for which estimates were available. By what measure did Alderman *et al.* know that they have substituted an improved indicator of the welfare of the community? Alderman *et al.* took as a maintained hypothesis that consumption is generally more accurately collected in household surveys than is income, and that it is a valid measure of the long run control of resources by the household (Deaton, 1997). Thus, Alderman *et al.* was seeking to compare the correspondence of both the average of the income measure obtained in the census and the poverty rates calculated using that measure with those estimates using the expenditure measure in the IES. If the

imputation of expenditure is of value then the imputed measure using census data should be closer to the IES indicators of consumption and poverty. In addition to looking at the correlation of poverty measures and rankings on poverty they also looked at a measure of the fit based on the absolute difference between the two poverty measures. That is defined as (Alderman *et al.*, 2000:8):

$$\text{Fit} = 1/N \left[\sum |Y_i - \hat{Y}_i| / \text{mean}(Y_i) \right] \dots\dots\dots(3.26)$$

Where Y_i is a measure of poverty derived using IES data (poverty rate, average expenditures, or income) for a given unit, denoted by the subscript i . Similarly, \hat{Y} indicates the corresponding estimate from the census.

While the goodness of fit measure provides a summary statistic, Alderman *et al.*, (2000) also regressed the individual components of the statistic against variables that may account for differences in the accuracy of the census income data. That is, they run regressions using $|Y_i - \hat{Y}_i| / \text{mean}(Y_i)$ as the left hand variable. This allows for the investigation of whether the bias in average reported census income, measured by its divergence from mean expenditure in the household survey for the same region, varies between areas depending, among other factors, on the sectoral composition in each region (Alderman *et al.*, 2000:8).

3.7.2.2 Data

This section provides some information on each of the three data sources that are utilised for Stats SA’s measure of poverty.

The October Household Survey (OHS) is an annual survey, which focuses on a few key indicators of living patterns in South Africa. In particular the survey focuses on employment, internal migration, and housing, access to services, individual education, and vital statistics. In the 1995 round of the survey, 29 700 households were interviewed (Alderman *et al.*, 2000:9).

As its name implies, the Income Expenditure Survey (IES) provides information on the income and expenditure of households for the 12-month period prior to the interview. The questionnaire is designed to capture the value of gifts and in-kind benefits and the

imputed value of housing under income and consumption. The following information provides some ideas about the detail of consumption data collected. The cost of housing is based on 27 questions, and monthly expenditures on food and beverage are aggregated up from information obtained in 131 questions. Twenty-two additional questions cover food consumed from own production. Similar details are sought regarding non-food purchases and services obtained, using a mix of monthly and annual recall. The expenditure variable used by Alderman *et al.* (2000) was slightly redefined from standard Stats SA reporting from the 1995 IES. In order to correspond more closely to current consumption as a standard measure of household welfare, Alderman *et al.* netted out income taxes as well as various forms of saving (including lumpy purchases of durable goods and vehicles as well as lobola and dowry) from the total expenditures (Alderman *et al.*, 2000:9).

Income is based both on individual formal and non-formal earnings, and returns to household assets as well as gifts and dowry received. In order to make these income and consumption aggregates comparable with the census data, all incomes and expenditures were put into 1996 Rand using the consumer price index (Alderman *et al.*, 2000:9).

The IES was designed to be merged with the OHS. While the interviews for the IES were conducted at a slightly later date than the OHS, the same households were visited. In all, 28 585 households remained in the dataset after the two surveys were merged (Alderman *et al.*, 2000:9).

Census '96 covered over nine million households, recording data from individuals based on where they were the night between 9 and 10 October 1996. In addition to information on household composition, it collected some details on housing and services in a manner that paralleled the OHS. It also asked every individual to indicate his or her income, including pensions and disability grants. The individuals were asked to indicate which of 14 brackets this income fell within. In order to get to household income, each of these ranges was assigned a point value. For most categories this value was the logarithmic mean of the top and bottom income of the bracket. For the lowest group with income, however, the value was two-thirds of the interval. For the highest bracket (greater than R360 000 per year) this value was 720 000. These

assignments follow standard practice within Statistics South Africa. The census also asks for the value of all remittances received by the household in the preceding year. The individual point estimates for each bracket were then summed. This figure was added to the estimate of household income (Alderman *et al.*, 2000:9), (see Box 3.1 below for an example).

All of these data sets include coding for the province, the enumeration area type (EA type), the district council, and the magisterial district in which the household resided. Only the provinces are representative of the sample, but given how the sample was stratified, the breakdown to EA type within each province should also be quite close to being representative of the breakdown of the population into residents of urban portion of former homelands, other rural residents, urban formal, urban informal and other types of enumeration areas. At each level of disaggregation, they excluded from their analysis, units where three or less enumeration areas were visited in the household survey (Alderman *et al.*, 2000:9-10).

For both the IES and Census '96 they averaged income per household and per capita over each of the units of analysis. Alderman *et al.* (2000) also created headcount poverty indices for each geographical unit. This index is the well-known Foster, Greer and Thorbecke poverty measure (FGT) defined as (Alderman *et al.*, 2000:10):

$$P_{i\alpha} = \frac{1}{N} \sum_{h=1}^N \left(\frac{z - y_h}{z} \right)^\alpha | (y_h \leq z) \dots\dots\dots(3.27)$$

Where P_i is the index of poverty for the i^{th} magisterial district, y_h is a measure of household income from a sample of size N and z is the poverty line. With the headcount index α is zero, while it is set to one to measure poverty gap and higher for the severity of poverty. While Alderman's *et al.* study focuses on the headcount measure of poverty, the methodology can be applied to these measures as well. The FGT measure is additive. Thus, one can go from poverty in each magisterial district to a consistent indicator of provincial or national poverty (Alderman *et al.*, 2000:10).

BOX 3.1 EXAMPLE ON HOW STATS SA CALCULATES THE PROXY INCOME VALUES FOR HOUSEHOLDS IN DIFFERENT INCOME CATEGORIES

The table below can be described by the following equations:

When the income category (i) is equal to 1, and both the lower limit of income range (y_{l_i}) and the upper limit of income range (y_{u_i}) are zero, the proxy income value allocated (yp_i) is also zero: $yp_i = 0$

When the income category (i) is 2, the proxy income value allocated (yp_i) can be defined as: $yp_i = y_{u_{i-1}} + [(y_{u_i} - y_{u_{i-1}}) \times 0.6667]$

For the income category 2 to 11, the proxy income value allocated (yp_i) can be defined as: $yp_i = y_{u_{i-1}} + [(y_{u_i} - y_{u_{i-1}}) \times 0.5]$

| Income category (i) | Lower limit of income range (y_{l_i}) | Upper limit of income range (y_{u_i}) | Proxy income value allocated (yp_i) |
|---------------------|---|---|---|
| 1 | 0 | 0 | 0 |
| 2 | 1 | 4800 | 3200 |
| 3 | 4801 | 9600 | 7200 |
| 4 | 9601 | 19200 | 14400 |
| 5 | 19201 | 38400 | 28800 |
| 6 | 38401 | 76800 | 57600 |
| 7 | 76801 | 153600 | 115200 |
| 8 | 153601 | 307200 | 230400 |
| 9 | 307201 | 614400 | 460800 |
| 10 | 614401 | 1228800 | 921600 |
| 11 | 1228801 | 2457600 | 1843200 |
| 12 | 2457601 | 4915200 | 3686400 |

Source: Own construction, based on information from Stats SA

3.7.2.3 Stats SA's 10% Sample

The Stats SA's 10% household and person sample contains a weight variable that is derived from the Post-Enumeration Survey (PES). This weight variable is the adjustment factor for undercount for households multiplied by 10 to inflate the 10% sample to the relevant population. The census household records were implicitly stratified according to municipality, geographic type and Enumerator Area (EA) number which is a unique eight-digit census EA number. The following geographic types were used (Stats SA, 2003):

- Urban formal
- Urban informal
- Tribal
- Rural formal

All variables as per the questionnaire are included in the 10% sample, as well as derived variables and imputation flags. EA numbers are excluded to preserve confidentiality. Geographic type is excluded from the final sample. Instead two additional geographical variables are supplied, namely, urban and rural for the census '96 classification and size and density of locality. In the case of household records aggregated totals will be approximately equal to real totals. In the person records, aggregated totals of sparsely populated codes, such as very old ages, might differ substantially from real totals due to sampling fluctuations, because no scaling of the weights was done. Mortality was not adjusted for undercount and therefore there is no weight variable (Stats SA, 2003).

The Stats SA 10% sample is a 10% unit level sample drawn from Census 2001 as follows (Stats SA, 2003):

Households

- A 10% sample of households in housing units, and

- A 10% sample of collective living quarters (both institutional and non-institutional) and the homeless (Stats SA, 2003).

Persons

- A sample consisting of all persons in the households and collective living quarters, and the homeless, drawn for the samples described above in the household category (Stats SA, 2003).

Mortality

- A sample consisting of all mortality information for the households in housing units drawn in the 10% sample of households.

The South African geographical structure for the 10% sample consists of the following geographical entities as indicated in Table 3.1, which fit into different geographical hierarchical levels (Stats SA, 2003).

TABLE 3.1 SOUTH AFRICA'S DIFFERENT GEOGRAPHICAL HIERARCHICAL LEVELS

| |
|--|
| South Africa |
| Province |
| District council (DC - Category C) or Metropolitan area (Category A) |
| Magisterial districts (MD) |
| Local municipality (Category B) or District management area (DMA) |

Source: Stats SA, 2003

While the structure is intended to be hierarchical, South Africa's geography has cross-boundary entities, which complicate the picture. For example, there are eight municipalities which lie across provincial boundary lines. One should bear this in mind when choosing the appropriate hierarchy. For example, for the City of Tshwane, which lies in two provinces, one would not use the provincial hierarchy. Due to the existence of cross-boundary entities there are five distinct geographical hierarchies (Stats SA, 2003).

3.7.3 Slabbert's measure of poverty

When measuring poverty Slabbert (1997, 2003 & 2004) defines poverty in absolute terms, which is from the viewpoint of deprivation or the lack of sufficient income to satisfy basic needs. The extent of absolute poverty is then defined as the number of people living below a subsistence minimum level of income. This minimum level of income is normally expressed in terms of the money needed to attain a certain minimum level of material subsistence. The minimum subsistence level in this argument is not viewed as a cut-off point to divide poor and non-poor households, but rather as a yardstick to measure different degrees of poverty. This, in addition, includes different degrees of urgency of the matter.

Slabbert follows the guidelines of the World Bank (1990:26-27) and defines a poor household as one of which the combined income of all its members is less than the calculated cost of the minimum adequate caloric intake and other necessities of the household. In order to measure poverty for a specific area according to this definition, Slabbert roughly follows the same approach as the Central Economic Advisory Services (CEAS, 1986:16) and defines income as:

- Salaries, wages, overtime and commissions after the deduction of pensions and taxes, in other words "take home pay";
- Net income from business, professional and informal activities;
- Estimated value of fringe benefits such as housing subsidy, food, clothing and accommodation provided by the employer;
- Any other regular income (pensions, interest, dividends, rent from boarders/lodgers, remittances etc).

The questionnaire used by Slabbert (1997, 2003 & 2004) when conducting surveys is constructed in such a manner that income and expenditure information for both the household and the individual members of the household could be obtained. Other information needed for the measuring of poverty with the non-income indicators is also obtained in the same surveys. This includes the age and the gender of household members, formal training, and employment status.

With the total incomes of households' interviewed in the survey, the next step Slabbert (1997, 2003 & 2004) does in the analysis is to calculate a poverty line for each household. Slabbert also uses the most widely used poverty line in South Africa, the Household Subsistence Level (HSL). Potgieter (1980:4) defines the HSL as an estimate of the theoretical income needed by an individual household to maintain a defined minimum level of health and decency in the short term. The HSL is calculated at the lowest retail cost of a basket of adequate quality. This comprises the total food, clothing, fuel, lighting, and washing and cleaning materials required for each person, together with fuel, lighting and cleaning materials needed by the household as a whole, and the cost of rent and transport. A comparable calculation can thus be made for any household of any given size and composition.

With the income of the households and poverty line (HSL) for households defined, Slabbert (1997, 2003 & 2004) then adapt the definition of a poor household to read as follows: A poor household is one in which the combined income of all its members is less than the HSL as determined for the specific household. With a poor household defined, the number of poor households in a particular area can be calculated. Slabbert's survey data (1997, 2003 & 2004) gives the combined income of each individual sample household, as well as the age and gender of all household members. By allocating the amounts suggested by the HSL to the different members, the HSL for each individual household can be determined. Comparing the combined income of a specific household with the HSL of the household, it can be determined whether the household is poor or not. Once the number of poor households have been determined, the different income indicators of poverty can be applied to analyse poverty in a particular area. The income indicators used by Slabbert are: the headcount index in conjunction with the poverty gap index and the dependency ratio. If the combined income of a household is described by y_i and the poverty line (HSL) of the same household is described by z_i , the extent of poverty, P_i , of this household is described by $P_i(y_i; z_i)$.

3.7.3.1 The headcount index and the poverty gap

The headcount index is defined as the fraction of the population below the poverty line (Deaton, 1994:122). The purpose of the headcount index is therefore to quantify the

number of those individuals or households that fall below the poverty line. If the distribution of incomes is represented by y and the poverty line by z , a poverty measure may be expressed by the function $P(y;z)$.

Suppose that in a population of N income units with incomes y_i ($i=1...N$) ranked in ascending order by subscript, M units have incomes equal to or less than z , then the headcount ratio (H) may be defined as follows (Borooah & McGregor, 1991:359):

$$H(y;z) = \frac{M}{N} \dots\dots\dots(3.28)$$

- Where:
- H = the fraction of households below the poverty line;
 - y = household income;
 - z = the poverty line of households;
 - M = the number of households with incomes less than z ;
 - N = the total number of households.

Slabbert (1997) adapts the headcount index to indicate the fraction of households that fall below their individual poverty lines. The poverty gap usually measures the average shortfall of the incomes of the poor from the poverty line while the poverty gap index measures the extent of the shortfall of incomes below the poverty line. Slabbert (1997) also adapts the poverty gap index to be a measure of a specific household, described by the equation:

$$R_i(y;z) = (z_i - y_i)/z_i \dots\dots\dots(3.30)$$

- Where:
- R_i = the income shortfall of a household expressed as a proportion of the household's poverty line;
 - y_i = the income of a specific household; and
 - z_i = the poverty line of a specific household.

The poverty gap of an individual household (in monetary terms) can therefore be expressed by the equation:

$$G_i(y; z) = z_i - y_i \dots\dots\dots(3.31)$$

Where: G_i = the income shortfall of a household;
 y_i = the income of a specific household; and
 z_i = the poverty line of a specific household.

Slabbert (1997:48) further ascertains that the size and composition of different households are totally different. This means that the income of households cannot be compared to an average poverty line. The number of household members, to arrive at a household per capita income, divides the total household income. However, this method has some shortcomings; it does not take into account that children cost less to feed and clothe than adults. A poverty line for each household should be determined, based on the size and composition of the household. Some researchers, therefore, make use of Adult equivalent scales, as suggested by Deaton (1994). With this method the number of adult equivalents in each household can be calculated. Total household income divided by the number of adult equivalents gives the household per adult equivalent income. Adult equivalent scales are calculated by the formula:

$$E = (A + \alpha K)^\beta \dots\dots\dots(3.32)$$

Where: E = number of adult equivalents;
 A = the number of adults;
 α = the "child fraction of adults";
 K = the number of children; and
 β = the economies of scale coefficient.

Whiteford and McGrath (1995:4), in their explanation of adult equivalents for households, use a generalised scale for developing countries as suggested by Deaton, where the value of 0.5 is attributed to α and 0.9 to β .

Although this method is an improvement, when compared to household per capita income, a more accurate and simpler method can be applied by allocating the calculated amounts for different kinds of members of a household as determined by Potgieter (1994:63). Instead of only making a distinction between adults and children by using adult equivalent scales, Potgieter's method allocates appropriate amounts for men and women and boys and girls of different ages. The requirements for a child between 1 and 3 years are quite different from those for a child between 8 and 10 years. There are also differences between the different genders and ages. The HSL for an individual household can thus be calculated by allocating amounts for the different members of the household (Slabbert, 2004:44).

The HSL for a household can be calculated and compared with its own total income with the information regarding the total income of a household, as well as the age and gender of its available members. The HSL not only determines whether the household is below the poverty line or not, but also how far below (or above) the household is with regard to its own poverty line. In this way, the poverty gap of an individual household is calculated. By calculating the same for all households of the survey sample, the total number of households below and above the poverty line and their distribution below and above the poverty line is determined (Slabbert, 2004:45).

3.7.3.2 Dependency ratio

The proportion of the total population falling between 0 to 15 and 65+ years of age is considered economically unproductive and are therefore not included in the labour force. In many less developed countries (LDCs), the population under the age of 15 accounts for almost half the total population, thus posing a burden to the generally small productive labour force and the government (Todaro quoted in Slabbert, 1997:56). One of the causes of poverty in South Africa is the high dependency in black families. The dependency ratio refers to the ratio of the number of non-income earners that depend on income earners. This tendency is particularly acute in extended family systems. Those who earn income have to support many non-earners so that their incomes are spread so thinly that they can afford very little food, clothes and shelter (Slabbert, 1997:57). This tendency obviously increases the incidence of poverty.

Dependency ratios are calculated by dividing the total number of non-earners by the total earners. However, this calculation of the dependency ratio is very insensitive because it is based on averages (Slabbert, 1997:55). Slabbert (1997:55) gives the following examples to illustrate the point:

Example 1:

BOX 3.2 CALCULATION OF A DEPENDENCY RATIO: METHOD 1

There are three households under consideration:

Household 1 has 5 members – 4 are income earners and 1 is a non-income earner

Household 2 has 5 members – 1 is an income earner and 4 are non-income earners

Household 3 has 6 members – 1 is an income earner and 5 are non-income earners

Total number of income earners: 6

Total number of non-income earners: 10

Dependency ratio: non-income earners / income earners = $10/6 = 1.67$

Dependency ratio of average of households = 1.67

Source: Slabbert, 1997:57

Example 1 shows that, on average, one income earner is supporting 1.67 non-income earners. A far more accurate method is to calculate the dependency ratio on the basis of individual households, and then calculate the average or mean of these different dependency ratios (Slabbert, 1997:57). This is done in Example 2 below.

Example 2 (Method 2) renders an average of 3.08, implying that in the average household each income earner is supporting 3.08 dependants. This method of calculation depicts the situation more realistically. The usual method of calculation (Method 1) creates the impression that there are six income earners supporting 10 non-income earners, but the fact is that the 4 income earners in household 1 are not supporting non-income earners in households 2 and 3 (Slabbert, 1997:57).

Example 2

BOX 3.3 CALCULATION OF A DEPENDENCY RATIO: METHOD 2

There are three households under consideration:

Household 1 has 5 members – 4 are income earners and 1 is a non-income earner

Household 2 has 5 members – 1 is an income earner and 4 are non-income earners

Household 3 has 6 members – 1 is an income earner and 5 are non-income earners

Dependency ratio of household 1 = $1/4 = 0.25$

Dependency ratio of household 2 = $4/1 = 4.0$

Dependency ratio of household 3 = $5/1 = 5.0$

Total 9.25

Average dependency ratio of individual households: $9.25/3 = 3.08$

Source: Slabbert, 1997:58

3.8 IS THERE A BETTER INDEX OF POVERTY THAN THE POVERTY RATE?

In the popular press and in much of the policy analysis work, the poverty rate (the percentage of the population whose incomes lie below the poverty line) is the most commonly encountered poverty measure, supplemented occasionally by reference to the average poverty gap ratio (the average percentage shortfall of poor individuals' incomes below the poverty line). However, Sen (1976) noted that the former measure is insensitive to the depth of poverty and the latter ignores the number of poor individuals (and neither statistic is transfer sensitive). Sen proposed a new poverty index and a set of desirable axioms for evaluating a poverty index. Since then, research on poverty indices has received considerable attention (Osberg, 2001:5), as discussed in Section 3.5.3, the Sen index is not replication invariant, not continuous in individual incomes, and fails to satisfy the strong transfer axiom, Shorrocks (1995) proposed a modified Sen index which is identical to the limit of Thon's (1979) modified

Sen index as the number of observations goes to infinity which is referred to as the SST index of poverty intensity (Osberg, 2001:5-6).

Hagenaars (1986 & 1991) and Zheng (1997) have summarised the properties that an ethically defensible index of poverty should possess. A particularly important consideration is that an acceptable measure of poverty should always register an increase in poverty whenever a pure transfer of income is made from someone below the poverty line to someone who has more income. This property is not possessed by the poverty rate (Osberg, 2001:6).

The poverty rate is a bad index on axiomatic grounds and there are several important policy implications of its deficiencies. When decreases in the poverty rate are used as the criterion for social policy, administrators who want to demonstrate “success” will be tempted by the option of “creaming” the poverty population. By redistributing benefits or services away from the very poorest (who are so far below the poverty line they are likely to stay poor anyhow) to those just below the poverty line (who have the greatest chance of being moved over the line). Administrators can improve the poverty rate, even while deepening the deprivation of the worst off which is surely not a socially desirable outcome (Osberg, 2001:6).

Use of the poverty rate criterion may also affect measurement choices. Myles and Picot (2000:4) have commented that: “A typical frustration of policy-makers is that incremental efforts to raise the incomes of the most indigent often have little impact on the poverty rate”. The temptation in this situation is to move the goal posts to a lower poverty standard in the (usually misguided) hope that a lower cut-off will register the change. Changes that affect the most indigent are always reflected in measures of poverty intensity (Osberg, 2001:6).

The use of a better measure of outcomes may obviate the tendency to “move the goalposts” and it may also reduce false pessimism about anti-poverty policy. As Focus (1998:4) commented: “According to conventional wisdom, US anti-poverty programs have not ‘worked.’” However, this perception was driven by trends in the poverty rate. In practice, policy makers are under pressure both to “show results” and to provide aid to the most indigent. If they follow Rawls (1971) and focus programmes on the least well off, their successes will be often statistically invisible, since the poverty rate does

not reflect the improvement in well being that comes with a reduction in the poverty gap. A better measure of poverty like poverty intensity may therefore also be important in avoiding “false negatives” in policy analysis (Osberg, 2001:7).

Despite a wide variety of poverty measurement methodologies, there is a common recognition that no method is perfect and all of them have certain inherent limitations. There are several major drawbacks that current poverty measurement methodologies share. As mentioned in Section 1.1, poverty is a multidimensional concept, which includes at least three dimensions, namely, material, human and social. Many measurement methods are single dimensional, focused mostly on measuring material dimensions of poverty by using economic indicators such as income, expenditure, food or housing. These methods do not provide a comprehensive picture of poverty. However, there are also some other methods available that capture the multiple dimensions of poverty. For example, the HDI covers economic and human dimensions (this is bi-dimensional, rather than multidimensional) in an integrated manner (by computing a general index, combining various indicators). However, it does not capture social dimensions. Based on this information one can conclude that there is no better index of poverty than the poverty rate.

3.9 SUMMARY AND CONCLUSION

There is much debate concerning how to measure poverty. To arrive at an estimate of poverty, a series of difficult measurement choices must be made. There generally seems to be no disagreement over the fact that poverty needs to be measured. Everyone in social policy and politics recognises the importance of poverty measurements. In fact, their impact has stirred a vigorous debate within the social science community. It is therefore important to measure poverty.

Any integral approach to the measurement of living standards, poverty and development (or alternative bases to GDP), confronts the problem of the lack of a unique measurement yardstick. This problem is avoided in national accounting, where money plays the role of unique and universal yardstick. In practice, then, poverty is most commonly measured in money-metric terms, while social indicators are used side-by-side, unintegrated.

The methodologies used for the measurement of poverty can be very complex, and require data sets that are more frequently found in rich countries, where the problems of poverty are less severe, than in poorer ones, where they are more significant. There is a large array of methodologies used for the measurement of poverty, and it is the responsibility of statistical offices to identify those that are more adequate to their specific purposes, and practical in terms of their financial resources and technical and administrative skills.

In the economic literature, many poverty measures have been proposed, primarily based on the axiomatic approach. However, many of them are not actually used in practice. The more communicable and often-used poverty measures are the headcount ratio, poverty gap ratio, income gap ratio, and the FGT indices of different orders. In spite of the shortcomings associated with the use of the headcount ratio, this poverty index is still very popular in the applied studies on poverty because of its straightforward interpretation. Although perhaps desirable from a theoretical perspective, more complex poverty measures such as the Sen indices that measure poverty incidence, depth and inequality jointly appear more difficult to calculate and harder to communicate. Hence, they are the simpler poverty measures that tend to be actually used despite their insensitivity towards distribution among the poor, which is considered important.

Some indices of poverty (such as the poverty rate) are easy to understand, but often misleading. Others have desirable ethical properties, but are rarely used in policy debates because of their complexity. When proposing an index of poverty, researchers should therefore avoid both the danger that the proposed measure will be theoretically unsound and the hazard that the measure will be as complex as to be not understandable by policy makers, and hence never used. The advantage of the Sen family of poverty indices is that they can be justified at both the theoretical level of ethical soundness and the practical level of easy communicability to the general public.

In many countries policy-makers are particularly sensitive about methodological choices involved in setting poverty lines, since these lines are crucial in determining the level of financial and social support for the population in question. Therefore, to a

large extent, all poverty lines are arbitrary, and countries are struggling with the need to come up with a set of measures that not only accurately reflects the incidence of poverty in their societies, but also that is politically acceptable as a basis for policy decisions.

The United States is one of the few developed countries with an official measure of poverty. The concept of poverty (absolute poverty) was originally developed in the early 1960s, as an indicator of the number and proportion of people with inadequate family incomes (resources) for needed consumption of food and other goods and services. The poverty thresholds were defined as the cost of a minimum diet (food) times three to allow for expenditures on all other goods and services. A set of thresholds (in dollars) is estimated and updated annually using the CPI.

Canada, like most industrialised countries excepting the United States, has no official government mandated poverty line. However, Statistics Canada has produced information on poverty since the 1960s, using the LICOs concept. In practice the LICOs estimates are used as semi-official poverty lines. The LICOs are thresholds of income with reference to the average of what a family spends in a year on food, shelter and clothing as a proportion of their annual income. A family unit with income below the cut-off for its family size and urbanisation classification is considered a "low income" family. A family's low income status depends solely on its income, not on its spending.

One consequence of apartheid in South Africa has been a lack of comprehensive social indicator data that could assist in policy formulation. Between 1976 and 1994 official data excluded the supposedly 'independent' TBVC territories, thus excluding many poor South Africans. The PIR accordingly made use of the 1993 PSLSD, which provided a baseline survey, the 1995 OHS, and the 1995 IES, supplemented qualitative by the SAPP.

When measuring poverty, Stats SA calculates the annual income for households by adding together the individual incomes of all members of the household. Stats SA uses income as an indicator of poverty as it is the easiest quantifiable indicator. The total income of each household is then reallocated into the relevant income category. Households are then measured, whether they are poor or not, with their allocated

proxy income values against a standard poverty line. Stats SA also uses the 10% sample method. The 10% household and person sample contains a weight variable that is derived from the PES. This weight variable is the adjustment factor for undercount for households multiplied by 10 to inflate the 10% sample to the relevant population.

Instead of taking the difference between the poverty line and the mean income of the poor, Slabbert uses a more accurate measure by calculating the poverty gap for each household individually. This is done by measuring the difference between a household's income and its own poverty line. To calculate the poverty gap ratio, the difference between the income and the poverty line of each household is expressed as a ratio of its own poverty line. The mean of all households' poverty gaps can be taken as the mean poverty gap for the population concerned.

Despite a wide variety of poverty measurement methodologies, there is a common recognition that no method is perfect and all of them have certain inherent limitations. There are several major drawbacks that current poverty measurement methodologies share. Poverty is a multidimensional concept, which includes at least three dimensions material, human and social. Many measurement methods are single dimensional, focused mostly on measuring material dimensions of poverty by using economic indicators such as income, expenditure, food or housing, and these methods do not provide a comprehensive picture of poverty. However, there are also some other methods available that capture the multiple dimensions of poverty. For example, the HDI covers economic and human dimensions which is bi-dimensional, rather than multidimensional in an integrated manner (by computing a general index, combining various indicators). However, this does not capture social dimensions. Based on this information one can conclude that there is no better index of poverty than the poverty rate.

CHAPTER 4

APPLICATION OF METHODOLOGIES TO A SET OF DATA

4.1 INTRODUCTION

This chapter outlines a cross-sectional comparative evaluation of the two methodologies (Stats SA's and Slabbert's) as discussed in Sections 3.7.2 and 3.7.3 on a set of data from Sharpeville (survey data 2004). The 2004 household survey was conducted as follows: Maps of Sharpeville were obtained from the Emfuleni City Council and a sample stratification was designed on account of the geographical distribution and concentration of people in the area. A questionnaire was designed for obtaining the desired information. The area was divided into different sections and the questionnaires were apportioned evenly among the inhabited sites. Two fieldworkers interviewed a total of 174 households. All the households approached were willing to partake in the survey and all 174 questionnaires were completed in August 2004. A detailed discussion on the survey design and application is contained in Annexure A, with the questionnaire in Annexure B of this study.

This chapter compares the results of the two methodologies when applied on the same data. The purpose of this study is to indicate that the methodology used by Stats SA needs to be revised as it does not seem to be a credible measure of poverty in Sharpeville. The chapter starts by analysing the results from the application of the 10% Stats SA sample compared with the 2004 survey data. This is followed by the demographic analysis of the poor population of Sharpeville when the two methodologies (Stats SA's and Slabbert's) are applied. The last part of this section analyses households' attitude towards revealing their income in surveys.

4.2 STATS SA'S 10% SAMPLE AND THE 2004 SURVEY DATA OF SHARPEVILLE

This section analyses the results from the cross-sectional comparative application of a 10% Stats SA sample and the Stats SA's methodology and Slabbert's methodology on the 2004 household survey data in Sharpeville. The Stats SA standard poverty line of R800 (2001) was used for this study when applying and comparing the Stats SA

method. This poverty line was inflated for 2004 by the CPI from 2002 up to 2004 to get an adjusted poverty line for 2004. The method used by Stats SA was also applied to a 10% sample of the 2001 Census-data of Sharpeville. The average poverty line for 2001 is determined by taking the average HSL of households in a 10% sample, and comparing it with the R800 poverty line.

Table 4.1 presents the results from the application of the two methodologies. The upper part of the table indicates the results of the Stats SA's 10% sample and the lower part indicates the results based on Stats SA's method Slabbert's method on the 2004 survey data.

From note 1 in Table 4.1, the poverty rate based on the Stats SA's 10% sample is 62.6%. This poverty rate was determined by compiling a poverty line for each household and comparing it to the midpoint amount of income determined by Stats SA.

When comparing the Stats SA 2001 poverty line of R800 to the midpoint amount of income determined by Stats SA, a poverty rate of 51.2% was determined. This poverty rate is lower (51.2% vs. 62.6%) than the poverty rate determined by comparing a poverty line for each household with the midpoint amount of income by Stats SA.

With Slabbert's method (using the 2004 survey data) of determining the poverty rate, whereby a poverty line is determined for each household and compared with the total income of that particular household, a poverty rate of 43.1% was determined for Sharpeville.

Using the 2004 survey data a poverty rate of 46.9% was determined with Slabbert's method by taking the individual poverty line of a household and comparing it to the total expenditure of the household (note 4 in Table 4.1). With Slabbert's method there is only a slight difference (i.e. 3.8%) between the poverty rates (43.1% vs. 46.9%) determined by using the total income and the one in which total expenditure is used.

The Stats SA 2001 poverty line of R800 was inflated to 2004 by the CPI to give a poverty line of R963.73. This poverty line (R963.73) was compared to the actual household income from the 2004 survey data to determine a poverty rate of 15.5% (note 5 in Table 4.1).

TABLE 4.1 STATS SA'S 10% SAMPLE AND THE 2004 SURVEY DATA OF SHARPEVILLE

| Stats SA's 10% sample for 2001 | | |
|---|---|-------------|
| Notes | Description | Percentages |
| 1 | Poverty rate (2001 HSL & mid point income) | 62.6% |
| 2 | Poverty rate (R800 Poverty line & mid point income) | 51.2% |
| 1 | Average poverty gap | 2027 |
| Slabbert's method and Stats SA's method on the 2004 survey data | | |
| Notes | Description | Percentages |
| 3 | Poverty rate based on Slabbert's method (2004 HSL & actual household income) | 43.1% |
| 4 | Poverty rate based on Slabbert's method (HSL & actual expenditure) | 46.9% |
| 5 | Poverty rate based on Stats SA's method (R963.73 poverty line & actual household income) | 15.5% |
| 6 | Poverty rate based on Stats SA's method (R1285.07 average poverty line & actual household income) | 24.7% |
| 7 | Poverty rate based on Stats SA's method (R1285.07 average poverty line & midpoint household income) | 15.5% |
| 8 | Poverty rate based on Stats SA's method (R963.73 poverty line & midpoint household income) | 15.5% |

Source: Own construction, based on the 2004 survey data

From Table 4.1 above, note 6 based on Stats SA's methodology indicates a poverty rate of 24.7% which was determined by compiling an average poverty line (R1285.07) based on the HSL for each household individually and compared this line to the income of the household.

In note 7, an average poverty line was compiled for each household individually based on the 2004 HSL, and compared to the relevant mid-point of household income category (inflated) to get a poverty rate of 15.5%. With Stats SA's method there is a great difference (i.e. 9.2%) between the poverty rates (24.7% vs. 15.5%) determined by comparing an average poverty line to the income of the household and the one in which an average poverty line was compared to the midpoint of household income category.

Applying the Stats SA's method on the 2004 survey data, the R963.73 (inflated R800) poverty line was compared to the 2001 inflated household midpoint income to give a poverty rate of 15.5% (note 8 in Table 4.1).

The table indicates that when comparing the 2001 HSL with the mid-point income, the poverty rate is 62.6% but when comparing the poverty line of R800 with the mid-point income the poverty rate decreases to 51.2%. This is higher than the poverty rate determined from the 2004 survey data which is 43.1%. When comparing the HSL to the actual household expenditure the poverty rate increases from 43.1% to 46.9%. It is evident from these figures that when the inflated poverty line is employed, the poverty rate decreases until it reaches 15.5%. From all these figures one can conclude that when the Stats SA standard poverty line is employed (together with the mean income) the poverty rate decreases and this might be misleading for policy makers.

4.3 DEMOGRAPHIC PROFILE

This section analyses the section of the population that has been found to be poor in the 2004 household survey. A number of indicators are used to profile the poor. The purpose is to show the differences between profiling the poor in terms of Stats SA's methodology and in terms of Slabbert's method, as the results are useful in determining a strategy to alleviate poverty.

For this study, a poor household is defined as a household of which the combined income of all its members is less than the HSL as determined for the specific household. Poverty is measured in terms of the headcount index and the poverty gap index. The headcount index is defined as the fraction of the population below the poverty line. In this study, the headcount index is adapted to indicate the fraction of households that fall below their individual poverty lines. The poverty gap usually measures the average shortfall of the incomes of the poor from the poverty line while the poverty gap index measures the extent of the shortfall of incomes below the poverty line.

The population in Sharpeville is estimated to be 41,031 and the average household size is 4.9, meaning that there are 8,374 households in Sharpeville (Sekatane, 2004:61). The headcount index as calculated from the 2004 survey data for Sharpeville is 0.431, meaning that from the 8,374 households in Sharpeville, 3,609 households live in poverty. That means 17,685 people are poor in Sharpeville. The poverty gap index was determined at 0.32, indicating that on average poor households lack 32% of the income to attain a level equal to their poverty line (Sekatane, 2004:61). These figures were determined by employing Slabbert's measure of poverty.

When employing Stats SA's measure of poverty, different results are found. If one considers the poverty rate in note 5 (in Table 4.1) where the Stats SA's 2001 poverty line of R800 was inflated to 2004 by the CPI to give a poverty line of R963.73 and that poverty line (R963.73) was compared with the actual household income from the 2004 survey data to give a poverty rate of 15.5%, the following can be determined. The population is still estimated to be 41.031 and the average household 4.9, meaning that there are 8,374 households, same as above. However, when the inflated Stats SA's poverty line is used the poverty rate decreases from 43.1% to 15.5%, meaning that the headcount index reduces from 0.431 to 0.155. A headcount index of 0.155 means that from the 8,374 households in Sharpeville, 1,299 (determined by multiplying the number of households with the headcount index, i.e. $8,374 \times 0.155 = 1,299$) households live in poverty. This means that 6,365 (determined by multiplying the average household size with the number of poor households, i.e. $4.9 \times 1,299 = 6,365$) people are poor in Sharpeville. With the Stats SA's methodology the poverty gap index

is determined at 0.31, indicating that on average poor households' lack 31% of the income to attain a level equal to their poverty line. The same number of poor households and people can be determined when the poverty rate in notes 7 and 8 (in Table 4.1) are used, since the poverty rate is the same as in note 5 (in Table 4.1).

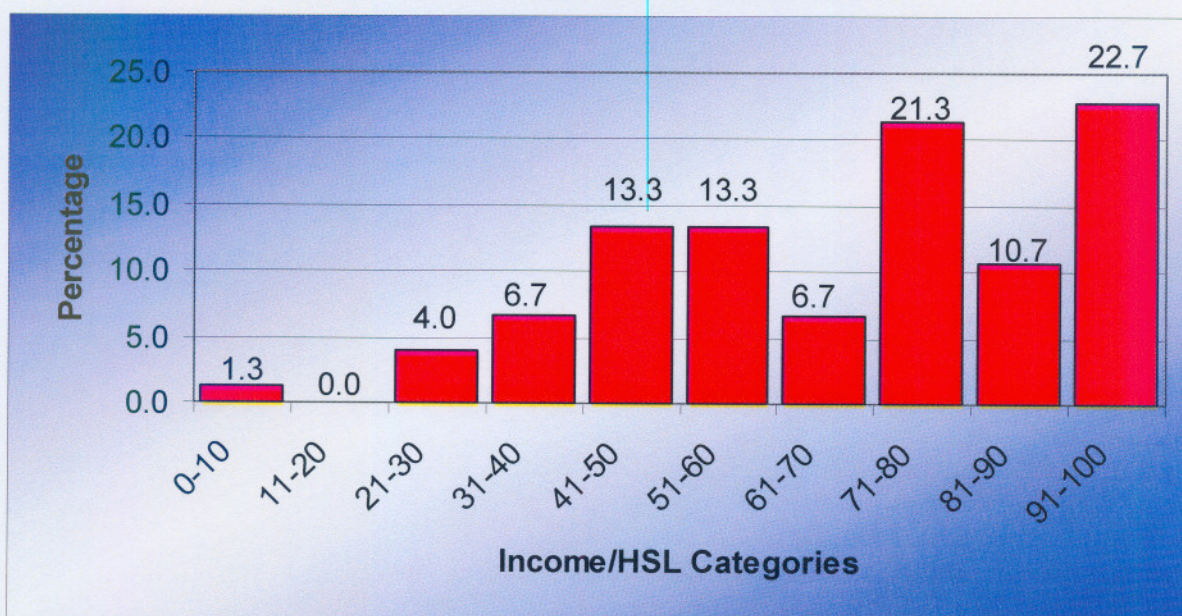
If one considers the poverty rate in note 6 (in Table 4.1), where an average poverty line (R1285.07) was compiled based on the HSL's for each household individually, and compared with the income of each household in the 2004 survey to determine a poverty rate of 24.7%, the following can be determined. The population is still estimated to be 41,031 and the average household 4.9, meaning that there are 8,374 households, same as above. A poverty rate of 24.7% means that the headcount index reduces from 0.431 to 0.247. A headcount index of 0.247 means that from the 8,374 households in Sharpeville, 2,068 (determined by multiplying the number of households with the headcount index, i.e. $8,374 \times 0.247 = 2,068$) households live in poverty. This means that 10,133 (determined by multiplying the average household size with the number of poor households, i.e. $4.9 \times 2,068 = 10,133$) people are poor in Sharpeville.

The figures above show that when the Stats SA methodology is employed, the poverty rate is lower than the one determined by Slabbert. When the poverty rate is lower it leads to a low number of households (e.g. 1,299 poor households with a poverty rate of 15.5% compared to 3,609 poor households with a poverty rate of 43.1%) and people that are poor being determined, and this will mislead policy makers as it does not reflect the true state of affairs of the inhabitants of the township/squatter areas of Sharpeville with regard to poverty. The Stats SA methodology does not accurately determine the poor population as a standard poverty line is used together with a midpoint amount of income determined by Stats SA. In doing that, the Stats SA's methodology does not reflect the intensity of poverty suffered by the poor. The problem is how poor are the poor? The methodology used by Slabbert proves to be more accurate, as real income values are used (i.e. whereby a poverty line for each household is determined and compared with the total income for that household) and can in addition determine the depth of poverty (the poverty gap)).

Figures 4.1 and 4.2 give the distribution of the poor households' income as a percentage of their specific HSL. Figure 4.1 is based on Slabbert's method, which was

determined by taking each sample household's HSL and comparing it with its own income. Figure 4.2 is based on Stats SA's method which was determined by taking an average HSL and comparing it with the households' midpoint incomes. If a household income is above the poverty line, the household falls in the income/HSL category above 100%. An increase in the number of households below the poverty line indicates an increase in the proportion of the poor population. Slabbert (2003:13) points out that "if most households earn 90 – 100% of their own HSL, this would indicate that poverty is not very severe". In line with this assertion, Figure 4.1 shows that 25.3% of all households in Sharpeville have an income of less than 50% of their HSL compared to 24.4% in Figure 4.2. From this information it means that poverty is less severe when applying the Stats SA methodology than when applying Slabbert's method.

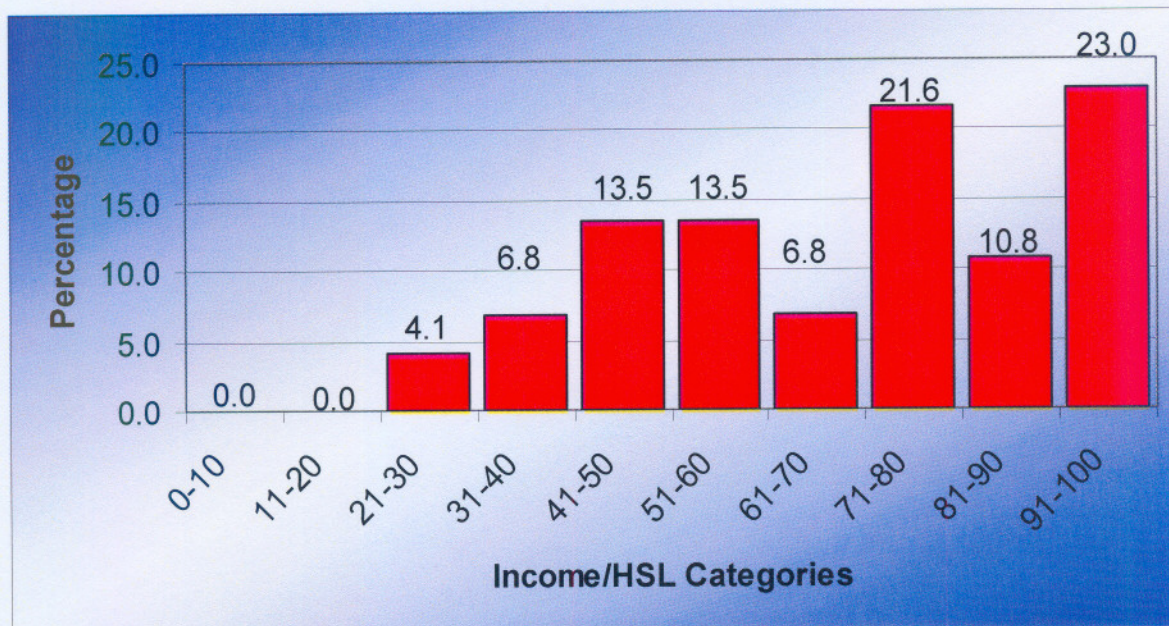
FIGURE 4.1: POOR HOUSEHOLDS AND THEIR HSL RATIOS IN SHARPEVILLE - SLABBERT'S METHOD



Source: Survey data, 2004

Figure 4.1 apply to the 3,609 households that live in poverty and 17,685 people that are poor in Sharpeville. According to Figure 4.2, 1,299 households live in poverty, meaning that 6,365 people are poor in Sharpeville. There is a difference of 2,310 households that are poor and 11,320 people that live in poverty between the two figures. With the Stats SA's method the number of poor households and people is very low.

FIGURE 4.2: POOR HOUSEHOLDS AND THEIR HSL RATIOS IN SHARPEVILLE - STATS SA'S METHOD



Source: Survey data, 2004

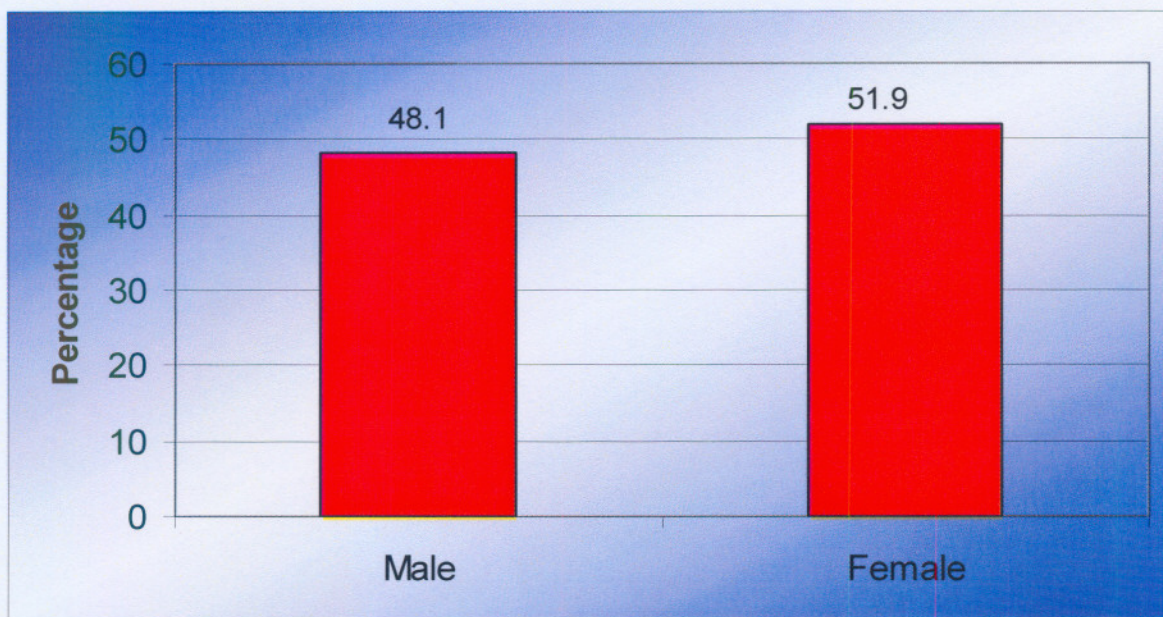
Figures 4.3 and 4.4 portray the gender distribution of the poor population of Sharpeville in respect of the two methodologies. Both Figures were determined by counting the number of males and females in the sample's poor populations. The same technique was used for all the other Stats SA's Figures. Both Figures indicate which gender of the population is more affected by poverty in the Township area. As shown in Figure 4.3, 47.2% of the poor population is male and 52.8% female, compared to 48.1% and 51.9% respectively in Figure 4.4. This means that according to both methods the female population in Sharpeville is slightly more affected by poverty than the male population.

FIGURE 4.3: GENDER DISTRIBUTION OF THE POOR POPULATION IN SHARPEVILLE - SLABBERT'S METHOD



Source: Survey data, 2004

FIGURE 4.4: GENDER DISTRIBUTION OF THE POOR POPULATION IN SHARPEVILLE - STATS SA'S METHOD

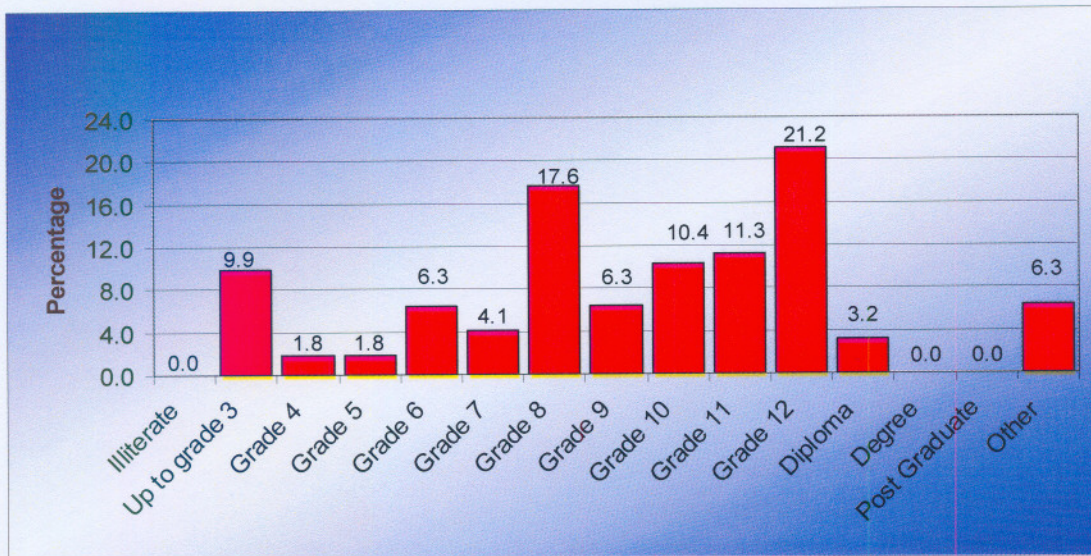


Source: Survey data, 2004

Figures 4.5 and 4.6 show the qualifications of the post-school poor population. Of the poor population 30.7% has a post-school qualification of grade 12 or higher

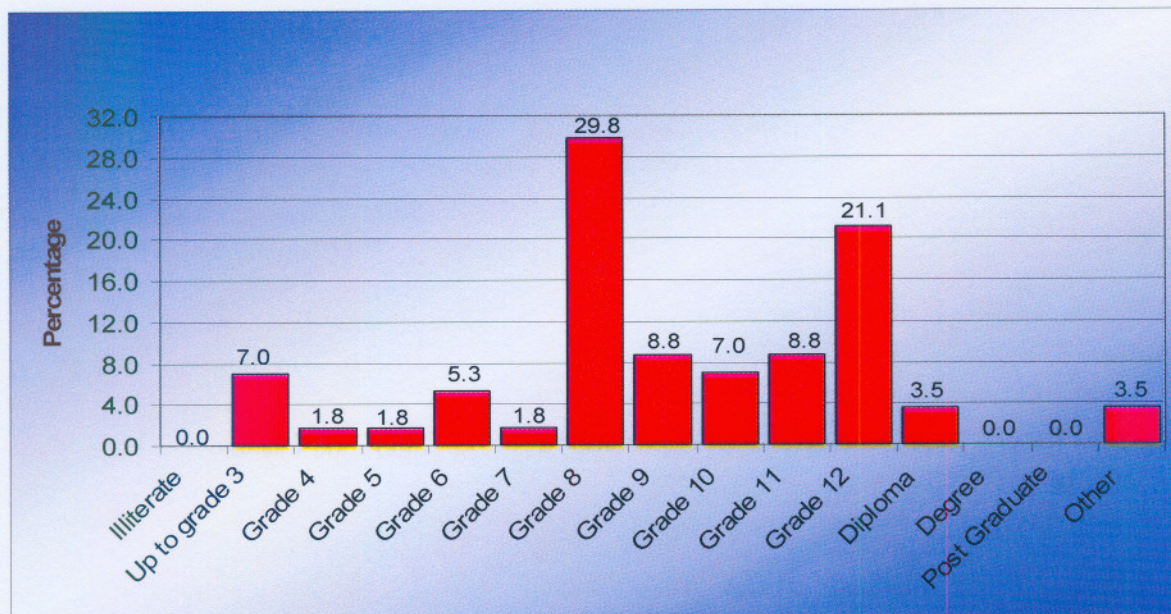
(Slabbert's method). The population with a diploma or degree living in poor households is only 3.2%. Figure 4.6 shows a similar trend, where 28.1% of the poor population has post-school qualifications of grade 12 or higher, and 3.5% of the population has a diploma or degree.

FIGURE 4.5: QUALIFICATIONS OF THE POST-SCHOOL POOR POPULATION IN SHARPEVILLE - SLABBERT'S METHOD



Source: Survey data, 2004

FIGURE 4.6: QUALIFICATIONS OF THE POST-SCHOOL POOR POPULATION IN SHARPEVILLE - STATS SA'S METHOD

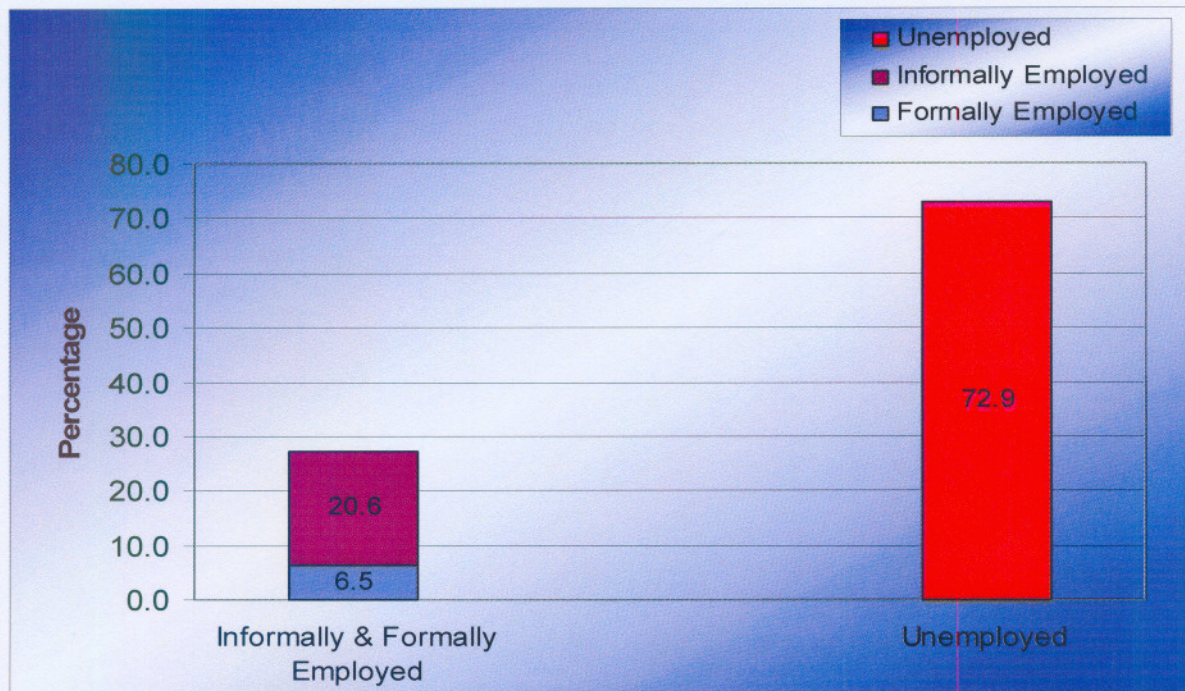


Source: Survey data, 2004

Figures 4.7 and 4.8 portray the status of the labour force stemming from the poor population. Figure 4.7 indicates that of the poor labour force, 27.1% is employed. The unemployment rate of the poor is 72.9%. Figure 4.8 indicates that the comparative figures are: 14.6% of the poor labour force is employed while 85.4% are unemployed. For both methodologies the unemployment rate was determined by taking the number of the unemployed people as a percentage of the economically active population. The unemployment rate (Ur) was then calculated according to the standard equation:

$$\frac{\text{number of unemployed}}{\text{Economically Active Population (EAP)}} \times \frac{100}{1} = \text{Ur}$$

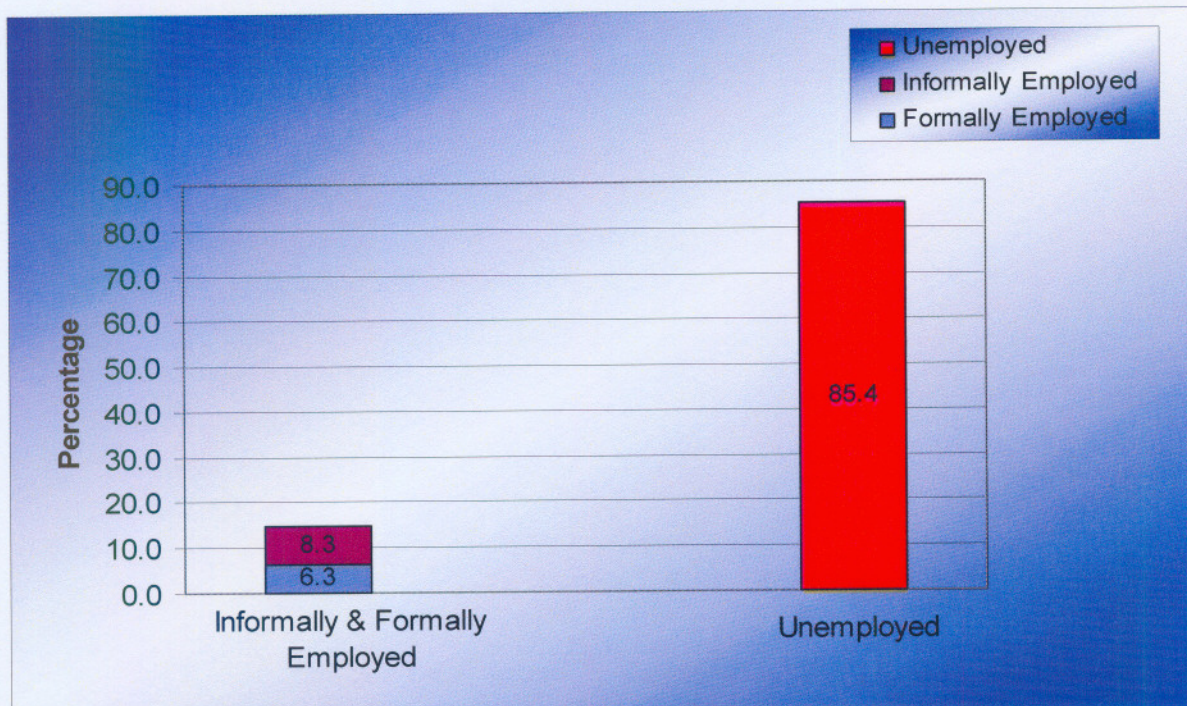
FIGURE 4.7: THE COMPOSITION OF THE POOR LABOUR FORCE IN SHARPEVILLE - SLABBERT'S METHOD



Source: Survey data, 2004

Concerning the poor employed, 6.5% are formally employed and 20.6% informally employed according to Figure 4.7, compared to 6.3% and 8.3% respectively in Figure 4.8. Both figures show a higher participation rate in the informal sector than in the formal sector, but Figure 4.7 shows a far higher percentage than Figure 4.8.

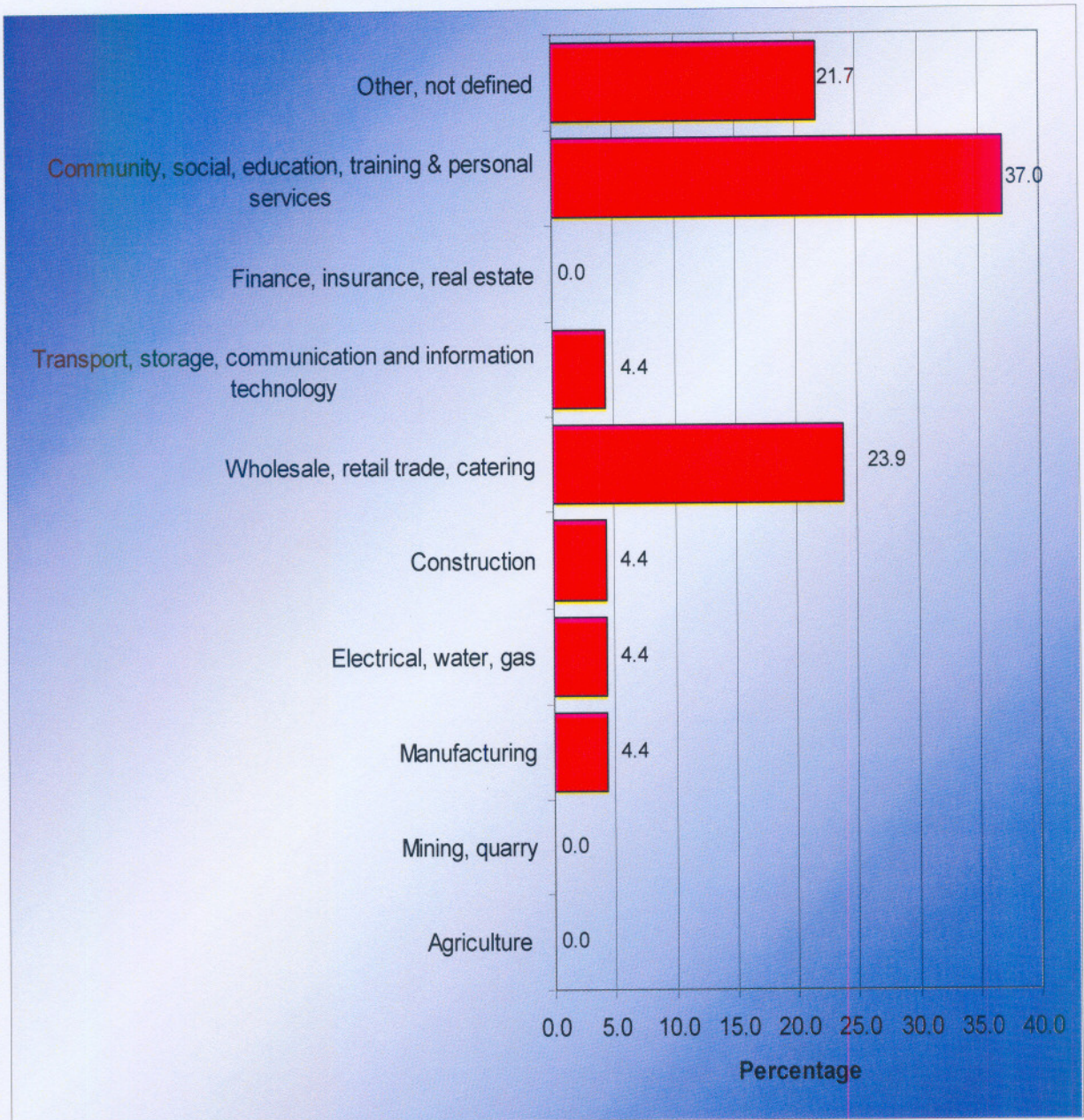
FIGURE 4.8: THE COMPOSITION OF THE POOR LABOUR FORCE IN SHARPEVILLE - STATS SA'S METHOD



Source: Survey data, 2004

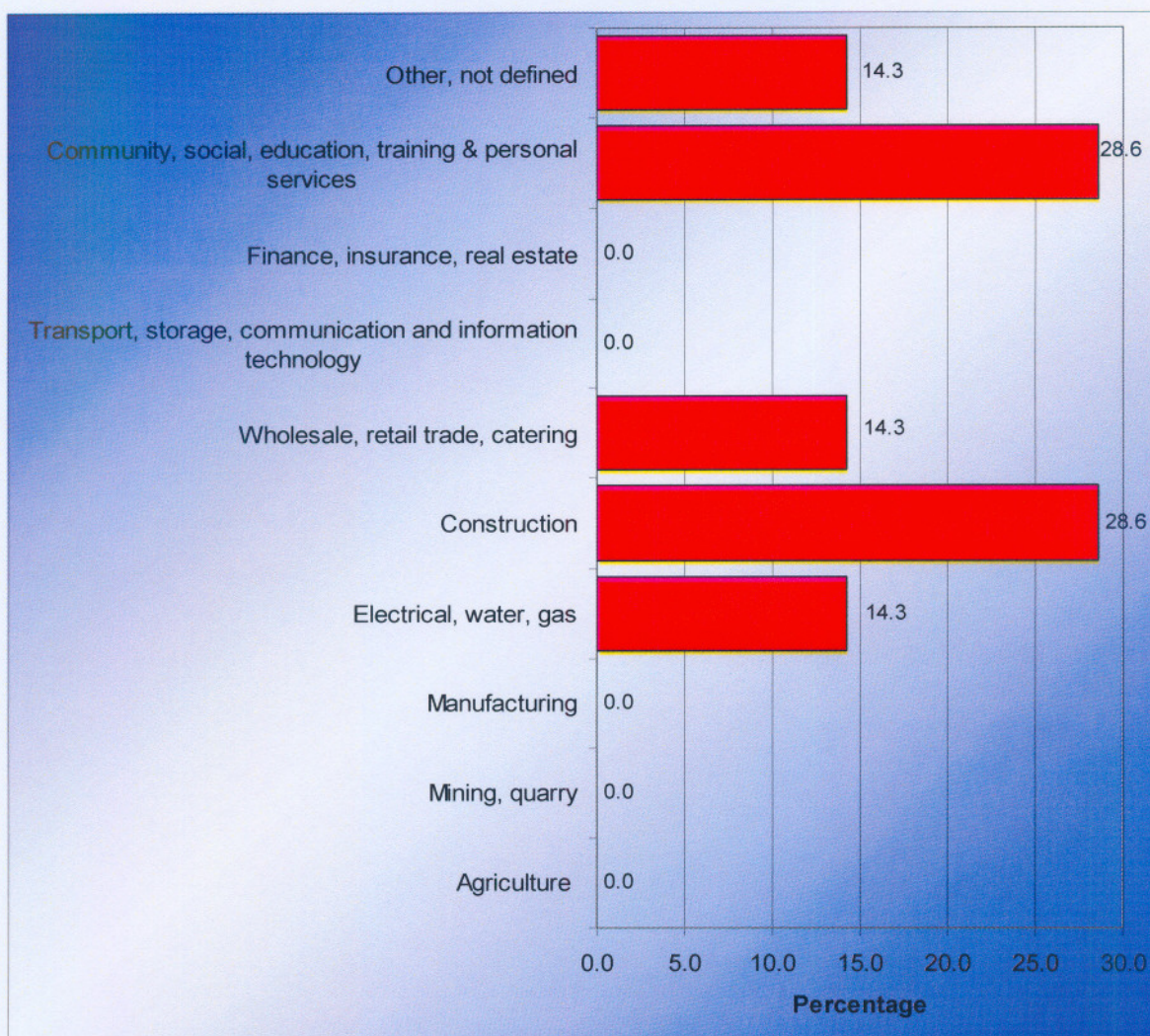
Figures 4.9 and 4.10 portray the sectors where the poor employed work. Both figures were determined by counting the number of people in the poor population employed in different sectors of the economy. Both figures show that a greater percentage of the poor population work in the community, social, education, training & personal services sector (37% in Figure 4.9 and 28.6% in Figure 4.10). Moreover, Figure 4.9 indicates that a greater percentage of the poor population work in the trade sector (23.9% compared to 14.3% in Figure 4.10). Contrary to Figure 4.9, Figure 4.10 indicates that 28.6% of the poor population work in the construction sector (according to Figure 4.9 only 4.4% of the labour force are employed in this sector). These are sectors with comparatively low wages, which easily lead to the perpetuation of poverty, vulnerability to shocks and income risk (Mokoena, 2004:118).

FIGURE 4.9: SECTORS OF EMPLOYMENT FOR THE POOR EMPLOYED IN SHARPEVILLE - SLABBERT'S METHOD



Source: Survey data, 2004

FIGURE 4.10: SECTORS OF EMPLOYMENT FOR THE POOR EMPLOYED IN SHARPEVILLE - STATS SA'S METHOD

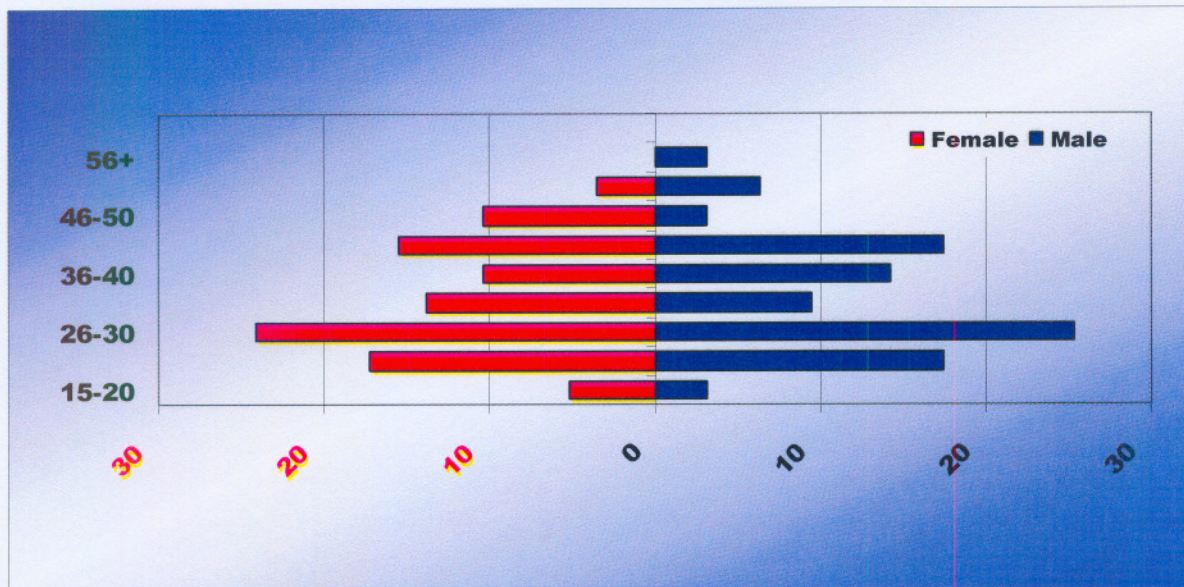


Source: Survey data, 2004

Figures 4.11 and 4.12 give an age profile of the poor unemployed in Sharpeville. These figures were determined by taking the poor unemployed population and allocating them according to their different age categories. Both figures show that amongst the poor, the youth are affected most by unemployment. According to Figure 4.11, 53.7% of the total poor unemployed are between 20 and 35 years of age. In the case of females, the percentage is higher (55.2%) than in the case of males (52.4%). Figure 4.12 indicates an average of 45.2% of the total poor unemployed between 20 and 35 years of age. Figure 4.12 also indicates that females are more affected by unemployment (52.4%) than males (which are 38.1%). Both figures show the same

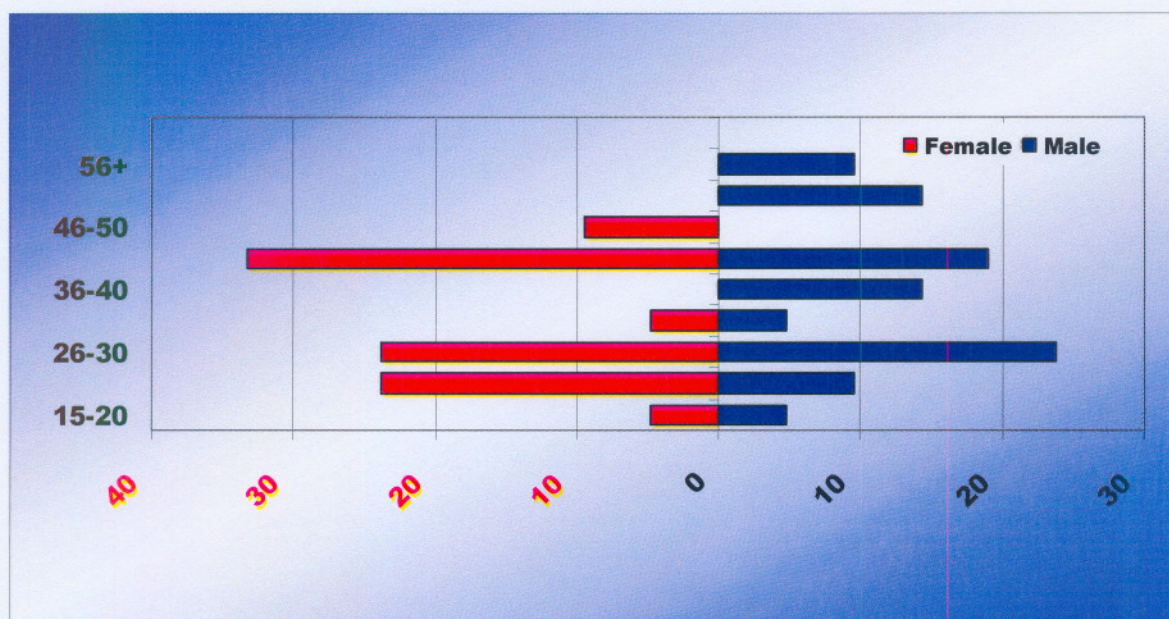
trend but Figure 4.12 shows a relatively low percentage of the average youth unemployment, that is 45.2% compared with 57.3%, in Figure 4.11.

FIGURE 4.11: AGE CATEGORIES OF THE POOR UNEMPLOYED POPULATION IN SHARPEVILLE - SLABBERT'S METHOD



Source: Survey data, 2004

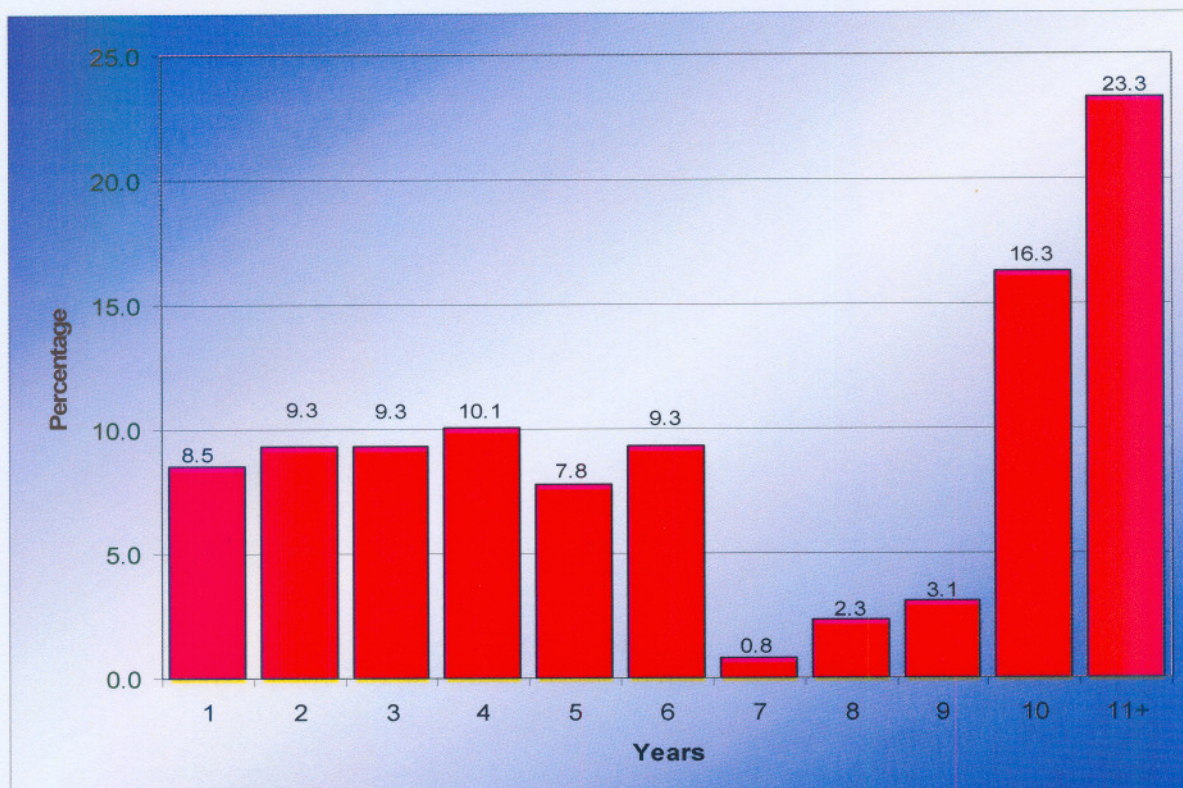
FIGURE 4.12: AGE CATEGORIES OF THE POOR UNEMPLOYED POPULATION IN SHARPEVILLE - STATS SA'S METHOD



Source: Survey data, 2004

Figure 4.13 shows the duration of unemployment for the poor population. Slabbert's method was used to determine the unemployed poor population in this figure. The figure shows that 45% of the poor population have been unemployed for up to five years.

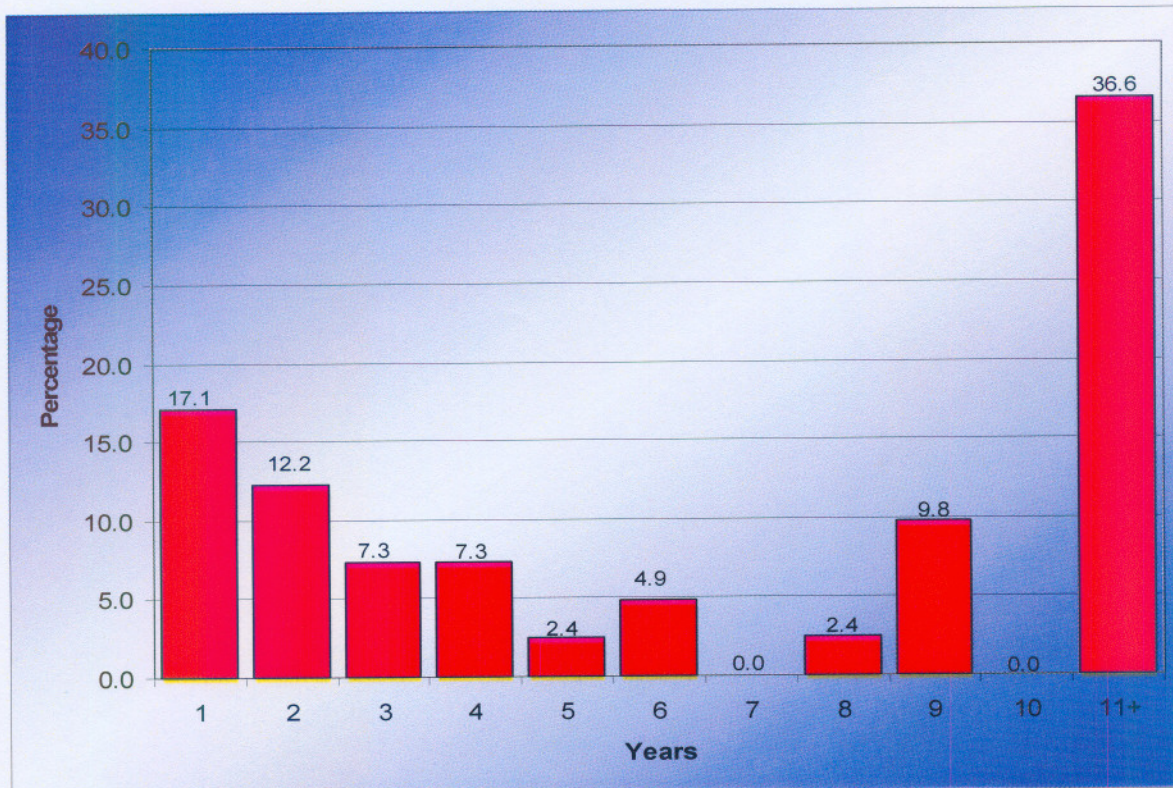
FIGURE 4.13: DURATION OF UNEMPLOYMENT FOR THE POOR UNEMPLOYED POPULATION IN SHARPEVILLE - SLABBERT'S METHOD



Source: Survey data, 2004

Figure 4.14 also shows the duration of unemployment for the poor population. Stats SA's method was used to determine the unemployed poor population in this figure. The figure shows that 46.2% of the poor population has been unemployed for up to five years. Figure 4.14 shows a slightly higher percentage than Figure 4.13 concerning the period of unemployment of the poor population of Sharpeville Township.

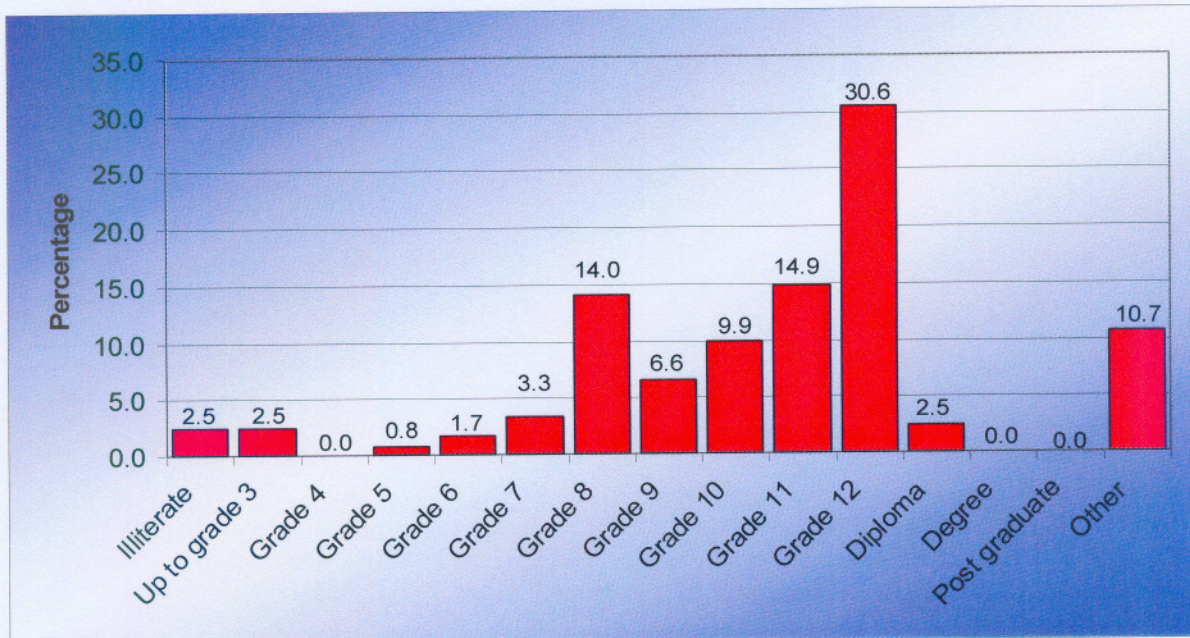
**FIGURE 4.14: DURATION OF UNEMPLOYMENT FOR THE POOR
UNEMPLOYED POPULATION IN SHARPEVILLE - STATS SA'S
METHOD**



Source: Survey data, 2004

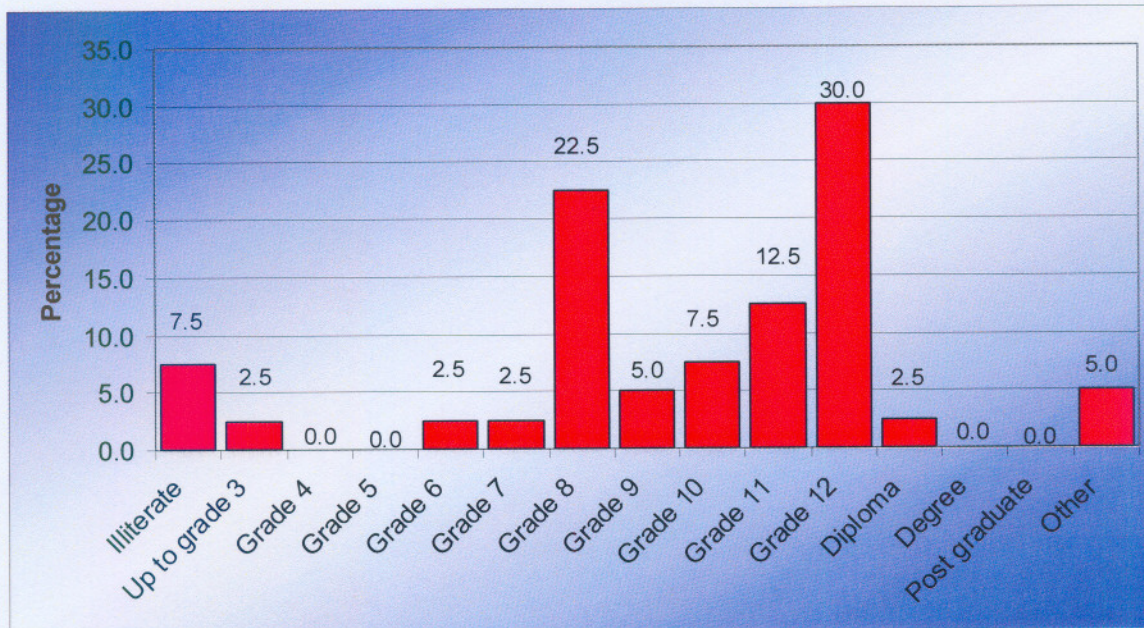
Figures 4.15 and 4.16 show the qualifications of the poor unemployed. These figures were determined by taking the poor unemployed population and allocating them according to the qualifications they possess. The percentage of the poor unemployed population with grade 12 or higher qualification is 43.8% according to Figure 4.15. This figure is 37.5% in Figure 4.16. Both figures show that of the poor unemployed population only 2.5% have diplomas and both figures follow the same trends with regards to the qualifications of the poor unemployed; they both also indicate that no one has a degree or a post-graduate degree in Sharpeville.

FIGURE 4.15: QUALIFICATIONS OF THE POOR UNEMPLOYED IN SHARPEVILLE - SLABBERT'S METHOD



Source: Survey data, 2004

FIGURE 4.16: QUALIFICATIONS OF THE POOR UNEMPLOYED IN SHARPEVILLE - STATS SA'S METHOD

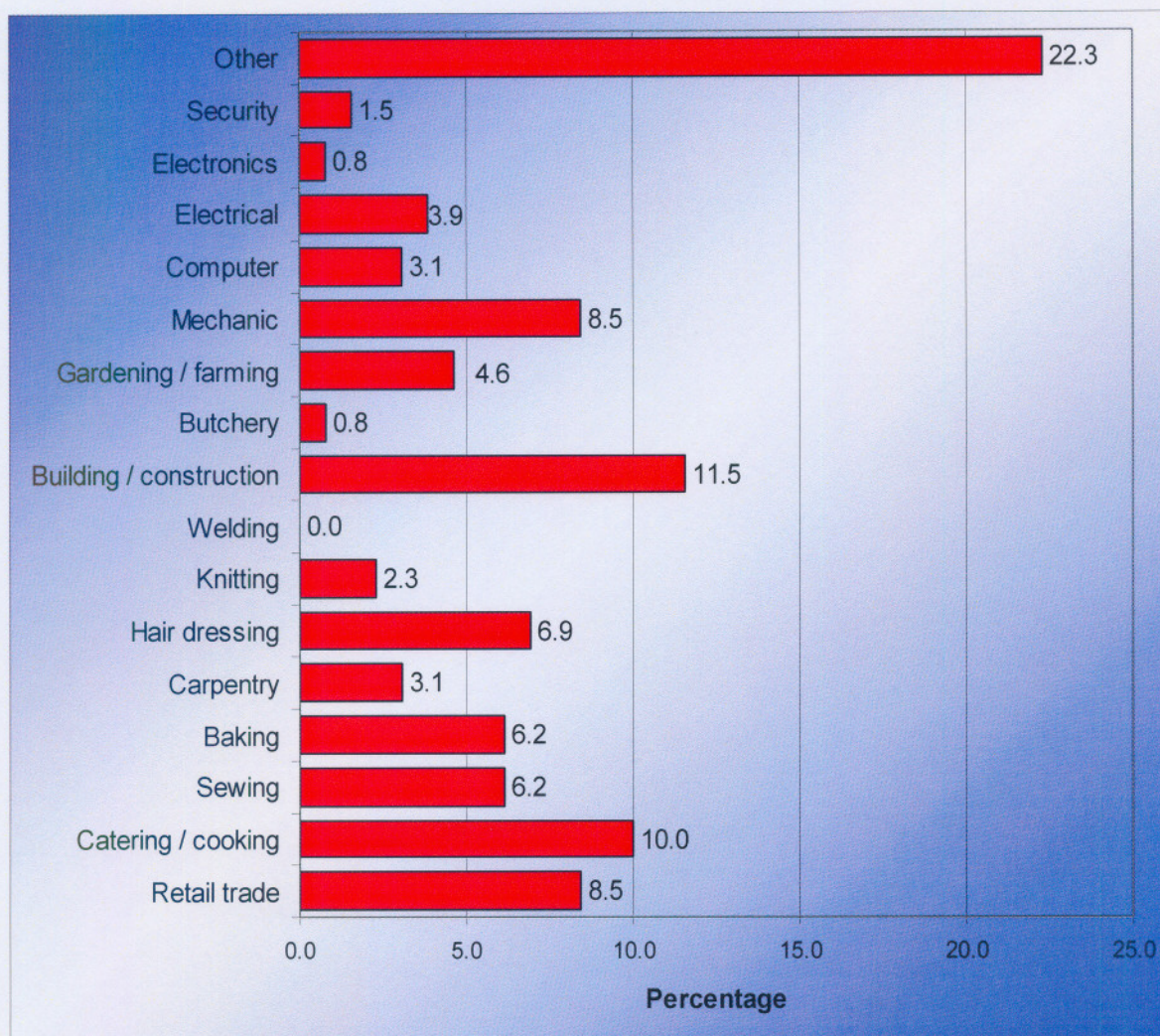


Source: Survey data, 2004

Figures 4.17 and 4.18 show the skills of the poor unemployed population. Both Figure 4.17 and 4.18 were determined by taking the poor unemployed population sample and

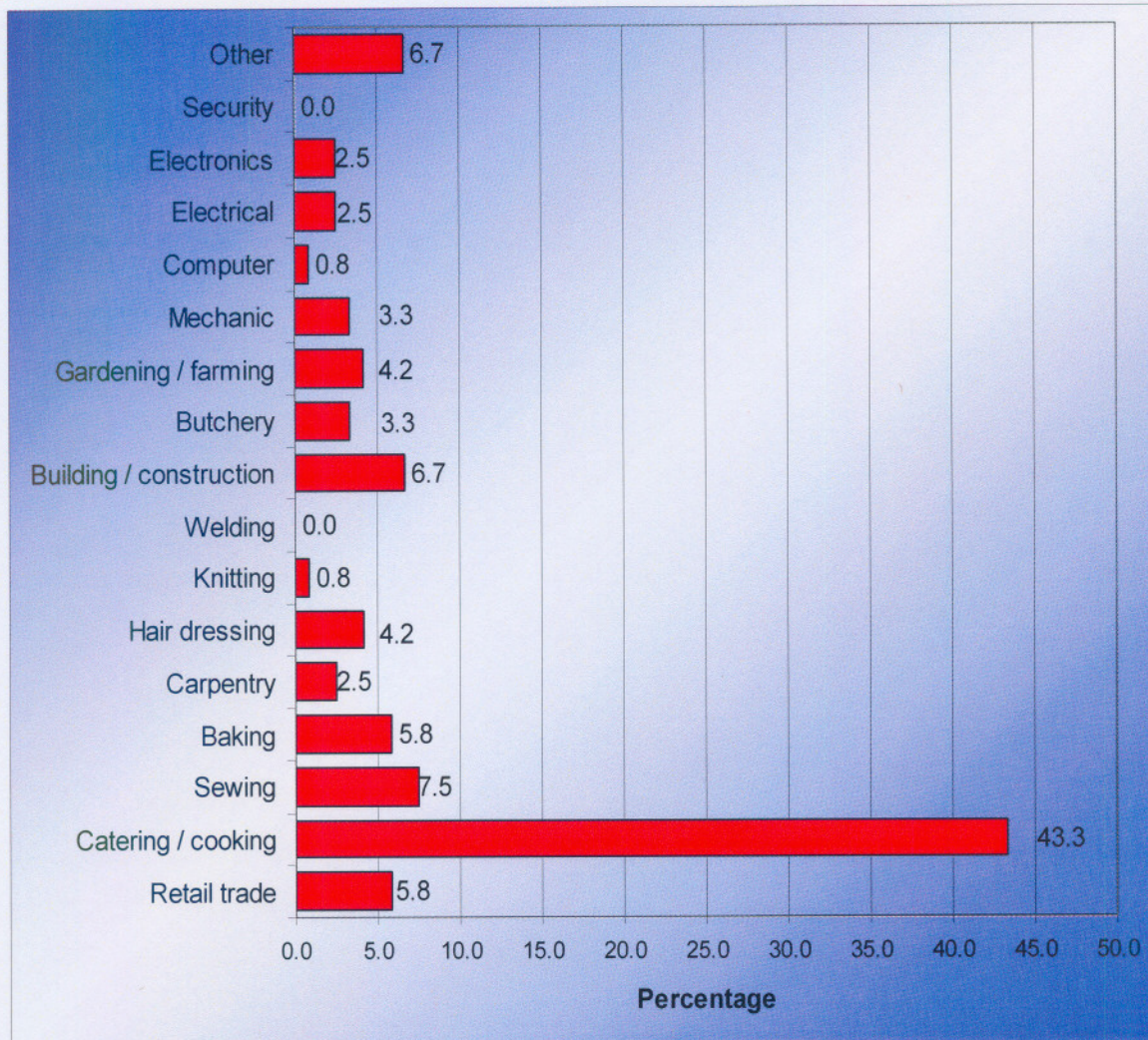
allocating them, according to the skills they possess, as a percentage of the whole poor unemployed population sample. Figure 4.17 show that the highest percentage of the unemployed has skills in building/construction (11.5%). In contrast to Figure 4.17, Figure 4.18 indicates that the highest percentage of the unemployed has skills in catering/cooking (43.3%). The predominant 'female' skills possessed by the unemployed in both figures are catering/cooking, sewing, baking and knitting (24.7% in Figure 4.17 and 57.4% in Figure 4.18), while the predominant 'male' skills are gardening/farming, building/construction, mechanic, welding and carpentry (27.2% in Figure 4.17 and 16.7% in Figure 4.18). Females in Figure 4.18 are better skilled than those in Figure 4.17 whereas it is the other way round for males.

FIGURE 4.17: SKILLS OF THE POOR UNEMPLOYED IN SHARPEVILLE - SLABBERT'S METHOD



Source: Survey data, 2004

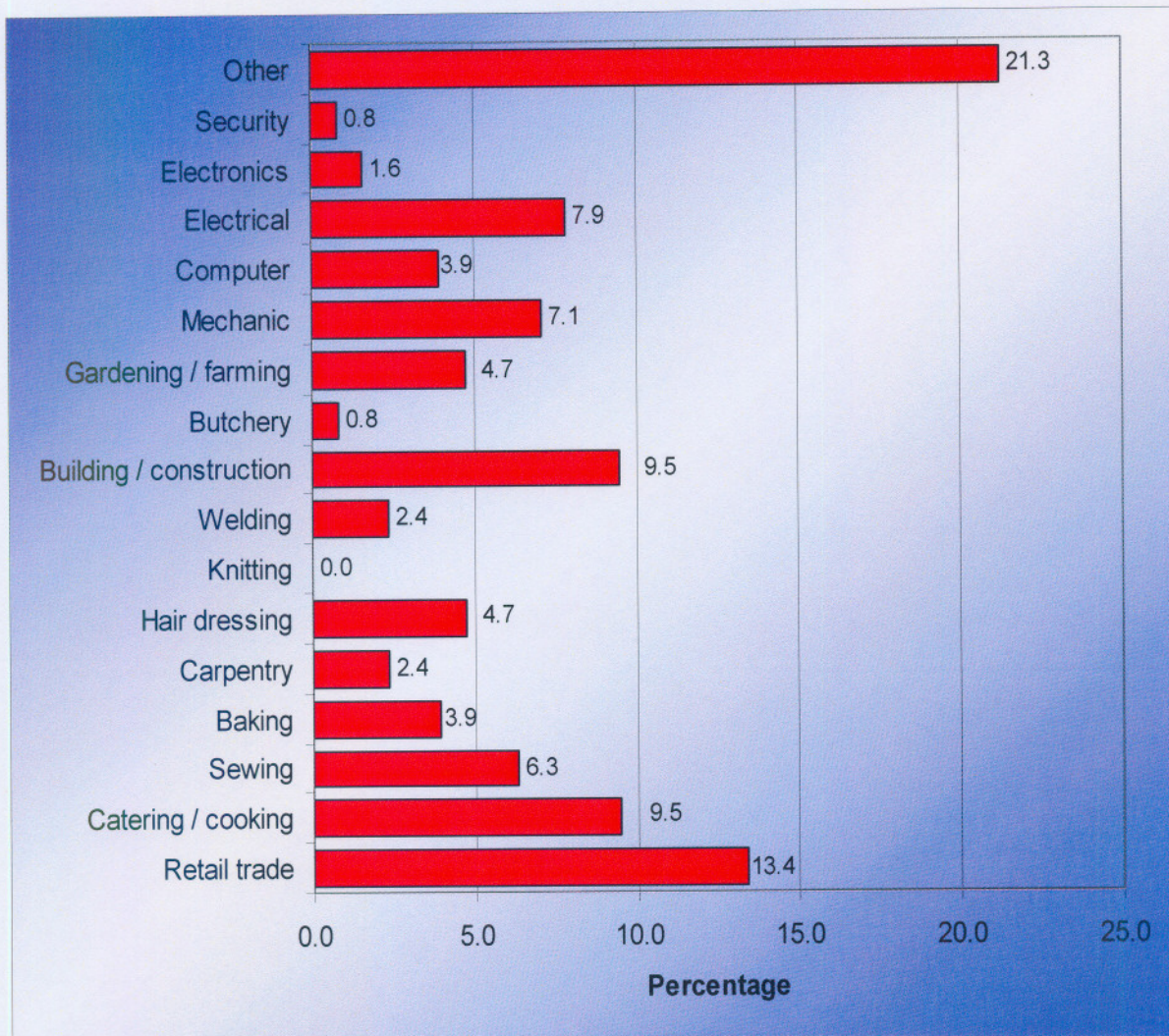
FIGURE 4.18: SKILLS OF THE POOR UNEMPLOYED IN SHARPEVILLE - STATS SA'S METHOD



Source: Survey data, 2004

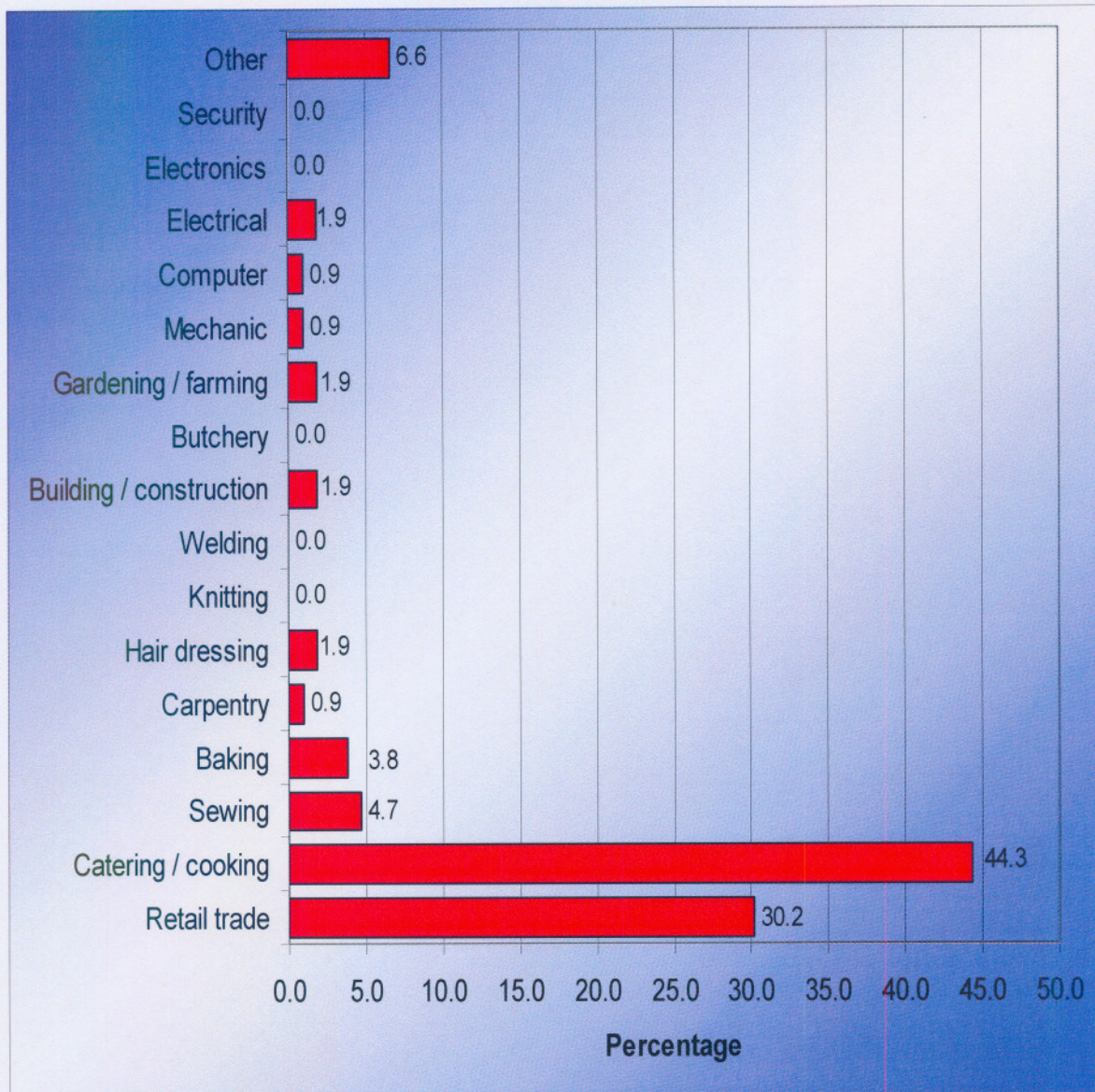
Figures 4.19 and 4.20 give an indication of the kind of self-sustaining activities the poor unemployed population would like to be trained in. These figures were determined by taking the poor unemployed population sample and allocating them, according to the skills training they prefer, as a percentage of the poor unemployed population sample. The majority of the poor unemployed in Figure 4.19 would like to be trained in the trading field (13.4%), while a majority of the unemployed in Figure 4.20 would like to be trained in the catering/cooking field (43.3%). Figure 4.19 indicates that, a strategy for poverty alleviation should focus on creating jobs in the trading, catering/cooking and sewing fields for females; and building/construction and mechanic fields for males. This is almost the same as for Figure 4.20.

FIGURE 4.19: SKILLS TRAINING PREFERRED BY THE POOR UNEMPLOYED IN SHARPEVILLE - SLABBERT'S METHOD



Source: Survey data, 2004

FIGURE 4.20: SKILLS TRAINING PREFERRED BY THE POOR UNEMPLOYED IN SHARPEVILLE - STATS SA'S METHOD

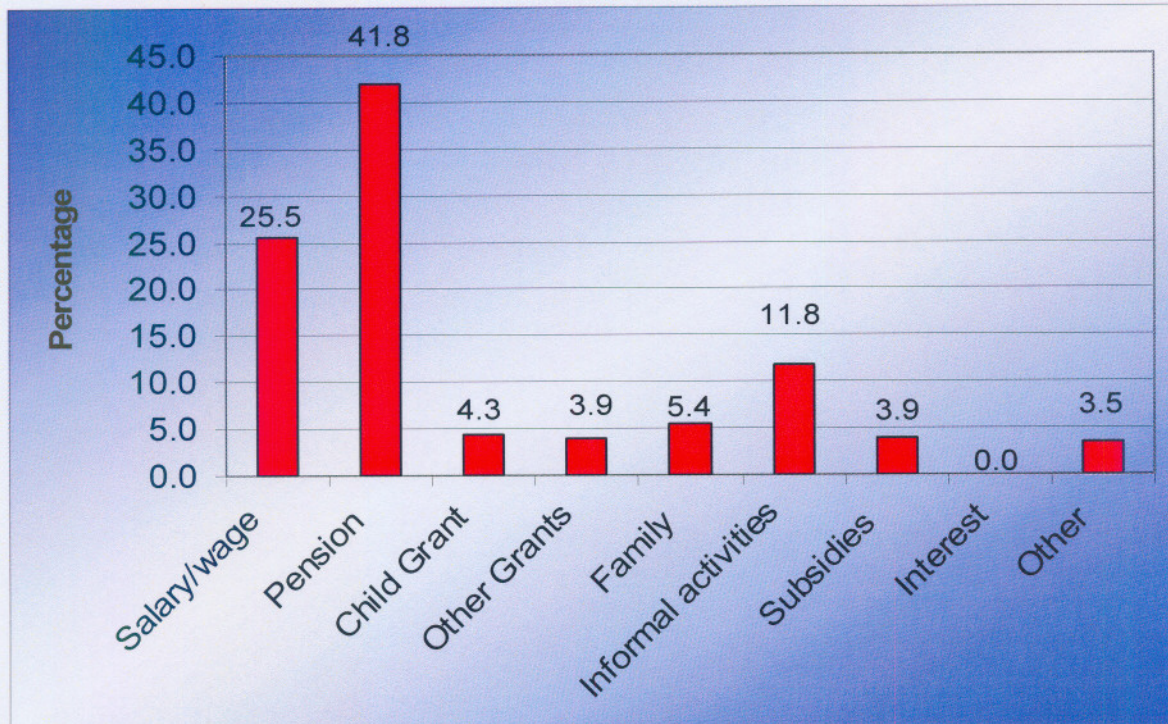


Source: Survey data, 2004

With both methodologies, the average household income was determined by taking the total income per household per month of all the households in the poor population sample, and then taking the average income of the whole sample. The average household income for the poor population in Sharpeville was then determined at R822.72 per household per month (Survey data, 2004 based on Slabbert's method). When the Stats SA methodology is applied on the same data, it indicates that the average household income is R416.70 per household per month. The two methods

indicate a difference of R406.02 between their average incomes (Stats SA's method indicates an average income of almost 50% less than Slabbert's method).

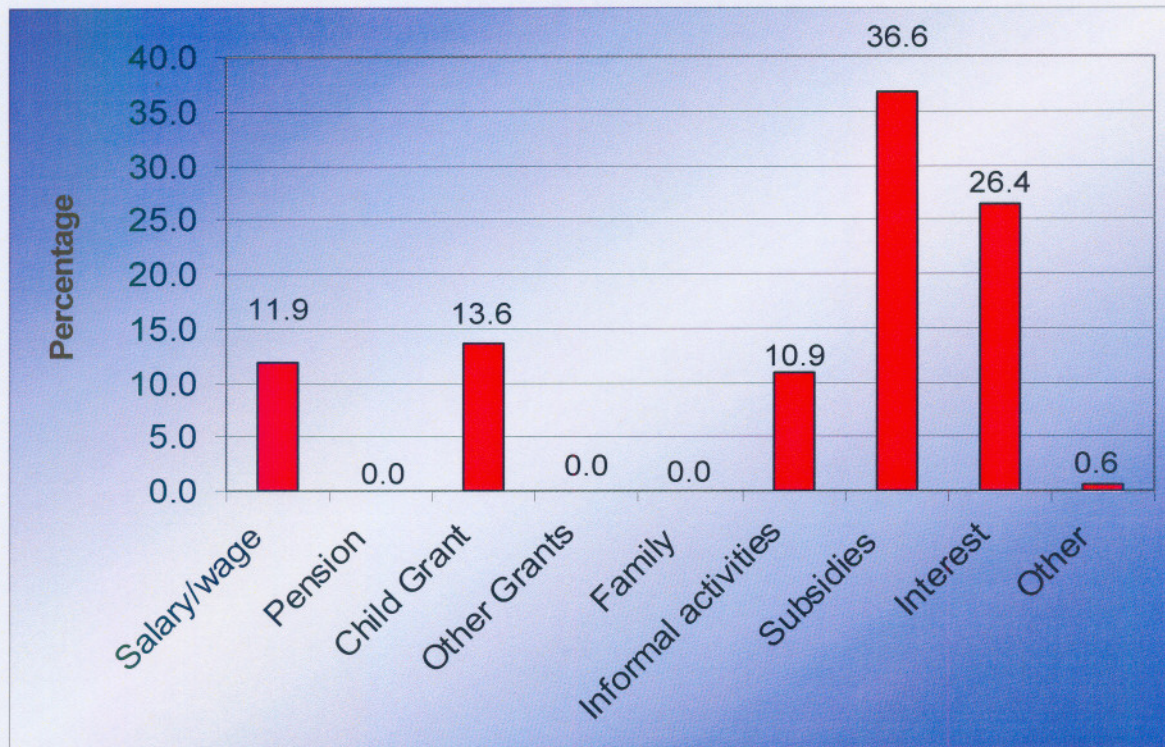
FIGURE 4.21: PERCENTAGE CONTRIBUTION OF DIFFERENT SOURCES TO POOR HOUSEHOLD INCOME IN SHARPEVILLE - SLABBERT'S METHOD



Source: Survey data, 2004

Figures 4.21 and 4.22, shows the different sources of income and their contribution to the total household income of the poor in Sharpeville. Figure 4.21 shows that 41.8% of poor household income comes from pensions. This is, therefore, by far the primary source of household income, followed by salaries and wages at 25.5%. In contrast to that, Figure 4.22 indicates that the primary source of income for the poor population in Sharpeville is subsidies followed by interest.

FIGURE 4.22: PERCENTAGE CONTRIBUTION OF DIFFERENT SOURCES TO POOR HOUSEHOLD INCOME IN SHARPEVILLE - STATS SA'S METHOD



Source: Survey data, 2004

4.4 HOUSEHOLD ATTITUDE TOWARDS INCOME REVELATION

As indicated in Section 1.4, the Stats SA's 2001 Census questionnaires did not make provision for determining the exact income of households, but only determined the income of households within a certain category. The question that this study raises around this practice by Stats SA is: Why not ask people/households their exact income in the census surveys? Hence a sample of 50 people/households were interviewed in Sharpeville by means of questionnaires to determine the attitude people have towards giving their exact income compared to indicating a category. From the 2004 survey data it was found that from the 174 households, 75 households were poor. The sample of 50 people/households that were interviewed for the attitude that people/households have towards revealing their income was randomly selected from the 174 households that were interviewed in 2004 (25 households from the poor population and the other 25 from the non-poor population). This section starts by analysing the attitude that poor households have towards revealing their income and

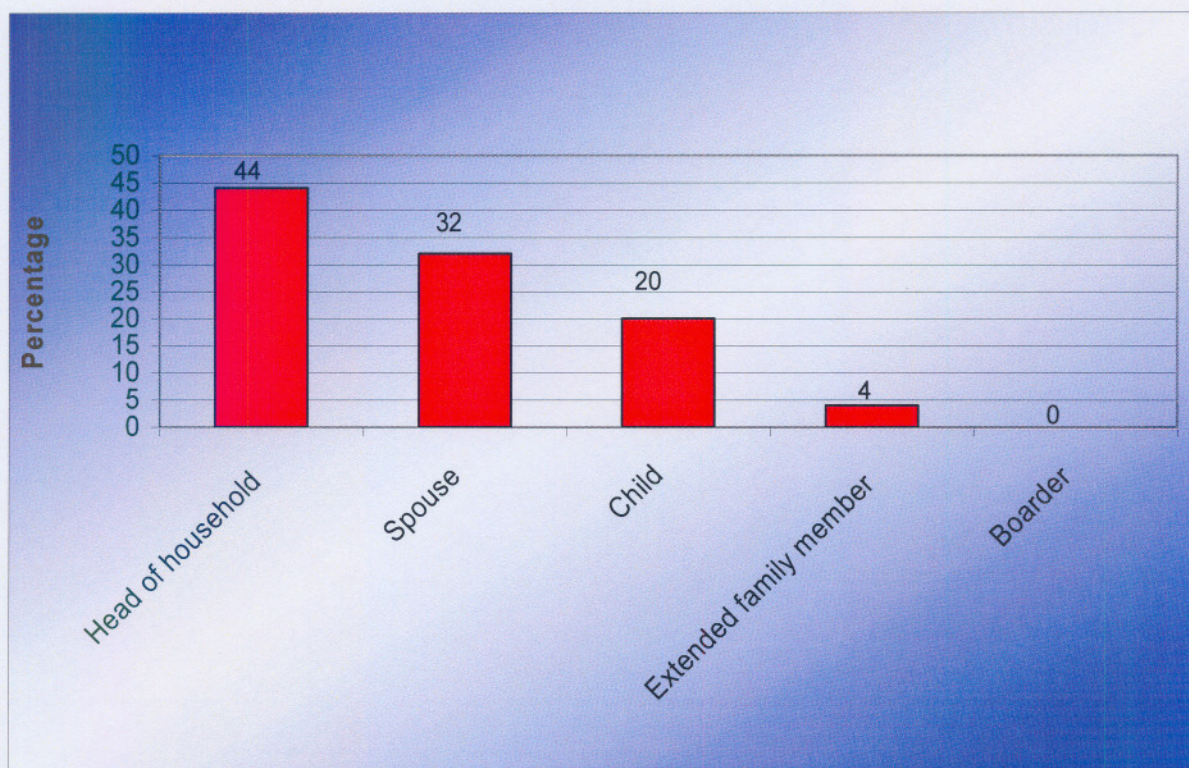
later analyses the attitude that the non-poor population have towards their income revelation.

4.4.1 Poor households and income revelation

For the purpose of this study, poverty is defined as the inability to attain a minimum material standard of living (World Bank, 1990:26). This section analyses the attitude that poor households have towards revealing their income. The purpose is to show that poor households do not mind revealing their exact income.

Figure 4.23 indicates the position of the respondents in the 25 poor households that were interviewed. The figure shows that 44% of the respondents were the heads of the households, followed by spouses with 32% and children 20% and lastly extended family members with 4%.

FIGURE 4.23: POSITION OF THE RESPONDENTS IN THE POOR HOUSEHOLD

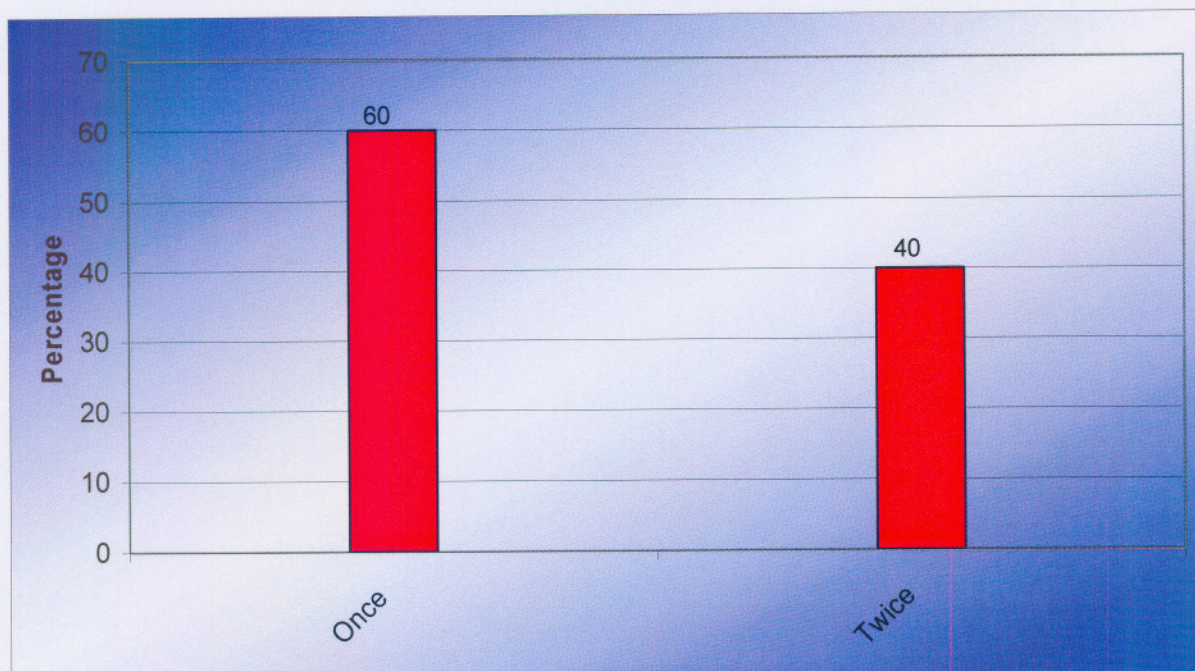


Source: Survey data, 2006

Households were asked if they ever participated in the Census Surveys or not. All people/households who were interviewed indicated that they did participate in the

Census Surveys. Figure 4.24 indicates the number of occasions in which the respondents participated in the Census Surveys. From the figure, 60% of the respondents indicated that they participated in the Census Surveys only once, whereas 40% indicated that they took part in the surveys twice.

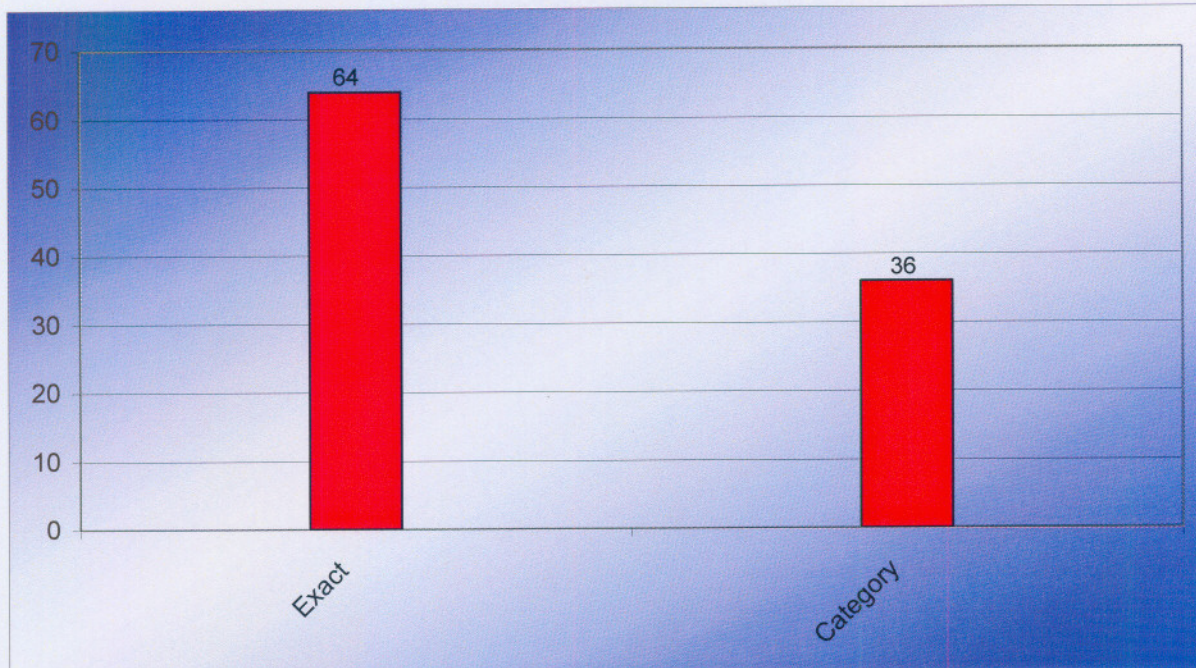
FIGURE 4.24: TIMES OF PARTICIPATION IN THE CENSUS SURVEYS - POOR HOUSEHOLDS



Source: Survey data, 2006

Since the respondents indicated that they did participate in the Census Surveys, the following question that they were asked was whether they felt comfortable or not when they had to answer the question about their income (that is how much they are earning).

FIGURE 4.26: PREFERRED METHOD OF REVEALING INCOME - POOR HOUSEHOLDS



Source: Survey data, 2006

Table 4.2 indicates the reasons given by respondents for preferring to reveal their income as the exact amount or in terms of a category. The first column of the table indicates reasons for preferring to reveal the exact income and the second column, reasons for preferring using a category. The first reason on the first column is that the respondents are unemployed and they get help from their family members, which is a fixed amount each month so they do not see a point for indicating a category. Some of the respondents indicated that they are pensioners (when checked, this corresponds to the information/data from the 2004 surveys), so there is no point in indicating a category, for everyone knows how much pensioners (those individuals who receive government grants) receive every month from the government. Others indicated that they don't have a problem revealing their true state of affairs and they believed that by doing that it will make it easier for the government to provide assistance to them (by providing better and suitable services). Some respondents preferred using a category because they are traders and the income is not fixed, so you can't give an exact income. Others indicated that they preferred a category due to lack of trust, they believe one's income is a personal matter. There were also respondents who hold

temporary jobs with incomes that are not fixed, so a category is the best option for them.

TABLE 4.2 REASONS FOR REVEALING IN EXACT INCOME AND IN TERMS OF A CATEGORY

| Reasons for giving exact income | Reasons for giving income in terms of category |
|---|---|
| Unemployed, get fixed income from family | Informally employed |
| Pensioner, it's an open secret | Lack of trust |
| Don't have a problem revealing their true status | Hold temporary jobs and the income are not fixed. |
| To get help one needs to reveal one's true status. This makes it easy for the government. | |

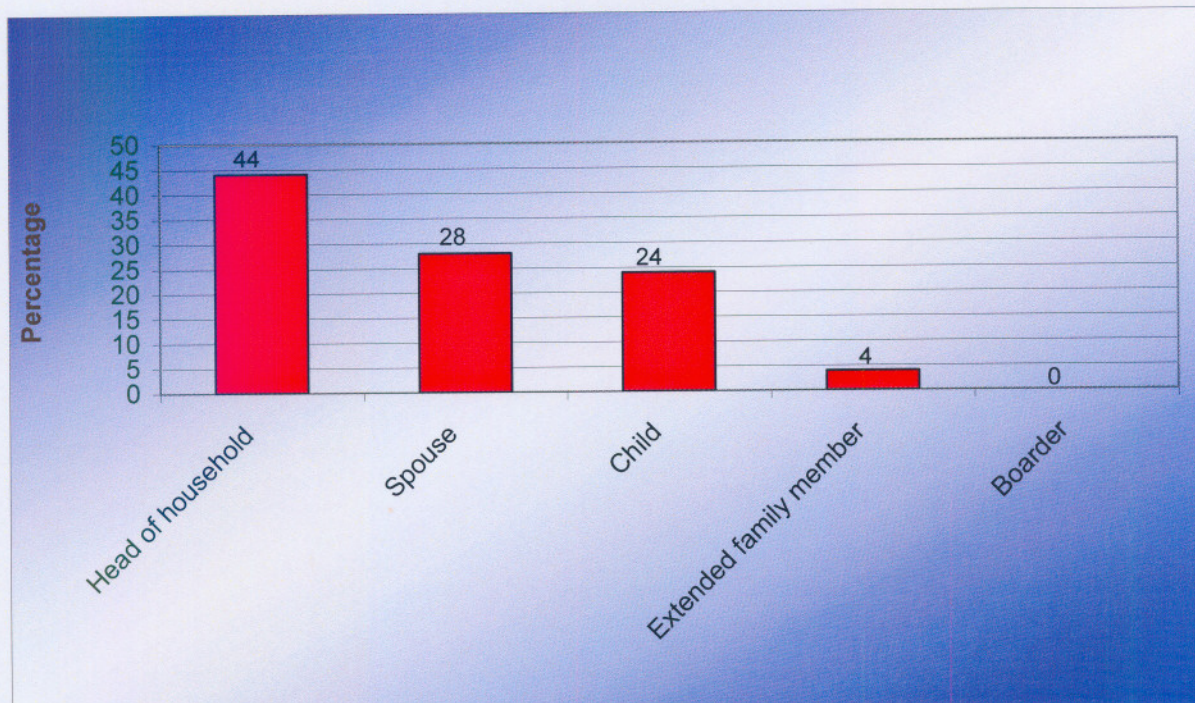
Source: Survey data, 2006

4.4.2 Non-poor households and income revelation

As indicated in Section 4.4.1, for the purpose of this study, poverty is defined as the inability to attain a minimum material standard of living (World Bank, 1990:26). This section analyses the attitude that non-poor households have towards revealing their income. These are households with the ability to attain a minimum material standard of living. The purpose is to show that non-poor households also do not mind revealing their exact income.

Figure 4.27 indicates the position of the respondents from the 25 non-poor households that were interviewed. The figure shows that 44% of the respondents were the heads of the households, followed by spouses with 28% and children 24% and lastly extended family members with 4%. This corresponds very well with the poor households.

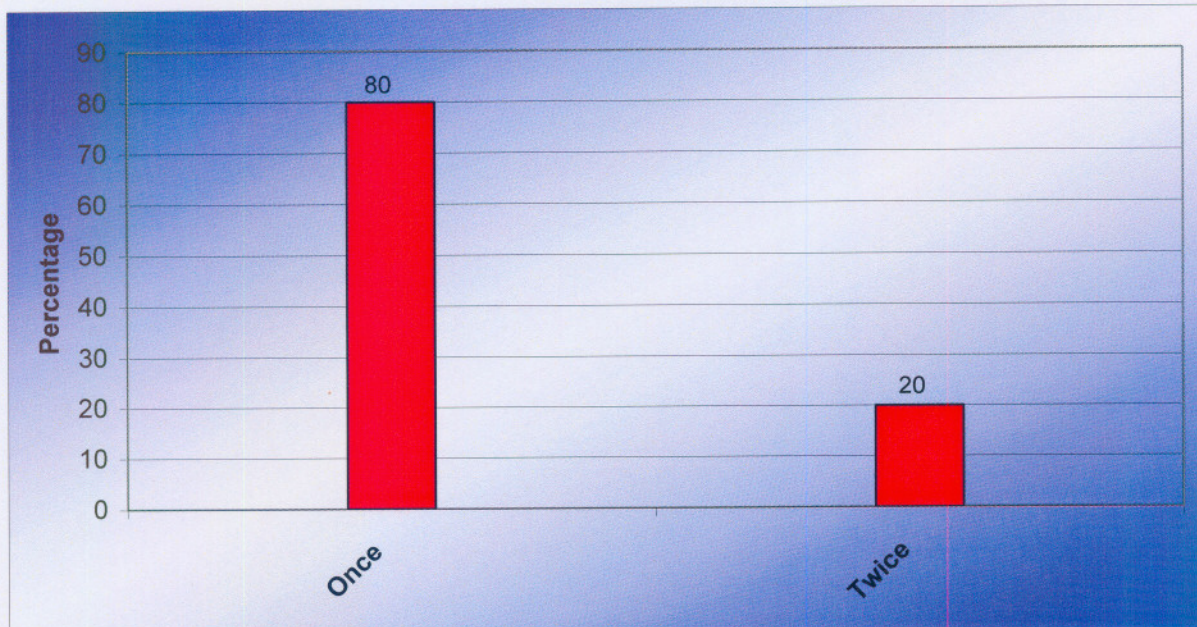
FIGURE 4.27: POSITION OF THE RESPONDENTS IN THE NON-POOR HOUSEHOLD



Source: Survey data, 2006

As with the poor households, households in the non-poor population were also asked if they ever participated in the Census Surveys. All non-poor people/households who were interviewed indicated that they did participate in the Census Surveys. Figure 4.28 indicates the number of occasions in which the respondents participated in the Census Surveys. From the figure, 80% of the respondents indicated that they participated in the Census Surveys only once whereas 20% indicated that they took part in the surveys twice. These figures follow the same trend as in the poor households but the percentage of respondents who took part in the Census Surveys only once is higher in the non-poor households compared to the poor households (80% vs. 60%), whereas it is the other way round for households that took part in the surveys twice (20% vs. 40%).

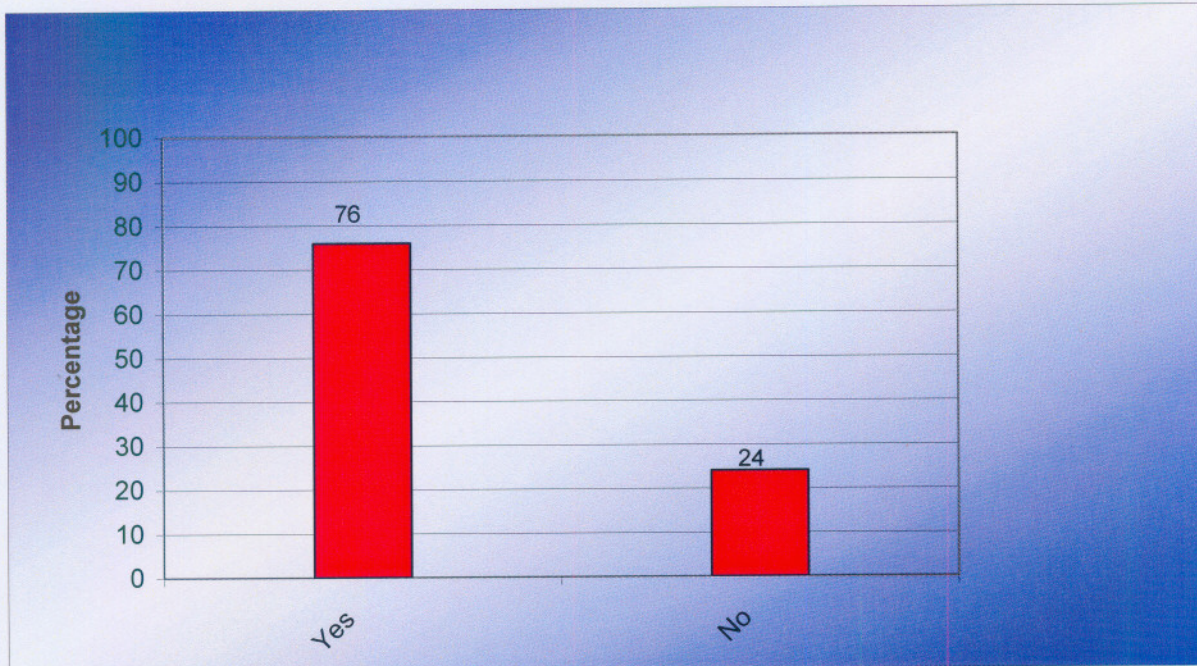
FIGURE 4.28: TIMES OF PARTICIPATION IN THE CENSUS SURVEYS – NON-POOR HOUSEHOLDS



Source: Survey data, 2006

Figure 4.29 indicates whether respondents were comfortable or not when they had to reveal their income during the Census Surveys. The figure shows that a higher percentage of the non-poor respondents didn't have any problem with revealing their income. It shows that 76% of the non-poor respondents indicated that they felt comfortable with revealing their income, while 24% of the respondents indicated that they felt uncomfortable, compared to 84% and 16% respectively for the poor households. As in the case of the poor households, those respondents who indicated that they felt uncomfortable revealing their income, indicated that this is because they feel one's income is personal (it is a private and confidential matter).

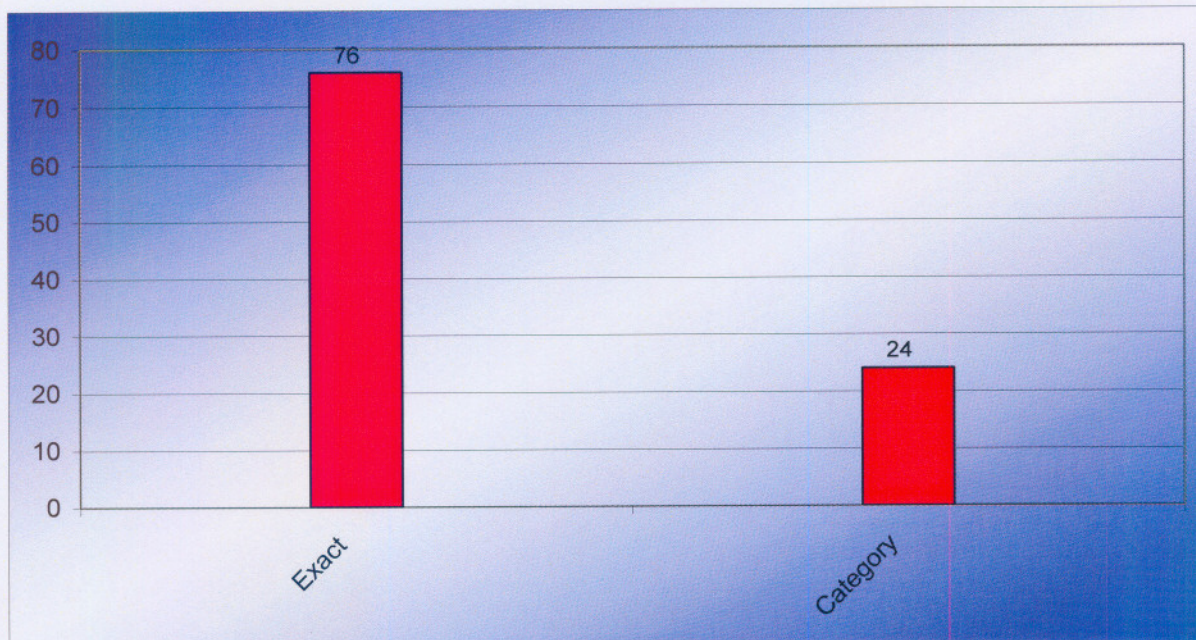
FIGURE 4.29: DID YOU FEEL COMFORTABLE WHEN YOU WERE ANSWERING QUESTIONS ABOUT YOUR INCOME? – NON-POOR HOUSEHOLDS



Source: Survey data, 2006

Figure 4.30 shows the preferred method by non-poor respondents of revealing their income. It shows that 76% (compared to 64% by the poor households) of the respondents prefer giving their exact income than giving their income instead of a category. The remaining 24% (compared to 36% by the poor households) indicated that they prefer giving their income in terms of a category against giving it in terms of an exact amount. From these figures it is clear that households from the non-poor population feel more strongly about revealing their exact income against giving their income in terms of a category. The respondents indicated the same reasons as shown in Table 4.2 for preferring the method of revealing their income.

FIGURE 4.30: PREFERRED METHOD OF REVEALING INCOME – NON-POOR HOUSEHOLDS



Source: Survey data, 2006

4.5 SUMMARY AND CONCLUSION

This chapter outlined a cross-sectional comparative evaluation of two methodologies (Stats SA's and Slabbert's) on a set of data from Sharpeville (survey data 2004). The chapter compared the result of the two methodologies when applied on the same data.

This section analyses the results from the cross-sectional comparative application of the Stats SA's 10% sample and the 2004 household survey data. The Stats SA standard poverty line of R800 (2001) was used for this study when applying and comparing the Stats SA method. This poverty line was inflated for 2004 by the CPI from 2002 up to 2004 to get an adjusted poverty line for 2004. The method used by Stats SA was also applied to a 10% sample of the 2001 Census-data of Sharpeville. The average poverty line for 2001 was determined by taking the average HSL of households in a 10% sample, and this is compared with the R800 poverty line. The following was determined from the Stats SA's 10% sample:

- Based on the Stats SA's 10% sample of Sharpeville a poverty rate of 62.6% was determined by compiling a poverty line for each household and comparing that particular poverty line to the midpoint amount of income determined by Stats SA.
- When comparing the Stats SA 2001 poverty line (R800) with the midpoint income determined by Stats SA, a poverty rate of 51.2% was determined for Sharpeville.

Table 4.3 indicates the results determined from employing the two methodologies on the 2004 survey data.

TABLE 4.3 COMPARISON OF THE RESULTS FROM THE TWO METHODOLOGIES (STATS SA'S AND SLABBERT'S)

| Methodology | Poverty rate | Headcount index | Poor households | Poor people |
|---------------------------------------|--------------|-----------------|-----------------|-------------|
| Slabbert (based on total income) | 43.1% | 0.431 | 3,609 | 17,685 |
| Slabbert (based on total expenditure) | 46.9% | 0.469 | 3,927 | 19,242 |
| Stats SA (based on midpoint income) | 15.5% | 0.155 | 1,299 | 6,365 |
| Stats SA (based on actual income) | 24.7% | 0.247 | 2,068 | 10,133 |

Source: Own construction, based on the 2004 survey data

Table 4.3 indicates that Slabbert's methodology yields a higher poverty rate for Sharpeville than Stats SA's methodology. Based on Slabbert's method, when the individual households' poverty line was compared with the total income of that household, a poverty rate of 43.1% was determined. And when the individual households' poverty line was compared with the total expenditure of that household, a poverty rate of 46.9% was determined. With Stats SA's methodology, a poverty rate of 15.5% was determined by taking an average poverty line and comparing it with the

households' midpoint incomes. And when the average poverty line was compared with the actual household income, a poverty rate of 24.7% was determined

From the table it can be concluded, on a comparative basis that Stats SA's methodology yields a lower number of poor households and people. This does not reflect the true status of the inhabitants of Sharpeville and might be misleading to policy makers.

A credible measure of poverty can be a powerful instrument for focusing the attention of policy makers on the living conditions of the poor. A poor measure will be misleading. The current Stats SA poverty measure that is used country-wide does not accurately identify the poor population. The methodology applied by Stats SA country-wide is also not able to determine the headcount index, nor does it lend itself to determine the poverty gap as proxy income values are used instead of real income values. The methodology used by Slabbert proves to be more accurate and can, in addition, determine the depth of poverty (the poverty gap) and portray the poor in terms of employment, unemployment, qualifications, skills possessed and skills preferred for self-sustaining activities, and expenditure patterns.

To determine its official poverty rate, Stats SA calculates the annual income for households by adding together the individual incomes of all members of the household, the total income is then reallocated into the relevant income category. Households are then measured whether they are poor or not with their allocated proxy income value against a standard poverty line. According to this method Sharpeville's poverty rate is 15.5%. This is far too low compared to Slabbert's poverty rate for Sharpeville (i.e. 43.1% which was determined by comparing the combined income of a specific household with the poverty line of the household).

According to Slabbert's methodology, 25.3% of all households in Sharpeville have an income of less than 50% of their HSL compared to 24.4% determined with Stats SA's methodology.

A profile of the poor population of Sharpeville was also constructed applying both methods. This was done in terms of household structures: age and gender structure of members, age and qualifications of school and post-school members; employment structures: age of the employed, sectors of employment, mean earnings of the

employed, age of the unemployed, qualifications of the unemployed and activities they wish to engage in, duration of unemployment, income and expenditure patterns of the households. The results from the two methodologies followed the same trend even though it was clear that the Stats SA methodology does not lend itself to constructing such a profile. This is due to the fact that the methodology applied by Stats SA country-wide does not lend itself to determine the poverty gap as proxy income values are used instead of real income values. In that way the Stats SA's methodology does not reflect the intensity of poverty suffered by the poor and cannot portray the poor in terms of employment, unemployment, qualifications, skills possessed and skills preferred for self-sustaining activities, and expenditure patterns.

This study raised a question around the practice by Stats SA: Why not ask people/households their exact income in the census surveys? A sample of 50 (25 households from the poor population and the other 25 from the non-poor population) people/households were interviewed in Sharpeville by means of questionnaires to determine the attitude people have towards giving their exact income compared to indicating a category. This chapter analysed the data from the surveys concerning people's attitude towards revealing their income. The following was determined from the surveys:

Poor households:

- 84% of the respondents felt comfortable revealing their income and 16% felt uncomfortable.
- 64% of the respondents prefer giving their exact income than giving their income instead of a category, whereas it is the other way round for the remaining 36%

Non poor households:

- 76% of the respondents felt comfortable with revealing their income, while 24% felt uncomfortable.
- 76% of the respondents prefer giving their exact income than giving their income instead of a category, while the remaining 24% preferred giving their income in terms of a category against giving it in terms of an exact amount.

Stats SA's 2001 census questionnaires unfortunately did not make provision for determining the exact income of a household, but could only determine the income of a household within a certain category. From the income revelation attitude survey data, it is clear that people/households (both poor and non poor) do not mind revealing their exact income. It was also indicated that the main thing that makes people/households unwilling to reveal their income in terms of a category is because they are involved in the informal sector where income is unstable. Based on this information one can conclude that there is no reason for Stats SA to only determine a household income within a category.

CHAPTER 5

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

5.1 INTRODUCTION

The objective of this study was to analyse international and national methodologies for measuring poverty and to apply and compare specifically the methodologies used by Statistics South Africa (Stats SA) and Slabbert to a set of data obtained by the candidate from a household survey conducted in 2004 in Sharpeville. The specific objective of this study was to indicate that the current Stats SA poverty measure that is used country-wide does not accurately identify the poor population, nor does it lend itself to the measuring of the depth of poverty in Sharpeville.

The previous chapters presented the theoretical background to the concept and measurement of poverty, analysed the indexes of measuring poverty and applied the methodologies by Stats SA and Slabbert on a set of data. This chapter provides a summary of the main points of the thesis and draws some conclusions and recommendations from the findings in the other chapters.

5.2 SUMMARY OF THE THESIS

While the question of poverty today is unavoidable and is set to play the primary role in the implementation of economic policies by developing countries in coming years, a fundamental question remains to be answered. In order to introduce effective strategies to combat poverty, it is necessary to reach an understanding on the definition of the phenomenon, in order to target as precisely as possible the population concerned and to introduce arrangements for evaluation and monitoring of policies. Consensus is far from being achieved on this point. Different concepts and indicators exist alongside each other; without the links between them being clearly set out: monetary poverty, penury or extreme poverty of capabilities, social exclusion, absolute and relative poverty, objective and subjective poverty to mention a few. This confusion stems from the fact that poverty is a complex and multifaceted phenomenon. And, from this point of view, there is today unanimous recognition of its multidimensional character.

The formulation of anti-poverty policies is being hampered by a lack of baseline information regarding poverty. Policies cannot be formulated without a knowledge of who the poor are, how poor they are and where they are located. For these reasons, poverty research is necessary to understand poverty, and equip policy makers with usable information. The philosophy of poverty research around the world states that poverty research thus far has predominantly concentrated on measuring the extent of poverty in a belief that it is of great importance to know the exact numbers of the poor as well as how poor they are. This tradition stems from the World Bank's involvement in poverty studies in the late 1970s, with the aim of making well-supported statements about poverty around the world. A great deal of poverty research is concerned with criticising the different measures and highlighting their shortcomings. Much effort is made to overcome faults and to increase the validity and reliability of the different measures. Global poverty research provided an important window into the economic realities of our time. However, it has been "long on measurements, but short on explanations and theories" and maybe almost silent on action.

Poverty studies in South Africa initially followed a more political approach in that poverty in South Africa was studied from a racial (white) perspective. Later, poverty studies supported the anti-apartheid struggle as they endeavoured to cast light on the policies of the Apartheid government, which caused poverty among blacks. When the 1994 government came to power, poverty studies in South Africa began following international trends by studying poverty at a national level.

The first thing to understand about poverty is that it is not a simple phenomenon that people can learn to define by adopting the correct approach. It is a series of contested definitions and complex arguments that overlap and at times contradict each other. It is differently seen as a big phenomenon or a small phenomenon, as a growing issue or a declining issue, and as an individual problem or a social problem. The vast majority of the existing analyses of the subject are concerned with identifying the best criterion or criteria to use in defining the concept of poverty and with the difficulties in its measurement.

In the 1960s poverty was defined by income; in the 1970s, relative deprivation and the basic needs approach became dominant; in the 1980s, non-monetary concepts were

added, including powerlessness, vulnerability, livelihoods, capabilities and gender. The 1990s saw the use of well-being and 'voice' in defining poverty, while the rights based approach has dominated the first years of the new millennium. Each has its own (differing) indicators, each following among its own governments and donors, programme managers and Non-Governmental Organisations (NGOs) although few stop to make sure they are talking about the same thing. However the question remains: Is there a single right definition of poverty? The answer is certainly 'no', but current thinking does allow some simplification.

Specifying a poverty measure is not, however, a simple task. Indeed, many conceptual and methodological issues should be addressed beforehand, such as: What individual welfare indicators should be retained? Who is really poor and why? How can the set of information describing the poor population be synthesised into a synthetic poverty measure? The economic literature dealing with these questions emphasises that it is often hard, if not impossible, to find a consensus on the process yielding an appropriate poverty index. Approaches to measuring poverty can be divided into two groups, described as the welfarist and the non-welfarist approaches. The first approach tends to concentrate in practice mainly on comparisons of "economic well-being". The second approach has also been recently and increasingly suggested by economists and non-economists alike as a multidimensional complement to the classical standard of living approach.

In poverty measurement the desirability of a poverty measure is evaluated by the properties (axioms) it satisfies. Over the years, researchers have introduced several axioms, such as the focus axiom, monotonicity axiom, transfer axiom, monotonicity-sensitive, transfer-sensitive I, transfer-sensitive II, replication invariance axiom, continuity axiom, symmetry axiom and increasing poverty line. Some of these axioms are believed to be ad hoc and some can be implied by others combined, and hence are not independent.

In the measurement of poverty, differences in family composition are typically treated through the use of an equivalent scale, which determines the relationship between poverty lines for different types of family. Different scales may reverse the conclusions drawn about the desirability of policies to redistribute income, where these affect

differently families of different types (for example, increases in child benefits financed by general income tax). Where the fortunes of different types of family have been changing differentially over time, alternative equivalence scales may lead to different findings as to whether poverty is increasing or decreasing.

Three criteria that could be used for choosing among different poverty lines were identified as: (a) Firstly, whatever poverty line one chooses, the choice will reflect one's values. This is the case whether or not the values are explicitly stated. In fact, the very discussion about poverty lines assumes a value decision that there is something wrong with poverty. (b) Secondly, criterion for judging among poverty lines is to examine how each measure relates to desired social outcomes. (c) Thirdly, the Market Basket Measure, following Adam Smith, defines necessities as whatever the custom of the country renders it indecent for creditable people, even of the lowest order, to be without.

A poverty line helps focus the attention of governments and civil society on the living conditions of the poor and has a great impact on policy decisions. A well-defined poverty line is the cornerstone of poverty measurement. A classic definition of the poverty line is "the cut-off living standard level below which a person is classified as poor". Anyone on or below the poverty line is defined as poor, and is covered by the poverty index; the rest of the population is ignored.

From all the information above, one can conclude that the concept of poverty is essentially multidimensional; income is only one of many factors in the identification of the poor. If poverty is defined as 'the failure of basic capabilities to reach minimally acceptable levels', and capacity is a function of income, health, housing, and the provision of public goods, then poverty should be measured from a multidimensional perspective. Important issues in the measurement of poverty include among others multi-dimensional poverty measurement and partial poverty orderings, which arise from the multiplicity of poverty measures, poverty lines and equivalence scales.

There is much debate concerning how one measures poverty. To arrive at an estimate of poverty, a series of difficult measurement choices must be made. There seems to be generally no disagreement over the fact that poverty needs to be measured. Everyone in social policy and politics recognises the importance of poverty

measurements and that, in fact, their impact has stirred a vigorous debate within the social science community. It is therefore important to measure poverty.

Any integral approach to the measurement of living standards, poverty and development (or alternative bases to Gross Domestic Product (GDP)), confronts the problem of the lack of a unique measurement yardstick. This problem is avoided in national accounting, where money plays the role of unique and universal yardstick. In practice, then, poverty is most commonly measured in money-metric terms, while social indicators are used side-by-side, unintegrated.

The procedures used for the measurement of poverty can be very complex, and require data sets that are more frequently found in rich countries, where the problems of poverty are less severe than in poorer ones, where they are more significant. There is a large array of instruments used in the measurement of poverty, and it is the responsibility of statistical offices to identify those that are more adequate to their specific purposes, and practical in terms of their financial resources and technical and administrative skills.

In the economic literature, many poverty measures have been proposed, primarily based on the axiomatic approach. However, many of them are not actually used in practice. Some indices of poverty (such as the headcount index) are easy to understand but often misleading. Others have desirable ethical properties but are rarely used in policy debates because of their complexity. The more communicable and often-used poverty measures are the head-count ratio, poverty gap ratio, income gap ratio, and the Foster, Greer, and Thorbecke (FGT) indices of different orders. In spite of the shortcomings associated with the use of the headcount ratio, this poverty index is still very popular in the applied studies on poverty, because of its straightforward interpretation. Although perhaps desirable from a theoretical perspective, more complex poverty measures such as Sen indices that measure poverty incidence, depth and inequality jointly appear more difficult to calculate and harder to communicate. Hence, it is the simpler poverty measures that tend to be actually used despite their insensitivity towards distribution among the poor, which is considered important.

When proposing an index of poverty, researchers should therefore avoid both the danger that the proposed measure will be theoretically unsound and the hazard that the measure will be as complex as to be not understandable by policy makers, and hence never used.

In many countries policy-makers are particularly sensitive about methodological choices involved in setting poverty lines, since these lines are crucial in determining the level of financial and social support for the population in question. Therefore, to a large extent, all poverty lines are arbitrary, and countries are struggling with the need to come up with a set of measures that not only accurately reflects the incidence of poverty in their societies, but also that is politically acceptable as a basis for policy decisions.

The United States is one of the few developed countries with an official measure of poverty. The concept of poverty (absolute poverty) was originally developed in the early 1960s, as an indicator of the number and proportion of people with inadequate family incomes (resources) for needed consumption of food and other goods and services. The poverty thresholds were defined as the cost of a minimum diet (food) times three to allow for expenditures on all other goods and services. A set of thresholds (in dollars) is estimated and updated annually using the CPI.

Canada, like most industrialised countries except the United States, has no official government mandated poverty line. However, Statistics Canada has produced information on poverty; since the 1960s, using Low Income Cut-Offs (LICO) concept. In practice the LICO estimates are used as semi-official poverty lines. The LICOs are thresholds of income with reference to the average of what a family spends in a year on food, shelter and clothing as a proportion of their annual income. A family unit with income below the cut-off for its family size and urbanisation classification is considered a "low income" family. A family's low income status depends solely on its income, not on its spending.

In South Africa there has been, as a consequence of apartheid, a lack of comprehensive social indicator data that could assist in policy formulation. Between 1976 and 1994 official data excluded the supposedly 'independent' Transkei, Bophuthatswana, Venda, and Ciskei (TBVC) territories, thus excluding many poor

South Africans. The Poverty and Inequality Report (PIR) accordingly made use of the 1993 Project for Statistics on Living Standards and Development (PSLSD), which provided a baseline survey, the 1995 October Household Survey (OHS), and the 1995 Income and Expenditure Survey (IES), supplemented qualitative by the South African Poverty Participation Assessment (SAPPA).

When measuring poverty, Stats SA calculates the annual income for households by adding together the individual incomes of all members of the household. Stats SA uses income as an indicator of poverty as it is the easiest quantifiable indicator. The total income of each household is then reallocated into the relevant income category. Households are then measured whether they are poor or not with their allocated proxy income values against a standard poverty line. Stats SA also uses a 10% sample method. The 10% household and person sample contain a weight variable that is derived from the Post-Enumeration Survey (PES). This weight variable is the adjustment factor for undercount for households multiplied by 10 to inflate the 10% sample to the relevant population.

Instead of taking the difference between the poverty line and the mean income of the poor, Slabbert uses a more accurate measure by calculating the poverty gap for each household individually. This is done by measuring the difference between a household's income and its own poverty line. To calculate the poverty gap ratio, the difference between the income and the poverty line of each household is expressed as a ratio of its own poverty line. The mean of all households' poverty gaps can be taken as the mean poverty gap for the population concerned.

This study outlined a cross-sectional comparative evaluation of two methodologies (Stats SA's and Slabbert's) on a set of data from Sharpeville (survey data 2004). The study compared the result of the two methodologies when applied on the same data. The Stats SA standard poverty line of R800 (2001) was used for this study when applying and comparing the Stats SA method. This poverty line was inflated for 2004 by the Consumer Price Index (CPI) from 2002 up to 2004 to get an adjusted poverty line for 2004. The method used by Stats SA was also applied to a 10% sample of the 2001 Census-data of Sharpeville. The average poverty line for 2001 is determined by taking the average Household Subsistence Level (HSL) of households in a 10%

sample, and this is compared with the R800 poverty line. The following was determined from the Stats SA's 10% sample:

- Based on the Stats SA's 10% sample of Sharpeville a poverty rate of 62.6% was determined by compiling a poverty line for each household and comparing that particular poverty line to the midpoint amount of income determined by Stats SA.
- When comparing the Stats SA 2001 poverty line (R800) with the midpoint income determined by Stats SA, a poverty rate of 51.2% was determined for Sharpeville.

Table 5.1 indicates the results determined from employing the two methodologies on the 2004 survey data.

TABLE 5.1 COMPARISON OF THE RESULTS FROM THE TWO METHODOLOGIES (STATS SA'S AND SLABBERT'S)

| Methodology | Poverty rate | Headcount index | Poor households | Poor people |
|---------------------------------------|--------------|-----------------|-----------------|-------------|
| Slabbert (based on total income) | 43.1% | 0.431 | 3,609 | 17,685 |
| Slabbert (based on total expenditure) | 46.9% | 0.469 | 3,927 | 19,242 |
| Stats SA (based on midpoint income) | 15.5% | 0.155 | 1,299 | 6,365 |
| Stats SA (based on actual income) | 24.7% | 0.247 | 2,068 | 10,133 |

Source: Own construction, based on the 2004 survey data

Table 5.1 indicates that Slabbert's methodology yields a higher poverty rate for Sharpeville than Stats SA's methodology. Based on Slabbert's method, when the individual households' poverty line was compared with the total income of that household, a poverty rate of 43.1% was determined. And when the individual

households' poverty line was compared with the total expenditure of that household, a poverty rate of 46.9% was determined. With Stats SA's methodology, a poverty rate of 15.5% was determined by taking an average poverty line and comparing it with the households' midpoint incomes. And when the average poverty line was compared with the actual household income, a poverty rate of 24.7% was determined

From the table it can be concluded, on a comparative basis, that Stats SA methodology yields a lower number of poor households and people, which does not reflect the true status of the inhabitants of Sharpeville and which might be misleading to policy makers.

According to Slabbert's methodology, 25.3% of all households in Sharpeville have an income of less than 50% of their HSL compared to 24.4% determined with Stats SA's methodology.

A profile of the poor population of Sharpeville was also constructed applying both methods. This was done in terms of household structures: age and gender structure of members, age and qualifications of school and post-school members; employment structures: age of the employed, sectors of employment, mean earnings of the employed, age of the unemployed, qualifications of the unemployed and activities they wish to engage in, duration of unemployment, income and expenditure patterns of the households. The results from the two methodologies followed the same trend even though it was clear that the Stats SA methodology does not lend itself to constructing such a profile. This is due to the fact that the methodology applied by Stats SA country-wide does not lend itself to determine the poverty gap as proxy income values are used instead of real income values. In that way the Stats SA's methodology does not reflect the intensity of poverty suffered by the poor and cannot portray the poor in terms of employment, unemployment, qualifications, skills possessed and skills preferred for self-sustaining activities, and expenditure patterns.

This study raised a question around the practice by Stats SA: Why not ask people/households their exact income in the census surveys? A sample of 50 (25 households from the poor population and the other 25 from the non-poor population) people/households were interviewed in Sharpeville by means of questionnaires to

determine the attitude people have towards giving their exact income compared to indicating a category.

When analysing data from the household attitude towards income revelation survey it was realised that people/households do not mind revealing their exact income. In both poor and non-poor households a high percentage of the respondents indicated that they feel comfortable revealing their exact income (84% for poor households and 76% for non-poor households). Only a small percentage of the respondents indicated that they feel uncomfortable revealing their exact income (16% for poor households and 24% for non-poor households) and prefer revealing their income in terms of a category. The following reasons were indicated for preferring one way of revealing income against the other: Some of the respondents indicated that they are pensioners (when checked, this corresponds to the information/data from the 2004 surveys), so there is no point in indicating a category. Everyone knows how much pensioners (those individuals who receive government grant) receive every month from the government. Others indicated that they don't have a problem revealing their true state of affairs and believe that by doing this; it will make it easier for the government to provide better and suitable services. Other respondents preferred using a category because they are informally employed and income is not stable in the informal sector. Others indicated that they preferred a category due to lack of trust, they believe one's income is a personal matter.

From this information one can conclude that people/households do not mind revealing their exact income, the very thing that causes Stats SA to use proxy values instead of exact incomes.

5.3 CONCLUSIONS

Despite a wide variety of poverty measurement methodologies, there is a common recognition that no method is perfect and all of them have certain inherent limitations. There are several major drawbacks that current poverty measurement methodologies share. As mentioned in the previous chapters, poverty is a multidimensional concept, which includes at least three dimensions, material, human and social. Many measurement methods are single dimensional, focused mostly on measuring material dimensions of poverty by using economic indicators such as income, expenditure,

food or housing, and these methods do not provide a comprehensive picture of poverty.

A credible measure of poverty can be a powerful instrument for focusing the attention of policy makers on the living conditions of the poor. A poor measure will be misleading. The current Stats SA poverty measure that is used country-wide does not accurately identify the poor population in Sharpeville. When applied to the 2004 survey data, the Stats SA's methodology did not seem to be accurate but misleading. This is due to the fact that a standard poverty line is used for all the households together with proxy income values. The Stats SA's standard poverty line of R800 was inflated for 2004 with the CPI to give a poverty line of R963.73. This poverty line was then compared with the 2004 actual household income to determine a poverty rate of 15.5%. This poverty rate is very low compared to the poverty rate determined by Slabbert by measuring the difference between a household's income and its own poverty line (15.5% vs. 43.1%). According to Stats SA's methodology poverty is not severe in Sharpeville. Of course, when applying this poverty rate (15.5%) to determine the number of poor households and people in Sharpeville this methodology indicated lower figures compared to what Slabbert's measure determined. Stats SA's measure indicated that from the 8,374 households in Sharpeville only 1,299 households (compared to 3,609 households determined by Slabbert's measure) are poor and only 6,365 people (compared to 17,685 by Slabbert's measure) live in poverty. Again, with Stats SA' measure of poverty, when an average poverty line of R1285.07 was compared with the income of the household to determine a poverty rate of 24.7%, the followings results prevailed: from the 8,374 households in Sharpeville, 2,068 households live in poverty and 10,133 people are poor in Sharpeville. This is still lower compared with the results from Slabbert's measure of poverty.

When looking at the results from the two methodologies, one realises the large difference between them. Taking into account the fact that Stats SA uses a standard poverty line and compares it with a proxy income whereas Slabbert determines, a poverty line for each household and compares it with that household's income one can conclude that Stats SA's methodology is not accurate but misleading. It indicates that poverty is not severe in Sharpeville, with a low number of households and people living in poverty. This might be misleading to policy makers.

This methodology also does not lend itself to determine the poverty gap, as proxy income values are used instead of real income values. The methodology used by Slabbert proves to be more accurate and can in addition determine the depth of poverty (the poverty gap). By this method the poor can be portrayed more accurately in terms of employment, unemployment, qualifications, skills possessed and skills preferred for self-sustaining activities, and expenditure patterns.

The households' attitude towards income revelation was also analysed. This was done as this study raised a concern towards the standard practice by Stats SA of only asking individuals to reveal their income within a category. The analysis showed that a higher percentage of households (poor and non-poor) in Sharpeville did not have problems towards revealing their exact income. Only a smaller percentage in both poor and non-poor household preferred revealing their income in terms of a category. The reason they prefer this method of revelation is because they are unemployed and does not have a fixed income, so it is difficult for them to indicate their exact income. This study proved, through household surveys, that households/individuals don't have a problem in revealing their exact income.

5.4 RECOMMENDATIONS

The following recommendations are made as to the revision of the Stats SA's methodology:

- There is a need for an official definition of poverty in South Africa. As indicated in Section 1.2 one of the problems with the measurement of poverty in South Africa is the fact that there is no national definition of poverty. Each measurement of poverty requires a specific definition of the precise concept to be determined. Similarly, poverty-reduction activities also differ depending on how poverty is defined and measured, as different concepts imply different interventions.
- The Census questionnaire should be revised to ask households/individuals to reveal their exact income. Since it was indicated in Section 4.4 that there are individuals without a fixed income who prefer revealing their income in terms of a category, then provision should be made for such people. The Census questionnaire can have two options for revealing income: that is option one with

exact income and option two with a category, especially the lower income categories smaller. This will make the measure to be more credible.

- Stats SA uses a standard poverty line. This study recommends that this standard practice be changed, instead of employing a standard poverty line determine a poverty line for each household and compare this to the actual household income. In this way, this measure will be able to measure the headcount index and poverty gap since the problem with poverty is “how far are the poor below the poverty line”? So far the Stats SA measure does not lend itself to determining the degree of poverty. It is easy to ignore the poor if they are statistically invisible.
- There is a need to develop geographical cost-of-living variations. It is clear that the cost-of-living differs substantially from place to place, and different choices of methodology have different implications. If geographic variation is to be incorporated, some method for periodically updating the thresholds for relative price changes among areas would need to be established.
- The need is to have a credible, “absolute” measure of poverty. The 1995 Copenhagen declaration committed signatory nations to produce two measures, one of absolute poverty, and the other of “overall”, or relative poverty. A statement by European social scientists (Gordon & Townsend, 2000:17) makes the point that this two-level approach would give better information to policy makers and lead to better anti-poverty policies. As well, it would be useful in making credible international comparisons of poverty.
- There are several institutions, Non-Governmental Organisations (NGOs), research divisions and academic institutions such as universities involved in poverty studies (poverty measurements, reduction, etc.). An in-depth investigation should be conducted as to giving tenders to such institutions to measure poverty in the different spheres of the country. With a national definition of poverty, this could lead to more credible and accurate measurement of poverty in the country.

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ANNEXURE A

SURVEY DESIGN AND APPLICATION

Questionnaires

Two questionnaires were employed in soliciting data from households in Sharpeville: the Household survey questionnaire (2004) and the Households' attitude towards income revelation questionnaire. Both were carefully constructed to utilise specific indicators. The household survey questionnaire was compiled from a number of other questionnaires used in the field such as by Slabbert (2003). In total, 174 household questionnaires and 50 income revelation questionnaires were employed.

2004 Questionnaire

Maps of Sharpeville were obtained from the Emfuleni City Council and a sample stratification was designed on account of the geographical distribution and concentration of people in the area. A questionnaire was designed for obtaining the desired information (see Annexure B below). The area was divided into the different sections and the questionnaires were apportioned evenly among the inhabited sites.

Plots/sites at which field workers were supposed to complete questionnaires were identified individually from the map before the field workers went out. However, where people could not be obtained for an interview, or where it was impossible to trace the household, a next pre-selected household was interviewed. Information was obtained from the breadwinner or the spouse.

Household Questionnaires were completed on site. Details with regard to the site were listed, but no names were recorded with regard to the head of the household or other persons living at the site. This was done to ensure anonymity, thereby encouraging honest and reliable information.

Fieldworkers

Two fieldworkers interviewed a total of 174 households. All the households approached were willing to partake in the survey and all 174 questionnaires were completed in August 2004.

2006 Questionnaire

50 households that were interviewed in 2004 were revisited (25 from the poor population and the other 25 from the non-poor population) to gather information regarding their attitude towards income revelation. These households were randomly selected. A questionnaire was designed for obtaining the desired information (see Annexure C below).

Fieldworkers

The candidate interviewed a total of 50 households. All the households approached were willing to partake in the survey and all 50 questionnaires were completed in June 2006.

ANNEXURE B

HOUSEHOLD QUESTIONNAIRE JUNE 2004

N.B.: The information in this questionnaire will be treated in strict confidence. (9 June 2004)

| | | | |
|-------------|----------------------------|--------------|-------------------|
| SHARPEVILLE | Section: Old / RDP / shack | Date: | Questionnaire no: |
| Street: | House number: | Interviewer: | |

Please note that the Head of the Household should preferably answer this questionnaire.

A: BACKGROUND INFORMATION

1. What is the position of the respondent in the Household? Cross *

| | | | |
|-------------------|-----------------|------------------------|---------|
| Head of household | Spouse or child | Extended family member | Boarder |
|-------------------|-----------------|------------------------|---------|

2. How many housing units are on the site?

3. How many people stay permanently on the site?

4. How long have you (respondent) stayed in the Vaal Triangle (years)?

B: ENVIRONMENTAL

5. How do you feel about the environment in which you stay? (Mark 2 options) *

| | | | | |
|-----------------------------|-------------------------------------|-----------------------------|---|----------------------------|
| 1. It is clean and pleasant | 2. It is littered, untidy and dirty | 3. Indifferent – No opinion | 4. Something should be done to clean it | 5. It can be left as it is |
|-----------------------------|-------------------------------------|-----------------------------|---|----------------------------|

6. If you feel it should be cleaned up, who should take the initiative and responsibility? (* More)

| | | | | |
|---------------------|-----------------------|--|-----------------------------------|-------------------|
| 1. The municipality | 2. A street committee | 3. Everyone should be made responsible | 4. A campaign should be organised | 5. Other: explain |
|---------------------|-----------------------|--|-----------------------------------|-------------------|

7. If you would have the money, what would you be prepared to pay monthly to have your environment cleaned up?

8. How do you experience, especially in winter, the smoke levels (air pollution) in your area? *

| | | | | |
|-----------------|----------------------|-------------|-------------------|-----------------------------------|
| 1. Not affected | 2. Slightly affected | 3. Affected | 4. Badly affected | 5. Unbearable (Severely Affected) |
|-----------------|----------------------|-------------|-------------------|-----------------------------------|

9. If you are making fire for cooking & heating purposes, would you like to be introduced to technologies that will reduce the smoke levels at your house? *

| | | | | |
|---|--|--|-----------------------------------|-------------------------------|
| 1. Not making fire: using electricity for cooking & heating | 2. Making coal / wood fire: but not interested | 3. Making coal / wood fire: And interested | 4. Using paraffin: Not interested | 5. Using paraffin: Interested |
|---|--|--|-----------------------------------|-------------------------------|

10. What would you be prepared to pay monthly to have your environment smoke-free?

a) What % of the smoke pollution do you think comes from industry? and coal fires?

b) Number of persons in your household whose health is affected by air pollution?

c) What are most of them suffering from? _____

11. How do you experience, especially in winter, the dust levels in your area? *

| | | | | |
|-----------------|----------------------|-------------|-------------------|-----------------------------------|
| 1. Not affected | 2. Slightly affected | 3. Affected | 4. Badly affected | 5. Unbearable (Severely Affected) |
|-----------------|----------------------|-------------|-------------------|-----------------------------------|

12. What would you be prepared to pay monthly to have your environment dust free?

13. Especially in the spring & summer some people are using amplifiers to make loud music. How are you affected by this in your area? *

| | | | | |
|--------------------------------------|--|---|--------------------------------------|---|
| 1. Not affected (quiet in the area). | 2. I hear it but I don't care (accepting it) | 3. I hear it and it is affecting me (don't like it) | 4. I hear it and I am badly affected | 5. I hear it and it is unbearable (severely affected) |
|--------------------------------------|--|---|--------------------------------------|---|

14. If you feel that something should be done in your area to reduce the noise levels, who should be responsible and what should be done? (Mark * more than one option)

| | | | | |
|--|--|--|---|---|
| 1. The municipality should control & restrict people to play loud music. | 2. The police should control & restrict people to play loud music. | 3. A street committee should control & restrict people to play loud music. | 4. People who disturb the neighbourhood with noise should be fined / punished | 5. The instruments of those who disturb the neighbourhood should be confiscated |
|--|--|--|---|---|

15. If you would have the money, what would you be prepared to pay monthly to have your environment quiet?

16. Has any person in your household been a victim of crime in the last 12 months? Yes No

17. What kind of crime? (Can mark * more than one option)

| | | | | | |
|------------|------------|---------|-----------|--------------|----------|
| 1. Assault | 2. Robbery | 3. Rape | 4. Murder | 5. Abduction | 6. Other |
|------------|------------|---------|-----------|--------------|----------|

C: CONSUMPTION

18. How much of the following items does your household buy per week/per month & about how much does your household spend on these items per week/per month?

| Product | Kilograms / litres per week | Kilograms / litres per month | Rand per week | Rand per month | Town ✓ | Township ✓ |
|-------------------|-----------------------------|------------------------------|---------------|----------------|--------|------------|
| 1. Maize Meal | | | | | | |
| 2. Bread | | | | | | |
| 3. Meat / chicken | | | | | | |
| 4. Vegetables | | | | | | |
| 5. Milk | | | | | | |
| 6. Washing powder | | | | | | |
| 7. Coal | | | | | | |
| 8. Paraffin | | | | | | |

19. How does your household spend their income monthly?

| Item | Rand per month | Name of shop | Town | T/ship | |
|---|----------------|--------------|------|--------|----|
| Housing (Rent/Bond) | | | | | 1 |
| Water | | | | | 2 |
| Electricity | | | | | 3 |
| Other energy (coal, paraffin etc) | | | | | 4 |
| Food | | | | | 5 |
| Cleaning materials | | | | | 6 |
| Cigarettes & Tobacco | | | | | 7 |
| Beer, wine & spirits | | | | | 8 |
| Transport: Taxi..... Car..... Other..... | | Total | | | 9 |
| Clothing | | | | | 10 |
| School | | | | | 11 |
| Entertainment | | | | | 12 |
| Medical Expenses | | | | | 13 |
| Insurance | | | | | 14 |
| GAMBLING: Lotto..... | | | | | 15 |
| Horseracing..... | | | | | 16 |
| Other (casino etc)..... | | | | | 17 |
| Savings | | | | | 18 |
| Licenses (e.g. TV, Vehicle) | | | | | 19 |
| Rates and taxes | | | | | 20 |
| Housekeeping Services (e.g. Garden) | | | | | 21 |
| Telephone..... | | | | | 22 |
| Cell..... | | | | | 23 |
| Car Repayment | | | | | 24 |
| Loan repayments | | | | | 25 |
| Furniture | | | | | 26 |
| Other: Specify | | | | | 27 |

D: EMPLOYMENT & EDUCATION STATUS

20. How does your household spend their income monthly?

| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|--|---|---|---|---|---|---|---|---|
| 1. Number of people in the household | | | | | | | | |
| 2. Composition of members (Code list 2) | | | | | | | | |
| 3. Age of each member in years | | | | | | | | |
| 4. Sex (Male = 1; female = 2) | | | | | | | | |
| 5. Marital Status (code list 5) | | | | | | | | |
| 6. Qualifications (still at school) (Code list 6) | | | | | | | | |
| 7. Qualifications (not at school) (Code list 7) | | | | | | | | |
| 8. Employment Status (Code list 8) | | | | | | | | |
| 9. Sector of employment (Code list 9) | | | | | | | | |
| 10. Has your salary increased as a result of minimum wages? (10) | | | | | | | | |
| 11. Can employer afford increases because of minimum wages? | | | | | | | | |
| 12. Working hours been reduced because of minimum wages? | | | | | | | | |
| 13. (10 – 17 for unemployed only) Skills of the unemployed | | | | | | | | |
| 14. Duration of unemployment in years | | | | | | | | |
| 15. Dismissed because employer could not afford minimum wage | | | | | | | | |
| 16. Willingness & type of Skills Training required (code list 13) | | | | | | | | |
| 17. What is the Unemployed doing presently | | | | | | | | |
| 18. Do you have matric exemption? | | | | | | | | |
| 19. If persons would like to study further: preferences | | | | | | | | |
| 20. Preferences to start self-sustaining activities | | | | | | | | |
| 21. Minimum wage required to take a job | | | | | | | | |
| 22. Income: Wages/salaries per month (Take home pay) | | | | | | | | |
| 23. Pension/Remittance | | | | | | | | |
| 24. Child Grant from Government | | | | | | | | |
| 25. Other Grants from Government | | | | | | | | |
| 26. Help (family/relatives/etc) Also help in kind | | | | | | | | |
| 27. Informal activities (e.g. SMME) | | | | | | | | |
| 28. Subsidies (e.g. Housing) | | | | | | | | |
| 29. Interest/dividends | | | | | | | | |
| 30. Other (Specify) | | | | | | | | |

21. Does someone in your household have a vegetable garden?.....
22. Would someone in your household be interested in receiving assistance to start a food garden in your yard?

| | |
|-----|----|
| Yes | No |
|-----|----|
23. Would someone in your household like to be involved in a community food garden project?

| | |
|-----|----|
| Yes | No |
|-----|----|
24. Would someone in your household be interested in farming?

| | |
|-----|----|
| Yes | No |
|-----|----|
25. Do you know small farmers in the area? If so, give the address: _____

| | |
|-----|----|
| Yes | No |
|-----|----|
26. Does someone in your household own a sewing machine?

| | |
|-----|----|
| Yes | No |
|-----|----|
27. Do you know a clothing manufacturing business in your township? If so, give the address: _____

| | |
|-----|----|
| Yes | No |
|-----|----|
28. Do you know any small scale welding / metal work firm in the township? If so, give the address: _____

| | |
|-----|----|
| Yes | No |
|-----|----|
29. Has any member of your household operated a SMME / still operating one? If so, what kind of SMME? _____

| | |
|-----|----|
| Yes | No |
|-----|----|
30. Taking into account your skills (or that of your household members), would you or someone in your household (unemployed persons) be interested in starting your own business or rather work together with others in a cooperative?

| | |
|--------------|-------------|
| Own business | Cooperative |
|--------------|-------------|
31. What kind of business would you like to start? _____
32. If you would like to start your own business, what kind of support do you think you will need? _____
33. Do you know somebody with a catering business in your township? If so, give the address: _____

| | |
|-----|----|
| Yes | No |
|-----|----|
34. Do you think you will get a job if you are better trained?

| | |
|-----|----|
| Yes | No |
|-----|----|

THANK YOU FOR YOUR COOPERATION!

Source: Adapted from questionnaires of Slabbert

ANNEXURE C

HOUSEHOLDS' ATTITUDE TOWARDS INCOME REVELATION QUESTIONNAIRE JUNE 2006

N.B.: The information in this questionnaire will be treated in strict confidence. (JUNE 2006)

Please note that the Head of the Household should preferably answer this questionnaire.

| | | | |
|-----------------------|----------------------------|--------------|-------------------|
| Township: Sharpeville | Section: Old / RDP / shack | Date: | Questionnaire no: |
| Street: | House number: | Interviewer: | |

1. What is the position of the respondent in the Household? Cross x

| | | | |
|-------------------|-----------------|------------------------|---------|
| Head of household | Spouse or child | Extended family member | Boarder |
|-------------------|-----------------|------------------------|---------|

2. Have you ever participated in the Census Survey?

| | |
|-----|----|
| Yes | No |
|-----|----|

If yes, how many times? _____

3. In all the number cases mentioned above, did you feel comfortable when you had to answer the question about your income (that is how much you are earning)?

| | |
|-----|----|
| Yes | No |
|-----|----|

If no, why? _____

4. Do you prefer to give your exact income or in terms of a category (e.g. between R1000 and R3500)?

Exact income, why? _____

Category, why? _____

THANK YOU FOR YOUR COOPERATION!