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Socio-Economic Determinants for Poverty Reduction: The Case of Fiji

A thesis presented in partial fulfilment of the
requirements for the degree of

Master of Philosophy
in
Economics

at Massey University, Palmerston North,
New Zealand



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2010

Abstract

Poverty is a multi-dimensional issue, which encompasses different dimensions of deprivation that relate to human capabilities including food security, health, education, rights, voice, security, dignity, income and consumption. Above all, poverty is denial of human rights (United Nations, 2009). Despite Fiji's as a most developed island economy, and plays an affluent role among the Pacific Island nations, its history of coups and vulnerability to external shocks have created major obstacles to reducing poverty by half by 2015.

The study demonstrates that knowledge on the characteristics of the poor is vital not only because it is essential to tackle the roots of poverty but also shape the policies and strategies to reducing poverty. The study found that, in particularly, the households headed by the females and people with disability are most prone to poverty. Rural households are more likely subjected to poverty than urban households. The Indo-Fijian households face greater income inequalities than Fijian households, and the urban households endure greater inequalities in comparison to rural households.

Being educated and employed are the key fundamental elements in reducing the likelihood of remaining poor. The study shows that people from the lowest income to the highest income groups all benefit from formal education, but it is tertiary education which has the ability to sustainably prevent people falling into poverty when the unseen event occur in the future. Also, employment in manufacturing, construction, trade and services, transportation and communications sectors are all vital determinants of poverty reduction. In particular, the manufacturing sector helps rural households in increasing the possibility of meeting the basic needs, while the transportation and communication sector helps urban households to increase the probability of meeting their basic needs.

The research findings suggest that poverty reduction policies and programmes should focus on the core areas of integration and targeting, promotion of human assets, provide resources and transportation linkages for rural and urban activities, promotion of income-job-creation and income redistribution. Releasing land for commercial agriculture farming could contribute to poverty reduction in rural areas and its linkages in the urban sector could also reduce poverty in urban areas.

Acknowledgements

The accomplishment of this thesis would not have been possible without assistance of many people, who have supported me throughout my academic years.

I own my deepest gratitude to my supervisor, Associate Professor Rukmani Gounder, for her constructive and remarkable comments and insights. Thanks also for creating an excellent learning and intellectual challenging environment during my time at Massey. Supervision from my supervisor has broadened my views and created alternative ways of thinking. She has been the most enthusiastic, caring and supportive lecturer and supervisor I have ever had. *Xie Xie*.

I also wish to extend my thanks to Professor Srikanta Chatterijee from the Department of Economics and Finance for his advice on decomposition of income components. Thanks are also going to all of the staff of the Department of Economics and Finance for creating an excellent learning and intellectual challenging environment within my time at Massey.

I would like to extend thanks to my friends for their great friendship and the joy they have given: Vorajit Sunaseweenonta, Manuela Linder, Richard Hower, Guillane Caillot, Benjamin Cousin, Fernando Figueredo, Ting Wang, Bandeth Ros, Valentine Borges, Kasey Gordon, Steve Kerr, Forrest Richmond, Mosese Qasenivalu, Nilesh Prakash, Geoff Bell, Helen and Wayne Bell, Grant Ketto, John Carter. A special thank goes to Peterson and Phoebe Asante for introducing God and Saviour Jesus Christ to my life.

A very special mention is due to my beloved and respected parents, Weili Fu and Shimin Xing, for their unconditional love, support and encouragement. A special thank to my extended Kiwi family, Marj and Murray Blyth.

Most importantly, I am sincerely grateful to Wirya Khim for her endless love, care and understanding. She has been a great companion throughout my time at Massey. Thank you Wirya for always being there for me.

I dedicate this thesis to my parents.

Table of Contents

Acknowledgements	ii
Table of Contents	iii
List of Tables	vi
List of Figures	viii
List of Abbreviations	ix
Chapter 1 Introduction	1
1.1 Background to the Study	1
1.2 Objectives and Significance of the Study	3
1.3 Data and Methodology	4
1.4 Chapter Outline	4
Chapter 2 Literature Review	6
2.1 Introduction	6
2.2 Definition and Measurement of Poverty	7
2.3 Determinants of Poverty	17
2.3.1 Country Level Characteristics	17
2.3.2 Household Level Characteristics	20
2.4 Education and Health for Poverty Reduction	24
2.4.1 Education and Poverty	25
2.4.2 Health and Poverty	29
2.4.3 Income Inequality	32
2.5 Conclusion	33
Appendix A2.1	35
Chapter 3 The Economy of Fiji: An Overview	37
3.1 Introduction	37
3.2 Economic Indicators of Fiji	38
3.2.1 Economic Growth Performance	38
3.2.2 Trade Sector Performance	41
3.2.3 Labour Force	45
3.3 Demographic, Emigration and Social Indicators of Fiji	47
3.3.1 Education	49

3.3.2	Health Indicators	50
3.3.3	Housing and Utilities	53
3.4	Poverty Issues in Fiji	56
3.4.1	Household Characteristics' as Determinants of Poverty in Fiji	57
3.4.2	Household Head's Characteristics' as Determinants of Poverty	63
3.5	Millennium Development Goals and Poverty Reduction	66
3.5.1	Progress Towards the MDGs in Fiji	66
3.5.2	Pro-poor Programmes in Fiji	70
3.5.2.1	Economic Infrastructure and Pro-Poor Growth Policies	72
3.5.2.2	Social Infrastructure and Pro-Poor Growth Policies	73
3.6	Conclusion	75
Appendix 3.1		76
Appendix 3.2		77
 Chapter 4 Determinants of Poverty in Fiji: A Logistic Regression Analysis		78
4.1	Introduction	78
4.2	Literature Review	79
4.2.1	Household Head's Characteristics' as Determinants of Poverty	80
4.2.2	Household Characteristics' as Determinants of Poverty	82
4.3	Model Specification, Methodology and Data	83
4.3.1	Model Specification	83
4.3.2	Data and Methodology	86
4.3.3	Variable Definitions and Descriptive Statistics	89
4.4	Empirical Results	92
4.4.1	Results for Poverty Determinants: Basic Needs and Food Poverty	93
4.4.2	Results for Food Poverty and Basic Needs Poverty Line: By Regions (Stage Two)	98
4.4.2.1	Results for Food Poverty Line: Rural versus Urban	98
4.4.2.2	Results for Basic Needs Poverty Line: Rural versus Urban	101
4.5	Conclusion	103

Chapter 5	The Impact of Education and Health on Poverty Reduction:	
	Empirical Evidences for Money and Non-Monetary Models	105
5.1	Introduction	105
5.2	Role of Education on Poverty Reduction: Monetary Model	
	Specification and Methodology	107
5.3	Role of Education and Health on Poverty Reduction: Non-monetary	
	Model Specification and Methodology	113
5.4	Data and Variable Definition	117
5.5	Empirical Results	118
5.6	Conclusion	125
Chapter 6	Inequalities in Fiji's Household Income Distribution 2002-03:	
	Empirical Analysis	127
6.1	Introduction	127
6.2	Theoretical Aspects of Measurement of Income Inequality	128
6.2.1	Positive Measures: The Gini Coefficient and the Nelson Ratio	130
6.2.2	Normative Measures: The Atkinson Index	132
6.3	Theoretical Aspects of Decomposition of the Inequality Measures	133
6.3.1	Decomposition Within and Between Population Groups	134
6.3.2	Decomposition by Source of Household Incomes	135
6.4	The Data and Assumptions	137
6.5	Empirical Results	139
6.5.1	The Within-Group Inequalities	139
6.5.2	The Between-Group Inequalities	141
6.5.3	Decomposition by Source of Household Income	142
6.5.4	The Atkinson Index	143
6.6	Conclusion	145
Chapter 7	Conclusion and Policy Implications	146
7.1	Introduction	146
7.2	Summary of Chapter Findings	146
7.3	Policy Recommendations	150
7.4	Areas for Future Research	155
	Bibliography	157

List of Tables

Table 3.1	Fiji's Major Export Commodities (% of GDP), 1980-2007	43
Table 3.2	Unemployment for Age 15 and Over, 1996 and 2007	47
Table 3.3	Top 10 Causes of Morbidity and Mortality in Fiji, 2007	52
Table 3.4	Poverty Lines (F\$) and Incidence in Fiji, 2002-03	57
Table 3.5	Distribution of Household Income and Expenditure, 2002-03	58
Table 3.6	Household Expenditure by Gift-given, Alcohol and Tobacco, 2002-03	62
Table 3.7	Household Size and Number of Children (age 0 to 14) per Household	62
Table 3.8	Average Years of Schooling and Gender of Household Heads, 2002-03	63
Table 3.9	Income Earning Characteristics of the Heads of Households, 2002-03	65
Table A3.1	The HDI, HPI, GDI and GEM Value and Rank for Fiji, 1991-2009	76
Table A3.2	Progress Towards the MDGs in Fiji, 1990-2015	77
Table 4.1	Variable Description and Definitions	90
Table 4.2	Descriptive Statistics	91
Table 4.3	Logit Models for Overall Households Analysis, HIES 2002-03	94
Table 4.4	Logit Model for Food Poverty Line: Rural versus Urban	99
Table 4.5	Logit Model for Basic Poverty Line: Rural versus Urban	102
Table 5.1	Variable Description and Definitions	118
Table 5.2	Monetary Impact of Education on Poverty Reduction	119
Table 5.3	Results for Total Education (i.e. Years of Schooling) Quantile Regression	120
Table 5.4	Results for Disaggregated Education Level Quantile Regression	120
Table 5.5	Logit Model of Education-Health Nexus: Health Prevention	123
Table 5.6	Logit Model of Education-Health Nexus: Sanitation	124
Table 6.1	Summary Data Statistics for HIES 2002-03 in Fiji	138
Table 6.2	Household Income Inequalities and Income Distribution in Fiji, 2002-03	140

Table 6.3	Decomposition of Inequality Index between Ethnic and Regional Groups	141
Table 6.4	Household Income Inequality by Factor Components, HIES2002-03	142
Table 6.5	Equally Distributed Equivalent Household Weekly Income and the Atkinson Indices of Inequality, 2002-03	144

List of Figures

Figure 2.1	Capability Approach: The Instrumental Role of Monetary Resource	12
Figure 3.1	Fiji's Economic Growth in Real GDP Growth (2000 prices), 1969-2008	39
Figure 3.2	Annual Inflation Rate in Fiji (consumer prices), 1970-2008	41
Figure 3.3	Value Added in Gross Domestic Product by Sectors (% of GDP), 1963-2007	42
Figure 3.4	Fiji's Labour Force by Gender, 1996 and 2007	46
Figure 3.5	Life Expectancy at Birth by Selected Western Countries, 2007	51
Figure 3.6	Infant Mortality Rates (under age 5), Selected Countries, 2007	52
Figure 3.7	Water and Sanitation by Selected Countries, 2006	53
Figure 3.8	Food Expenditure by Income Deciles (%), 2002-03	59
Figure 3.9	Education Expenditure by Income Deciles (%), 2002-03	59
Figure 3.10	Medical Expenditure by Income Deciles (%), 2002-03	60
Figure 3.11	Housing Expenditure by Income Deciles (%), 2002-03	61
Figure 4.1	A Nested Structure of Poverty Status of Households for Fiji	87
Figure 5.1	Returns to Education by Quantiles of Income	121
Figure 6.1	The Lorenz Curve and the Gini Coefficient	130

List of Abbreviations

ADB	Asian Development Bank
CPI	Consumer Price Index
EIU	The Economist Intelligence Unit
EU	European Union
FIBOS	Fiji Islands Bureau of Statistics
GDI	Gender-related Development Index
GDP	Gross Domestic Product
GEM	Gender Empowerment Measure
HDI	Human Development Index
HPI	Human Poverty Index
HIES	Households and Income and Expenditure Survey
ILO	International Labour Organisation
MDGs	Millennium Development Goals
MFNP	Ministry of Finance and National Planning
OECD	Organisation for Economic Co-operation and Development
OLS	Ordinary Least Squares
PICS	Pacific Island Countries
RBF	Reserve Bank of Fiji
UN	United Nations
UNDESA	United Nations Department of Economic and Social Affairs
UNDP	United Nations Development Programme
EUS	Employment and Unemployment Survey
VAT	Value Added Tax
WB	World Bank
WHO	World Health Organisation

Chapter 1

Introduction

“Poverty is a call to action-for the poor and the wealthy alike-a call to change the world so that many more may have enough to eat, adequate shelter, access to education and health, protection from violence, and a voice in what happens in their communities”, World Bank.¹

1.1 Background to the Study

Over the past 30 years, developing countries have achieved remarkable improvements in the living standards which are reflected in terms of growth in average incomes, doubled primary school enrolment rate, fall in mortality rates and risen in life expectancy. The statistics about poverty indicate that the population of the poor has been declined to 1.4 billion in 2005 from 1.8 billion in 1990 (based on US\$1.25 a day in 2005 prices). In particular, poverty in East Asian (the world's poorest region in 1981) has fallen from nearly 80 percent of the population living on less than US\$1.25 a day in 1981 to 18 percent in 2005, largely owing to rapid progress in poverty reduction in China and India (United Nations Development Programme, 2009).

These improvements in living standards are highly encouraging because they demonstrate that poverty can be overcome and reduced. But the battle is far from over as poverty continues to be pervasive, intractable and inexcusable. The UNDP (2009) estimates that one in four persons in developing countries still lives on less than US\$1.25 a day. And the progress in combating poverty is far from even from country to country. Despite Asia's rapidly advancement in reducing poverty, it still accounts for most of the world's poor. On the other hand, Sub-Saharan African nations have struggled with slow growth and rising poverty partially linked to conflict and governance problems, and the scourge of HIV/AIDS.

¹ World Bank. “Poverty Analysis: Overview”. Retrieved July 6, 2009 from <http://web.worldbank.org/WBSITE/EXTERNAL/TOPICS/EXTPOVERTY/EXTPA/0,contentMDK:20153855~MENUPK:435040~pagePK:148956~piPK:216618~theSitePK:430367,00.html>

In the case of Fiji, poverty reduction is considered to be the highest priority development objective in the national plan, which aims at reducing the incidence of poverty by half by the year 2015 (Asian Development Bank, 2003; Ministry of Finance and National Planning, 2008). The aim to reduce poverty to negligible level as indicated suggests various challenges to meet this goal. But the results are far from satisfactory. Since Fiji gained independence in 1970 a decade later saw some major achievements in socio-economic development. However, since the military coups in 1987 Fiji faced various development challenges for its resources, economic and environmental vulnerability, and limited access to the global markets that led to obstacles in achieving substantial advancement both in economic and social developments. The economic hardships are enhanced due to a series of notorious political upheavals and natural disasters, and the expiry of land tenure problems have pushed more households into poverty (Gounder, 2007a). As a result, about 35 percent of the population or 29.6 percent of the households in Fiji are in poverty (Narsey, 2008).

At the global level, the Fiji's human poverty index (HPI) rank has dropped from the 6th (out of 85 developing countries) in 1998 to 45th (out of 95 developing countries) in 2009. It is particularly concerning that Fiji's human development ranking (i.e. Human Development Index, based on life expectancy, education and income) has slipped from 44th (out of 174 countries) in 1998- a position most developing countries would envy at the time- to 81st in 2009 (UNDP, 2009).

Secondly, the term poverty can still mean different things for different people in Fiji. This means that according to their perceptions, their social and cultural backgrounds, and their economic circumstance will understand and reflect on poverty issues differently. Therefore, "clarification of how poverty is defined is extremely important as different definitions of poverty imply use of different criteria for measurement, potentially the identification of different individuals and groups as poor, and the use of different policy solutions for poverty reduction" (Laderchi, Saith and Stewart, 2003, p. 3).

Thirdly, the literature on poverty reduction in developing countries supports the view that both education and health play a crucial role in poverty eradication (Romer, 1990; Mankiw, Romer and Weil, 1992; Tilak, 1994; Geda, Jong, Kimenyi and Mwabu, 2005;

Todaro and Smith, 2006; Abuka, Ego, Opolot and Okello, 2007), yet little has been written about the impact of education and health on poverty reduction in the case of Fiji. In these studies, some authors suggest that investment in education increases the skills and productivity of poor households that in return enhances the income levels as well as the overall living standard. And some suggest that education not only helps in the fulfilment of basic needs such as water and sanitation, utilisation of health facilities and shelter but also affects the women's behaviour in fertility decisions and family planning.

1.2 Objectives and Significance of the Study

Given the background of poverty issues, this study raises a general research question that how the poverty is defined and measured, what causes it, how it can be alleviated and where the future policy can be directed to in dealing better with poverty problems in the context of Fiji. This study is directed by the following specific objectives:

1. identify the characteristics that are responsible for the incidence of poverty in Fiji;
2. examine the possibilities of remaining poor, and analyse its household characteristics;
3. analyse the impacts of education and health on lifting people out of poverty;
4. measure the magnitude of household income inequality in Fiji in 2002-03; and
5. determine the implications amongst these above mentioned factors that influence the social and economic policies aimed at poverty reduction.

The empirical investigations of the general research question have several areas of significance for Fiji. Theoretically, it contributes to an understanding of how poverty is defined and measured, what are the characteristics that are responsible for the incidence of poverty and how to address it based on the household survey.

Practically, the study is expected to assist policy makers, government agencies and interested groups to improve the way poverty is understood and to help them design effective strategies and responsive policies to poverty reduction by determining the

characteristics of the poor in Fiji. This is vital for Fiji as it has only five years to achieve its commitment in reducing poverty by half by 2015.

1.3 Data and Methodology

A quantitative approach is adopted in the study, which utilises Household Income and Expenditure Survey (HIES) data for the period 2002-03 to estimate several research hypotheses. The HIES dataset is obtained from the Fiji Islands Bureau of Statistics (FIBOS) through personal communication.

Appropriate econometric procedures have been employed throughout the study. For the household level determinants of poverty, the logit regression technique is used to examine the probability of remaining poor based on households' demographic and socio-economic information. For the analysis of education and health impact on poverty reduction, both the quantile and logistic regression methodologies are employed. In investigating the household income inequality in Fiji, a set of econometric procedures has been used. The details of these procedures are discussed in the relevant chapters.

1.4 Chapter Outline

This study consists of seven chapters. Chapter 1 is an introduction, which provides background, objectives and significance of the study. A review of theoretical and empirical literature on poverty is presented in Chapter 2. It discusses how poverty is understood, measured, and what are the determinants of poverty and linkages between education, health and poverty reduction. In discussing the causes of poverty and the impact of education and health on poverty reduction, this review investigates the characteristics of the poor and the interaction of education and health at both the country- and household-levels.

Chapter 3 addresses the trends in social and economic development in the context of Fiji with a focus on socio-economic issues. In discussing the economic indicators, the chapter provides an overview of economic growth performance, trade sector

performance and labour force in the post-independence period. Some of the key social indicators discussed are education, health, housing and utilities, and poverty issues. Given Fiji government's efforts and commitment in attacking poverty, this chapter also discusses the level of progress in achieving Millennium Development Goals (MDGs) followed by illustrating the existing pro-poor programmes and exploring the potential pro-poor growth policies for Fiji.

Chapter 4 empirically investigates the household level determinants of poverty in Fiji. In this chapter determinants of poverty are examined in two categories, household head's characteristics and household characteristics. Chapter 5 tests the hypotheses that the influence of education on poverty reduction that goes beyond its impact on income and wages, but also on the health behaviours of individuals. A set of econometric techniques is used in this chapter to analyse both the monetary and non-monetary effects of education on poverty reduction.

Chapter 6 looks at the nature of Fiji's household income distribution in 2002-03. In this chapter, income inequality is examined to address several main issues such as: what is the magnitude of inequality within and between population groups; which source of household income contributes more inequality effect; and hypothetical speaking, what would be the equally distributed equivalent household income for Fiji in 2002-03.

Chapter 7 concludes the study by summarising the empirical findings. The key findings are: households headed by the females and people with disability are most likely subjected to poverty; the poorest people benefit most from obtaining formal education; employment in the sectors such as manufacturing, construction, trade and services, transportation and communication are vital determinants of poverty reduction. The chapter 7 also presents the overall conclusions and policy recommendations for Fiji, and explores areas for future research in this dynamic area of poverty study.

Chapter 2

Literature Review

2.1 Introduction

Economic growth is considered as a strategy for reducing poverty and improving quality of life. A large amount of investment in physical capitals is seen as the prime element for development activities to achieve growth. But as this growth is seen to fail in reducing poverty, a shift in investment is made to provision of health, nutritional and educational services as a matter for public policy in many developing countries. This is based on the assumption that improvements in health, nutrition and education are seen as not only a right of the poor, but also a way to boost growth in income, both nationally and among the poor (World Bank, 1990, 2001; Laderchi, Saith, and Stewart, 2003).

The issue of poverty elimination has become one of the main agendas in developing countries to meet the Millennium Development Goals (MDGs) agreed by 189 United Nations (UN) member countries to reduce poverty by half by 2015. In addition, the World Bank, the United Nations Development Programme (UNDP) and other major donors often assess their policies in relation to their impact on poverty, ranging from debt relief, enhance security, promote empowerment, to macro economic stabilisation. As a result of these efforts and strategies, the population of the poor has been declined to 1.4 billion in 2005 from 1.8 billion in 1990 (based on US\$1.25 a day in 2005 prices), yet a significant proportion of population is still suffering from poverty or on the very edge of poverty (World Bank, 1990, 2001; United Nations, 2009).

While concern is given to poverty reduction, the term poverty still means different things for different people. This means that people, according to their political, social and economic circumstances, will understand poverty differently. Laderchi, Saith, and Stewart (2003, p. 3) argue that “clarification of how poverty is defined is extremely important as different definitions of poverty imply use of different criteria for measurement, potentially the identification of different individuals and groups as poor, and the use of different policy solutions for poverty reduction”.

This chapter explores the definition, measurement and determinants of poverty and the link between education, health and poverty reduction by reviewing appropriate theoretical and empirical literature. The first section of this chapter reviews the meaning and measurement of poverty while the next section discusses causes of poverty at country- and household-level. In final section, the study investigates the effects of education and health on poverty reduction by highlighting the major findings of the discussion.

2.2 Definition and Measurement of Poverty

The definition of poverty has been one of the more controversial issues in poverty studies as it is difficult to provide a universal definition that satisfies everyone (Sen, 1985, 1999; Alcock, 1997; Dessallien, 1998; Alkire, 2002; Barr, 2005; Stewart, Saith, and Harriss-White, 2007). The emphasis on the multi-dimensionality of poverty includes economic and noneconomic dimensions of deprivation. The World Bank (2001, p. 15) defines poverty as “unacceptable human deprivation in terms of economic opportunity, education, health, and nutrition, as well as lack of empowerment and security”.

The key to understanding this concept is the notions of deprivation and well-being. The notion of deprivation includes two aspects. The first one is related to the physiological aspect of deprivation, which considers people are poor if they lack income, food, clothing and shelter. The second one refers to the sociological perspective of deprivation, which views the existence of poverty as structural barriers. It argues that such structural barriers prevent the poor from both accessing to external assets (e.g. credit, land, infrastructure and common property) and internal assets (e.g. health, nutrition and education) (World Bank, 2005; Stewart et al., 2007).

The notion of capability itself extends the people's opportunities, but when they are poor, capability of poverty spans deprivation both physiologically and sociologically. Accordingly, people are poor not only because the country is poor, but also due to a lack of real opportunity (Stewart et al., 2007). This multi-dimensionality that is accepted today raises the standards for more complicated and complex strategies for poverty

alleviation (World Bank, 2005; Stewart et al., 2007). As such, poverty requires a measurement as comprehensive as the definition of poverty in order to achieve an adequate result. The major approaches to poverty measurement are: the monetary approach; the capability approach; the basic needs approach; the social exclusion approach; and the participatory approach. These are discussed below in detail.

The Monetary Approach

The standard of living comprises of a set of possibilities available to individuals or households to meet their needs. The possibility of satisfying these needs includes material and non-material items. The monetary approach presents all these items needed in the monetary terms, i.e. income and consumption. Thus, an individual is considered poor if s/he lives in a family whose income and consumption falls below a certain threshold or a minimum level (UNDP, 1997; Case and Deaton, 2003; Laderchi, 2007).²

Poverty can be explained in an absolute or relative term. In the welfare economics framework Ravallion (1998) defines poverty line as the minimum cost of the poverty level of utility. In Laderchi's (2007) work, poverty line is defined as either with respect to a list of basic needs to be fulfilled or with respect to some characteristic of the distribution of the chosen welfare indicator. In this regard, the monetary approach is seen as an objective measurement which can be contrasted with subjective measurement. Alcock asserts that:

“Absolute poverty is thus contrasted with relative poverty. This is a more subjective or social standard in that it explicitly recognizes that some element of judgment is involved in determining poverty levels...Judgment is required because a relative definition of poverty 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, usually involving some measure of the average standard of the whole of the society in which poverty is being studied” (Alcock, 1997, p. 69).

Furthermore, as suggested by the World Bank's (2005) that the choice of the poverty line should be in line with social norms and the common understanding of what represents a minimum level. For example, “in some countries it might make sense to use the minimum wage or the value of some existing benefit that is widely know and

² The minimum level is known as the poverty line, which is calculated on the basis of individual income (or expenditure) or household income (or expenditure). However, precaution is needed when determining a poverty line, because the poverty lines can be different between regions in terms of social, culture and economic environment (Hoeven and Anker, 1994).

recognised as representing a minimum” (World Bank, 2005, p. 34). In choosing between monetary indicators of poverty, consumption provides much more detailed information than income. In the poor agrarian economies, incomes for rural households may fluctuate in line with seasonal harvest cycle during the year. In the urban economies, a large number of people have non-permanent income from the informal sectors which implies their income may also be erratic.

Comparing consumption to income, Hemmer and Wilhelm (2000) argue that consumption is a more reliable yardstick than income in terms of the possibility to meet basic needs, due to short-term economic fluctuation than expenditure. Coudouel, Hentschel and Wodon (2001) note that consumption based on an individual’s well-being reflects the ability of an individual/household to meet their basic needs and the goods and services that a household can acquire based on its current income. It also indicates whether the household can access to credit markets or household savings at times when current income is low or even negative, resulting from seasonal variation or harvest failure.

A range of statistical techniques are employed in the monetary approach for measuring poverty, i.e. headcount index; poverty gap index; and severity of poverty or squared poverty gap. The most often-quoted poverty measure is the headcount ratio (see Foster, 1984; Foster, Greer, and Thorbecke, 1984; Ravallion, 1996, 1998; Dessallien, 1998; Coudouel et al., 2001; World Bank, 1992, 2002, 2005) defined as the share of the population below the poverty line.³

The headcount ratio measure suffers from a number of limitations, so that the measure alone can not be used in measuring poverty (Ravallion, 1998; Dessallien, 1998; World Bank, 1992, 2005). There are three major problems in this function. First, this method does not tell how much poor are the poor: i.e. whether they are close to the poverty line, are far below it, or are distributed in some other manners (Ravallion, 1998; World Bank,

³ $P_0 = \frac{1}{N} \sum_{i=1}^N I(x_i \leq z)$, where P_0 is the headcount ratio; N is the population in total; $I(.)$ is an indicator function that is 1 if its argument is true and 0 otherwise; x_i is the number of people who are equal or below to the poverty line; and z is the poverty line.

1992; 2005). Second, the method violates the monotonicity axiom, i.e. other things remaining same, a reduction in income of someone below the poverty line must increase the poverty measure (Sen, 1976; Ravallion, 1998; World Bank, 2005). Third, the method also violates the weak transfer axiom, where other things remaining same, a transfer of income from a richer poor person to a poorer poor person must lead to a reduction in poverty measure (ibid).

The poverty gap (PG) measure represents the depth of poverty, i.e. it analyses the mean distance separating the population from the poverty line (i.e. with the non-poor being given a distance from zero). The PG measures poverty deficit that captures the resources that would be needed to lift all the poor out of poverty through perfectly targeted cash transfers.⁴

The squared poverty gap (SPG) takes into account not only the distance separating the poor from the poverty line, but also the incidence of inequalities among the poor. While the poverty gap (P_1) considers the distance separating the poor from the poverty line, the squared poverty gap takes the square of that distance into account. When using the squared poverty gap, the poverty gap is weighted by itself, so that it gives more weight to the very poor. The SPG approach is particularly sensitive to the severity of poverty (World Bank, 2005).⁵ For example, in the case of Madagascar, it has been found that unskilled workers have a high poverty incidence (are ranked third highest poverty rate) while this group ranks as fifth in the poverty severity (ibid). Such a difference implies that this group has a higher risk of being in poverty, though their poverty tends to be less severe or deep. The different types of interventions, therefore, are needed to help in identifying different poverty dimensions.

⁴ It is measured as: $P_1 = \frac{1}{N} \sum_{i=1}^N (1 - \frac{x_i}{z}) I(x_i \leq z)$. When x is just below the poverty line z , the contribution to poverty is very small, and P_1 remains at zero when x equals or above z , i.e. $I(\cdot)$ takes value of zero. Furthermore, as Deaton (1997, p. 146) suggested, “the function $(1-x/z)I(x \leq z)$ is convex in x —although not strictly so—so that the principle of transfers holds—at least in a weak form.

⁵ The SPG is measured as: $P_2 = \frac{1}{N} \sum_{i=1}^N [1 - \frac{x_i}{z}]^2 I(x_i \leq z)$.

The Capability Approach

According to Sen, who pioneered this approach, development should be viewed as the expansion of human capabilities, not as the maximisation of utility or monetary income (Sen, 1985, 1999). The approach defines poverty as a deprivation of basic capabilities rather than merely as income poverty, and views well-being as the freedom of individuals to live a life s/he values (Stewart, Laderchi, and Saith, 2002 cited in Stewart, Saith and Harriss-White, 2007). Freedom in the development process context can be manifested in elements such as political freedom, economic facilities, social opportunities, transparency guarantees, and protective security (Sen, 1999). He notes that these elements are the building blocks of a generally capability foundation which enable a person to live more freely.

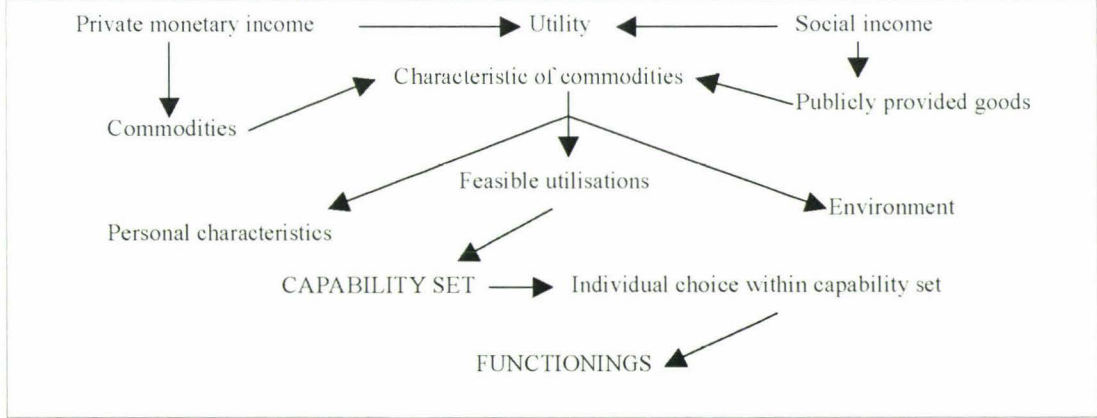
Political freedom, is related to the “opportunities that people have to determine who should govern and on what principles, and also include the possibility to scrutinise and criticise authorities, to have freedom of political expression and an uncensored press, to enjoy the freedom to choose between political parties, and so on” (Sen, 1999, p. 38). The economic facilities refer to an individual’s ability to use economic resources and access to markets in order to generate income for consumption, production and exchange. Social opportunities deal with the basic service provision for human development such as education, health, public infrastructure and others. This is particularly important as it influences a person’s life through decreased morbidity, mortality, and also affects his/her ability to participate in development activities through literacy and awareness.

Transparency guarantees refer to the needs for openness and trust in a community, that emphasises the importance of interactions that an individual has with the institutions (both private and governmental in the community) and should be conducted honestly and lucidly in order to develop integrated systems involving all people in participating and investing their capital in development sectors (Sen, 1999). The element of enabling a person to live more freely is related to protective security, i.e. protect certain groups in the community who are more vulnerable to economic adversity than others. These attempts can be achieved through some sort of safety net programmes in the form of emergency services, or unemployment securities or other ways to reduce any probability of destitution for the groups (Sen, 1999).

Sen’s capability approach, in general, includes two concepts of capability and function. It includes the basic capabilities (e.g. income, education, health and nutrition) and also other capabilities such as human rights, social opportunity, transparency guarantees and protective security.⁶ The concept of functionings, on the other hand, deals with the numerous valuable things a person could be able to do and be, e.g. working, studying, resting, living a healthy life, being part of a society, being respected, and being healthy, etc (UNDP, 1997). In this context, monetary resources are considered only to be a means to enhancing well-being, rather than the actual outcome of interest.

Stewart et al., (2007) illustrate the instrumental role of monetary resources in the achievement of well-being, presented in Figure 2.1. It demonstrates that investment or employment provides the wages and income with which people are able to purchase the goods (food, clothing, housing) and services (education, healthcare transport), which will keep them out of poverty and provide them with a decent quality of life. Apart from the private monetary income and publicly provided goods and services, an individual’s characteristics (i.e. age, gender, physical capacities) and the general environmental context help determine the capability set and its usage, or the individual’s functioning’s. As such, monetary resources remain instrumentally related to the achievement of well-being or, conversely, poverty (Stewart et al., 2007).

Figure 2.1 Capability Approach: The Instrumental Role of Monetary Resource



Source: Stewart, Saith, and Harriss-White (2007, p. 16).

A fundamental problem of this approach to poverty measurement is in translating the capability concepts into practice. Stewart et al., (2007) claim that Sen does not provide a

⁶ According to Sen (1999, p. 20) basic capabilities include “premature mortality, significant undernourishment (especially of children), persistent morbidity, widespread illiteracy and other failures”.

universal list of what the minimal capabilities and functionings include, even though he gives examples of some basic functionings such as being well-nourished, being healthy, avoiding escapable morbidity and so on. However, a lack of specification in the capability approach, as argued by Alkire's (2002), was deliberately done by Sen so as to ensure the relevance of the approach to different person and cultures. Nevertheless, a comparison of lists of the minimal capabilities developed by different researchers (Doyal and Gough, 1991; Desai, 1995 cited in Steward et al., 2007; Nussbaum, 2000; Qizibash, 2002) using different methodologies indicate that capabilities are significantly associated with health, nutrition and education despite the different criteria for inclusion. That, in turn, reflects the importance of any investigation of poverty.

The Human Poverty Index

The Human Poverty Index (HPI) is a human poverty measurement that is derived from the human capabilities approach, which is a multidimensional measure of poverty. The HPI was first introduced by UNDP in 1997 to measure poverty from social indicators as the result of numerous issues of poverty most developing countries experienced at the time, e.g. famine, epidemics and the lack of health services or safe water and sanitation (UNDP, 1997, 2000). Because of these issues are indicated in the concept of deprivation, therefore the HPI is developed to measure poverty from deprivation in three basic elements of human life which has already reflected previously in the Human Development Index (HDI) in 1990. That includes a long and healthy life (longevity), knowledge, a decent standard of living (UNDP, 2000).

The first basic dimension of human life (longevity) is measured by the percentage of people who are not expected to survive to age 40. The second deprivation, knowledge, is gauged by rate of adult who are illiterate. The final deprivation, a decent standard of living, is measured by two variables: the percentage of people without access to an improved water source and health services, the percentage of malnourished children under five.⁷ The *Human Development Report 1997* notes that it is better to focus on material deprivation in hunger and malnutrition rather than income because, for the poor, the personal income will most likely goes to food and nourishment (UNDP,

⁷ The reason for the HPI excludes income is that income cannot affect human welfare directly in which the effect will go firstly to the prices of goods and services and then to human welfare. Thus an increase in personal income does not guarantee an increase in human welfare.

1997). The magnitude of inequalities between women and men (i.e. gender imbalance) is captured by the gender-related development index (GDI) and the gender empowerment measure (GEM) by the UNDP's *Human Development Report 1995* (UNDP, 2000). The GDI is the HDI adjusted for gender inequality. For example, the greater the gender disparity in basic human development, the lower is a country's GDI relative to its HDI. The GEM measures gender inequality in economic and political opportunities.

The Basic Needs Approach

The basic needs approach view poverty as the deprivation of material requirements for meeting basic human needs. The concept of deprivation (similar to capability approach) goes beyond the lack of personal income. It includes indicators such as access to food, shelter, schooling, health, water supply, sanitation facilities and opportunities for both employment and participation for measuring poverty (UNDP, 1997; Dessallien, 1998). It addresses the limitation arising from the income perspective that highlights the difference between personal income, public services and other forms of non-monetary income.

Questions have been raised in regard to which needs are considered to be basic and which needs are considered to be a luxury. Hemmer and Wilhelm (2000) suggest that basic needs should at least include private goods and publicly provided goods and services.⁸ When measuring the basic needs approach to poverty reduction, two material requirements are classified: 1) basic needs for food items; and 2) basic needs for non-food items. The approach interprets human well-being as follows: when prices of basic needs items such as food, clothing and shelter increases it is considered to be a decline in an individual's well-being because it directly affects his or her welfare.⁹ Households fall below either one of these estimated poverty line are considered to be poor. In this context, the basic needs approach can be seen as a monetary approach in which all indicators are concerted into a monetary value.

⁸ For example, consumption for private goods include food, clothing, shelter and some basic household appliances and furniture, while the essential public goods and services include provision of drinkable water, public transport, healthcare centre, sanitary and educational facilities.

⁹ An example of using the basic needs approach can be seen in the case of Fiji, where Narsey (2008) estimated food poverty line based on the minimum of 2100 calories per adult per day, and non-food poverty line based on the consumption patterns of household survey during the period 2002 to 2003.

As noted in the capability approach, the concept of basic needs is also relative. It is not limited to physical needs for personal survival, but it includes community services, facilities such as infrastructure and other non-material assets. The concept of basic needs defined by the International Labour Organisation (ILO) is as follows:

“The minimum standard of living which a society should set for the poorest groups of its people. The satisfaction of basic needs means meeting the minimum requirements of family for personal consumption: food, shelter, clothing; it implies access to essential services, such as safe drinking-water, sanitation, transport, health and education... it should further imply the satisfaction of needs of a more qualitative nature: a healthy, humane and satisfying environment, and popular participation in the making of decisions” (ILO, cited in Dixon and Macarov, 1998, p. 6).

The Social Exclusion Approach

The term social exclusion, was first used in 1974 by Lenoir (a French politician), refers to people who did not fit into the norms of industrial societies, who were not protected by social insurance, and were considered social misfits (Stewart et al., 2007).¹⁰ Townsend (1979) defines social exclusion as a process through which individuals or groups are excluded from ordinary living patterns, customs and activities. Social exclusion is noted as follows:

“The terms poverty and social exclusion refer to when people are prevented from participating fully in economic, social and civil life and/or when their access to income and other resources (personal, family, social and cultural) is so inadequate as to exclude them from enjoying a standard of living and quality of life that is regarded as acceptable by the society in which they live. In such situations people are often unable to fully access their fundamental rights” (European Commission, 2001, p. 11).

Social perspective plays a central role in the concept of social exclusion (i.e. the concept is socially defined). Social exclusion can also be seen as a characteristic of groups (e.g. the aged, gender, handicapped, racial or ethnic categories) arising from discrimination against particular groups. As Barry (1998; cited in Stewart et al., 2007, p. 76) points out that “groups be considered socially excluded if they are denied the opportunity of participation, whether they actually desire to participate or not”.¹¹ Although it has been argued that social exclusion can be difficult to interpret of the concepts of deprivation,

¹⁰ The original term of social exclusion includes “the handicapped, drug users, delinquents and the aged, among others, and was estimated to account for one-tenth of the French population” (Stewart et al., 2007, p. 34).

¹¹ For example, Burchardt, Le Grand, and Piachaud (2002, p. 30) define exclusion as occurring if an individual “does not participate in key activities of the society in which he or she lives”.

the analysis of exclusion can lead itself to the study of structural characteristics of society and the situation of groups (such as ethnic minorities, the aged, handicapped or the landless) which can generate and characterised exclusion (Stewart et al., 2007). Policies are essential to opening doors to more inclusive societies noted by Naidu (2001) in the case of the Pacific Island Countries.

The Participatory Approach

The participatory approach, pioneered by Chambers (1994a, 1994b), involves people themselves participated in decisions about what it means to be poor and the magnitude of poverty. The approach identifies the people in changing their own situation, analysing their knowledge of life and conditions, and using this in order to shape plans and help to construct strategies for development and poverty alleviation (Chambers, 1994a; Narayan, Chamber, Shah, and Petesch, 2000a; Narayan, Patel, Schafft, Rademacher, and Schulte, 2000b; Narayan and Petesch, 2002).

When measuring the participatory approach of poverty, a series of contextual methods of analysis are involved, i.e. data collection methods which attempt to understand poverty dimensions within the social, cultural, economic and political environment of a locality (Narayan et al., 2000a). According to the World Bank's (2005) poverty manual, a range of tools are used in gauging poverty, i.e. participatory mapping and modelling, seasonal calendars, wealth and well-being ranking.

The fundamental problem of this approach arises from heterogeneity within the community (Saith et al., 2007). In this regard, the questions are associated with how comparable and how representative are the poor. Cultural differences can also make appropriate processes differ across societies. Thus, the results may not be comparable (Narayan and Petesch, 2002). Nevertheless, the major advantage of this participatory approach to poverty measurement is that it provides a way to solving some of the problems encountered with other approaches.¹² As the definition of poverty discussed in this section is based on different perspectives, it is crucial to point out the determinants of poverty.

¹² For instance, the participatory approach helps to define: an appropriate minimum basket of commodities for the monetary approach; a list of basic capabilities in the capability approach; and what the main elements might be if the concept of social exclusion can be applied in a particular society (Saith et al., 2007).

2.3 Determinants of Poverty

Knowledge on the characteristics of the poor is important because it is not only essential in tackling the roots of poverty but also shape strategies of poverty alleviation. Because of the multi-dimensionality of poverty, there is a variety of causes of poverty. The incidence of poverty may result from a country's poor economic performance or insufficient income for an individual or a household to meet their basic needs. The causes of poverty are experienced at two levels, i.e. country level and household level. Todaro and Smith (2006) point out economic characteristics of poverty groups. That includes rural poverty, women and children in poverty, and ethnic minorities and indigenous populations in poverty. The country and household characteristics' as determinants of poverty are discussed below.

2.3.1 Country Level Characteristics

The incidence of poverty literature notes that higher levels of poverty are seen in the countries characterised by poor economic performance, lack of human resource development, poor governance and inhospitable climatic conditions (Dowrick and Nguyen, 1989; Barr, 2005; Gounder, 2005; Todaro and Smith, 2006; Kumar and Prasad, 2007). This has also been seen in the regional level, for instance, almost half of the world's population live on less than \$2 a day are living in the countries of Africa, the Middle East, Eastern Europe, Central Asia and Asia (except for Japan), Latin America and the Caribbean.

The first cause of poverty links to low economic growth performance. Economic growth is the cornerstone of successful development and poverty reduction" (World Bank, 1990, p. 144). The precondition for restoring growth in many developing countries is structural adjustment so that the poor can benefit from restructuring. Empirically studies by Dowrick and Nguyen (1989), Bernard and Durlauf (1995), Sala-i-Martin (1996), Miller and Upadhyay (2000) note that if economic growth is enhanced then through the trickle-down effect better incomes will be available to the poor and reduce the number of the people in poverty. Moreover, it is suggested that economic growth generates more revenues for the government that would be utilised to curb poverty by providing education and health programmes and income generating projects for the poor.

However, economic growth can also be the cause of poverty and inequality within a country.¹³ As strongly suggested by the UNDP's *Human Development Report 1990* that economic growth is simply a means to an end, not an end in itself, and thus, the primary objective of development effects should be more focused on people and their quality of life. The World Bank (2005, p. 250) has also noted that "high aggregate growth, in itself, will not reduce poverty. The pattern of growth must also benefit the poor, either directly through increased employment and income or indirectly through improved social services".

The second cause of poverty associates with lack of human resource development. Many developing countries are considered poor mainly because "their citizens do not have access to the ideas that are used in industrial nations to generate economic value" (Todaro and Smith, 2006, p. 72). Therefore, human resource development is being seen as a means of reducing poverty. As Liem (1986) suggests, developing human resources is not only emphasis on physical well-being of the people in terms of life expectancy at birth, infant mortality, rates of morbidity and levels of nutrition, but also on socio-cultural aspects, such as education and employment, social cohesion and stability, political expression, cultural diversity and ecological harmony. Ellis (2000) explains that people tend to be poor in some places is due to their lack of good quality human resources. "Poor people are disadvantaged by lack of information, education, skills and confidence. Many factors contribute to limited personal capability, including physical isolation, being cut off from the powerful and wealthy, lack of access to media and limited schooling. All these contribute to limited confidence, and together they reinforce powerlessness and voicelessness and marginalisation in society" (Narayan et al., (2000a, p. 237).¹⁴

¹³ For instance, between 1977 and 1990-91, the Fiji economy grew by almost 25 percent, but the proportion of the people living in poverty grew by around two thirds. As it has been suggested by the UNDP and Government of Fiji Poverty Report (1997, p. 45) that "most benefits of growth must have therefore gone to the well-off and little 'trickle-down' to the poor has materialised, even in a period of relative prosperity". In addition, Barr (2005, p. 69) points out that "the dangerous underlying myth is that there is no need to worry about poverty as long as we get the economy growing. But, in fact, economic growth alone will not necessarily address poverty and inequality. It does not follow automatically".

¹⁴ In the context of many Pacific Island countries a lot of people in rural areas or outer islands do not have ready access to schools and health clinics. Also, lack of infrastructure such as roads/shipping makes it difficult for them to sell their produce and so impedes their economic advance and business potential (Barr, 2005). He points out that in most of Pacific Island nations, poor children tend to go to poor quality schools and teachers with poor facilities. These children often fail exams due to lack books or bus fare, come to school with little or no food, and unable to give adequate attention to their lessons. Also,

The third cause is related to external or social factors where a deficient social structure is one of the determinants of poverty (Alcock, 1997; Halman and Oorschot, 1999; Zekeri, 2003). As argued by Alcock (1997, p. 39) that “poverty is the product of dynamic social forces”. This debate is encouraged by an opinion which does not blame the failure of the poor on their bad traits, but on the failure of the social security policy to eliminate poverty and the failure of the agencies and the institutions designing the policy. Alcock (1997, p. 39-40) identifies the policies which are said to fail in coping with poverty such as housing policy, health policy and social service policy. Also, the low morale of the indicial officers in the organisation, structural and operational practices do not support the policy implementation. In this perspective on poverty, Zekeri (2003, p. 6) lists the following actions stemming from the way social structure contributes to poverty:

- 1) racial discrimination in employment where minority groups have been last hired and first fired and relegated to dead-end jobs;
- 2) educational opportunities, which are related to employment, are more accessible to upper and middle-class youth than to lower-class youth; and
- 3) conditions of employment of migrant farm workers are seasonal, uncertain and low paying.

Other causes of poverty can be due to the poor governance (Narayan et al., 2000a; Asian Development Bank, 2002; World Bank, 2005; Gounder, 2005; 2007a; 2007b; 2007c; Kumar and Prasad, 2007). They note that good governance is one of the key pre-conditions for pro-poor growth. For example, the Asian Development Bank (ADB) (2002) notes how poor governance of Pakistan causes poverty in four major ways: political instability, non-transparency in resource allocation, weak public sector capacity and inadequate access to justice.¹⁵ The impact of poor governance also distorts resource allocation.¹⁶ In addition, Barr (2005) illustrates a number of good practical examples

assistance schemes for the poor in areas of health care and education are often available in Fiji but the poor do not know how to gain access to them (Ministry of Finance and National Planning, 2004).

¹⁵ In Fiji's case, Kumar and Prasad (2007) argue that it is political instability and corruptions that have affected Fiji's economic in the last decade. Aftermath of the 1987 coups characterised by the collapse in business as the number of tourist arrivals dropped, an increase in unemployment and job losses, a severe reduction in sugar production, an increase in the government deficit and the balance of payments deficit, an acceleration of inflation, a large-scale of departure of skilled professionals, a declining public and private investment, and a rapid depletion of foreign exchange reserves (Kasper, Bennett, and Blandy, 1988; Gounder, 1998, 2002).

¹⁶ In many villages the poor do not have access to primary education, primary health care, social development and public infrastructure such as water supply, sanitation, electricity, markets and roads, simply because government's policies tend to be focused in urban areas rather than in rural areas (ADB, 2002). The studies by Gounder (2005; 2007c) address that the failures of government policy in Fiji (such

from the bottom-up approach (whereby the people are involved in influencing the decisions which affect their own development), they are as follows:

- Bangalore, India: the Report Card system used to allow for people's participation in evaluating the services provided by local and national governments and candidates who stand for elections;
- Prot Alegre, Brazil: encouraging people to participate in the budgetary process;
- Colombo: the poverty profile is used to improve services to the poor; and
- Nage, Philippines: people are encouraged to take part in the city council's decisions-making process.

At the regional level, poverty is also associated with inhospitable climate that countries experience. Studies note the climatic impact it has on farms, houses, infrastructure, loss of personal household etc that already affects the poor (World Bank, 2001; Todaro and Smith, 2006).

2.3.2 Household Level Characteristics

As with the regional-level characteristics there is a variety of characteristics of the household that are associated with the incidence of poverty. For instance, employment provides wages and income with which individuals are able to purchase the goods (food, clothing and shelter) and services (education, healthcare and transportation) that provide a decent quality of life and keep them out of poverty. However, where people are unemployed (lack of job opportunities), low education levels and/or inadequate skills, it decreases people's ability to purchase basic needs and pay for educational and health costs for the family. This in turn increases the probability of falling into poverty. Poverty indicators, such as the age structure of household members, education level, gender of the household head, and the extent of participation in the labours force and other factors suggest various problems faced by the households.

In investigation the cause of poverty at the individual household perspective, the characteristics of underlying these personal traits are vital to address the problem at the individual member level. Thus, it is feasible to look at the causes of poverty from the internal side of a person (personal traits) and seeks for an internal solution to poverty. Alcock (1997) addresses two approaches that explain poverty from the individual traits,

as lack of public service provision, lack of economic and social policy implementation) have caused a greater number of people falling into poverty, and remaining in poverty.

i.e. 1) the genetic approach; and 2) the psychological approach. The first approach explains poverty from the inherited characteristic side, while the latter approach is developed individual traits. Both approaches suggest that individual traits are correlated with the incidence of poverty. However, some studies have found no causal link between poverty and individual traits.

A longitude study conducted by Brown and Madge (1982) in the case of United Kingdom (UK) (cited in Alcock, 1997, p. 38) shows that “most children of poor homes did not repeat the poverty of their families and communities, and that most of those who were poor did not themselves come from such a deprived background”. Similar finding for the UK is also found by Spicker’s study (1993, p. 77) which shows that “there are continuities particularly preserved in certain families, partly because most poor children are not poor as adults, and partly because people marry spouses who are not from similar family backgrounds”. It suggests that other characteristics beyond individual traits explain the causes of poverty, e.g., age and education of household members, number of income earners, household composition and size, assets owned by the household, access to basic social services, gender, ethnicity of head, location variable (rural/urban) and the sector of employment.

First, the determinate of poverty is linked to the age and education of household members. Many studies have shown that poverty mainly affects people who are under or above productive age who are unskilled and have no or little education (e.g. Narayan and Petesch, 2002; Sikander and Ahmed, 2008; Babatunde, Olorunsanya, and Adejola, 2008; Verner, 2008). The household head’s age is significantly associated with the incidence of poverty in the Punjab province of Pakistan (Sikander and Ahmed, 2008). This is consistent with Babatunde, Olorunsanya and Adejola’s (2008) study of southwestern Nigeria, and Verner (2008) study of Haiti.

The educational levels of household members have been considered to be the most significant determinant of poverty by many empirical studies. A recent poverty assessment conducted by the World Bank (2009) finds that the poverty rate of Georgia significantly declines as the level of education by a household head increases. In particular, the study shows that having technical and vocational education reduces the probability of being poor by 21.7 percent, while having a university degree brings it

down to 12.1 percent. In Nigeria, a discussion group of women in the village of *Ikot Idem* claimed that they are better off because of education and skills acquisition (Narayan and Petesch, 2002). Furthermore, having a university degree declines the chance of being poor by 45.7 percent in the rural and 36.2 percent in urban areas of Nigeria (Babatunde et al., 2008).¹⁷

Second, the number of income earners amongst the household also indicates poverty. It is linked to the relationship between the number of household members and income earners. This is explained, as seen in the recent times, as people have moved or are moving from subsistence economy to a cash economy where money assumes a greater importance. Therefore, poverty can occur in a household where the number of household members is more than the number of income earners. The relationship is calculated as the ratio of the number of family members not in the labour force to those in the labour force in the household. This ratio (known as dependency ratio) allows to measure the burden weighing on members of the labour force within the household (World Bank, 2005). High dependency ratio implies a closer tie with poverty. A poverty study in Cambodia (World Bank, 1999) shows that the incidence of poverty is found to be higher in larger households, i.e. average family size of 6.6 persons in the poorest quintile compared to 4.9 in the richest quintile. Similar trends have also been found in Sikander and Ahmed's (2008) study, they found that higher dependency ratio and larger family size is significantly associated with the greater rate of poverty in Pakistan.

Several studies show that household burden is also linked to the gender of the household head. For instance, in Kenya and Malawi, Ellis (2000) finds that households headed by the females are more likely prone to poverty.¹⁸ Abdullah (2003) further indicates that women, in Bangladesh, who have been excluded from the mainstream development activities are more likely to be malnourished, receive fewer years of education, have shorter longevity, own less property and assets and play a much smaller

¹⁷ Clearly, studies in the case of Albania (World Bank, 2007), Brazil (Fiess and Verner, 2004), Haiti (Verner, 2008), Cambodian (World Bank, 1999), Indonesia (Pernia and Quibria, 1999; Lanjouw, Pradhan, Saadah, Sayed, and Sparrow, 2001), Kenya (Geda, Jong, Kimenyi, and Mwabu, 2005), Malaysia (Mok, Gan, and Sanyal, 2007), Maldives (Kruijk and Rutten, 2007), Pakistan (Khalid, Shahnaz, and Bibi, 2005; Sikander and Ahmed, 2008), note that lack of education is one of the main contributing factors in the likelihood cause of households being poor in these countries.

¹⁸ This finding is consistent with the poverty analysis carried out by Shahnawaz (1996), Qureshi and Arif (2001), Khalid, Shahnaz, Bibi (2005), and Sikander and Ahmed (2008) for Pakistan, Meng and Gregory (2007) for China, Lawson, Mckay, and Okidi (2006) for Uganda, Abdullah (2003) for Bangladesh.

role in decision making and have less earning opportunities than their male counterparts.

Several studies note lack of assets owned by the household as a cause of poverty.¹⁹ For example, people in rural areas who produce crops can sell them to bring in the money required for their basic needs such as food, clothing, shelter, health and so on. If people do not own or have access to land (because of lack of proper distribution or the expiry of land leases) and if the land is not put to good use, then people in rural areas have difficulties in meeting their basic needs. Lanjouw et al., (2001) discuss two ways of accessing to or owning the land can act as a means to reducing poverty. The first one is to expand aggregate production or land usage that would lead to income distribution via employment. Second, production from the land at the household level can cover the basic consumption, and therefore reduces the probability of being poor. However, the relationship between access to land and poverty reduction can be complicated which depends on many variables like the traditional land transfer structures and land tenure patterns, land entitlement, tenure security, ownership and rights (Abdullah, 2003). Assets can also be considered as the determinants of wealth.²⁰

A key influence on poverty at the household level is the lack of availability of basic social services. Infrastructure is an essential part of poverty reduction, e.g. roads, transport, access to ports and waterborne transport, clean water supply, energy and communication possibilities are important features and a foundation for development (Sachs, 2005; Todaro et al., 2006). It has been argued that isolation through poor infrastructure facilities does not only limit the possibilities of income earnings but also makes people more vulnerable since remote communities are more likely to be impoverished by shocks such as drought, floods and famine (World Bank, 1999, 2007; Fiess and Verner, 2004; Khalid et al., 2005; Verner, 2008). On the one hand, the

¹⁹ See studies by Ernesto and Quibria (1999), Ellis (2000), Lanjouw et al., (2001), Narayan et al., (2000a), Narayan and Petesch (2002), Abdullah (2003), Geda et al., (2005), Khalid et al., (2005), Sikander and Ahmed (2008).

²⁰ Narayan and Petesch (2002) note that Bangladesh communities identified themselves as poor or rich based it on asset ownership. "Rich people are those who have their own land and other properties, livestock for cultivation, and money for investment, and can afford sufficient meals, wear good clothes, send their children to school, have jobs and mobility, and are free from disability"(2002, p. 120). But, "poor people are those who are denied access to credit and loans, suffer from periodic food insecurity and deficits, have no assets and no capital and are forced to seek credit to cover their daily expenditures, live in rented tin or bamboo houses, mostly work as day labourers and are landless"(ibid, p. 121).

quantitative analysis of poverty (e.g. World Bank, 1999, 2007; Verner, 2008) shows a large significant difference between the poor and non-poor households in terms of accessing to basic social services. On the other hand, the qualitative analysis of poverty by Quibria (1993), Narayan, et al., (2000a), Narayan and Petesch (2002), Sachs (2005) note that the perception of poverty is a result of lack of access to basic services and infrastructure faced by the poor. See Appendix A2.1 where Narayan, et al., (2000a) record several voices of the poor from different places around the world under various categories of basic social services.

In order to overcome poverty trap, Sachs (2005) suggests that the poor needs to have access to such capitals as business capital (i.e. machinery, facilities, motorised transport used in agriculture, industry and services), natural capital (i.e. arable land, healthy soils, biodiversity, and well-functioning ecosystems that provide the environmental services needed by human society), and knowledge capital (i.e. the scientific and technological know-how that raises productivity in business output and the promotion of physical and natural capital). The discussion here suggests that the determinants of poverty at the country-level and household-level characteristics are complex and also inter-connected. The views do not only emanate from a single aspect but from all aspects of life worldwide. Poverty is caused by a large number of factors which affects over one-third of the world populations. The section below examines the broader notions of wellbeing (education, health etc) as more promising route to poverty reduction.

2.4 Education and Health for Poverty Reduction

This section investigates the link between education and health for poverty reduction by reviewing the important theoretical and empirical literature of these factors' impact on poverty reduction. The empirical studies on the association of education and health with poverty alleviation can be grouped into two categories, i.e. country-level and household-level studies. Selected studies from each group are discussed below.

2.4.1 Education and Poverty

The recognition of the role of education in development and economic growth can be traced back to the age of ancient Greece period.²¹ Adam Smith (1776) conceptualised all of the acquired and useful abilities of all of the residences of a country as a part of human capital and economic growth. Ricardo (1821) though the theory of comparative advantage noted the importance of human capital in economic development, where a country can reap welfare gains by specialising in the production of a good or service in which it has a lower opportunity cost relative to the other. The major contributions to the human capital theory have been seen in several studies. Schultz's (1961) notes education not merely as consumption but as an investment that leads to the formation of human capital comparable to physical capital. Becker (1975) claims that investment in education attainment and in skill enhancement is the necessary component of human capital accumulation for productivity improvements and economic growth. Rosen (1989, p.682) further suggests that the "stock of skills and productive knowledge embodies in people" constitutes human capital.

Human capital plays a special role in a number of endogenous growth models (Solow, 1956). The studies by Denison (1962), Bowan and Anderson (1963), Peasle (1965; 1967) clearly established that human capital contributes significantly to welfare and growth. A clear statement that education can be regarded as an important explanatory variable (input) in the production function analysis has been noted by Griliches (1957; 1964; 1970).

Denison's (1962) study in the case of the United States (US) finds that 23 percent of growth rate in per capita income (employed) during 1909-1929 were due to educational attainment of employed individual, its contribution increased to 42 percent during 1929-1957. The finding is consistent with that of Haveman and Wolfe (1984) on education-growth nexus. Krueger (1968) reports that more than half of the differences in income levels between the US and a group of 28 countries are in terms of age, educational attainment and employment distribution of population and that income gap is due to

²¹ Plato, the founder of the first institution of higher learning in the western world, believed that education is the key to construction of a better society by developing good people who would serve the society in a better way. Realising the high economic value of education, Plato argued that the sustainable amount of the community's wealth must be invested in education (Seung, 1996).

human capital stocks.²² Bowan and Anderson (1963) find that literacy contributes significantly to economic growth in two folds: first, a 40 percent of adult literacy is needed to reach a gross national product (GNP) per capita level of US\$200 (in year 1950). Second, 80 percent literacy rate is needed to achieve income level of US\$500 per capita. Primary education had substantial impact on income levels of 77 countries. The levels of primary and secondary education have positive impact on growth (McClelland, 1966) and prove its contribution to poverty reduction.²³

Stronger relationship is found between literacy and economic development in 88 countries (during the period 1960-63 and 1970-73) by Wheeler (1980). Base on panel data, he finds that an increase in literacy from 20 percent to 30 percent yields an increase in real GDP by 8 to 16 percent. The effect of literacy on economic growth was even stronger in the case of African countries. Based on the finding, Wheeler (1980) concludes that

As education has a significant role for accelerating economic growth (Wheeler, 1980). Also education has the tendency to yield substantial rewards at some stages of development, while at other stages the impact may be negligible (Tilak, 1986). As there is a voluminous literature on education-economic growth nexus (Lucas, 1988; Psacharopoulos, 1985, 1994; Barro, 1997), attention is now placed on studies that discuss the role of education in poverty reduction. Education and human capital are essential for poverty reduction that gained much importance in the mid-1990s based on the rapid economic progress of East Asian nations (Singapore, Hong Kong, the Republic of Korea and Taiwan). High standards of living in these countries are mainly due to their investment in education and human capital formation in the 1970s and 1980s (World Bank, 1993).

²² Some countries with the same factor endowments as the US could not match its income level per capita because of the education gap. Kothari (1970) study found a significant difference in income per capita between India and United Kingdom as a result of a wide educational gap.

²³ Peasle (1965; 1967) looks at the relationship between primary education enrolments and GNP per capita in 34 richest countries of the world since 1850. He finds that no country has even achieved significant economic growth within the last 100 years without first attaining an enrolment ratio of 10 percent at primary level. He concludes that primary education is absolutely essential for any economy to take off. Colclough (1994) notes that in Africa, extremely poor countries such as Lesotho, Madagascar and Togo have primary gross enrolment ratios in excess of 100 percent and that amongst poor countries there is a considerable variation where low GNP does not necessarily translate into low levels of educational enrolment.

In general, the findings from empirical studies indicate that many of poor countries are found with low levels of education, and that poverty and education are inversely related. This implies that, on one hand, investment in human capital is the precondition for a developing country to absorb modern technology and improve productivity for higher level of income per capita and improve economic performance. On the other hand, the higher the level of education of the population the lesser will be the number of people remaining poor because education imparts knowledge and skills which is supportive in higher wages consequently putting people above the poverty line (Romer, 1990; Mankiw, Romer and Weil, 1992; Wolff and Gittleman, 1993; Tilak, 1994; World Bank, 2005).

As with cross-country studies, a high correlation between education and income status is also found significant at the household level studies. The findings of household level analysis are in support for the assumption that education can help a family climb out of poverty directly by increasing household income through increasing the productivity of self-employed workers, or by enabling access to higher paid job. The first study as such was provided by Mincer (1974), which conceptualised the role of education in wage earnings as a function of years of schooling, potential years of labour market experience. In this basic earnings function (Mincer, 1974), the coefficient on years of schooling are interpreted as the average private rate of return to one additional year of education. This notes that increase in earning is based on an individual's rise in education levels suggesting that a rational individual will invest in schooling up to the point where the wage gains of an extra year's schooling are offset by additional cost (assumed to be mainly the earning foregone).²⁴

The link between education and poverty reduction can be inversely related. Studies by Filed (1980) and Tilak (1986; 1989a; 1994) clearly show that the higher the level of education of the population, the lower the proportion of poor people in the total population as education imparts knowledge and skills that are associated with higher wagers and income. Tilak's (1994) study notes that incidence of income poverty is the largest amongst illiterate households, and it declines consistently by increasing levels of education in developing countries. He also observes that poverty is predominant among

²⁴ In discussing the issue of wages, years of schooling, job experience and other variables, the equation $\ln W_i = \mu + \beta S_i + \gamma_1 X_i + \gamma_2 X_i^2 + u_i$ will be used to examine this in the case of Fiji in Chapter 5.

illiterates, and it is almost a non-existent phenomenon among educated households. Thereby, he concludes that education and incidence of income poverty are very significantly and systematically inversely related, with a large decline in poverty occurring between illiterates and primary/secondary school graduates.

Datt and Jolliffe (1999) analyse the impacts of schooling and the level of parents' education on living standards and poverty levels in Egypt. They find that there is a positive significant effect of the role of education in alleviating poverty. Based on their simulation results, they suggest that a two-year increase in household average school attainment would result in an 18 percent decline in the number of individual in poverty. Moreover, a two-year increase in school attainment would also result in a reduction in the depth of poverty (as measured by the poverty gap index) and the severity of poverty of 22 and 25 percent, respectively. Datt, Simler, Mukherjee and Dava (2000) in examining the educational attainment impact at the household level on poverty in Mozambique find that education is an important means of poverty reduction. In particular, completing primary education is associated with large gains in poverty reduction as poverty-reducing impact of higher literacy rates alone is also significant. Datt et al., (2000) conclude that it is clear that investing in education should be a key element of poverty alleviation strategy for Mozambique.

Several studies note that educational attainment of a household head is considered to be the critical determinant of household poverty. Qureshi and Arif (2001) find that an extra increase in the educational level of household head significantly reduces the probability of the household being poor in Pakistan. In the case of Kenya, Geda, Jong, Kimenyi and Mwabu (2005) find that educational attainment of the household head is the most important factor in keeping households from falling into poverty and/or getting them out of poverty. Two main conclusions drawn in this study are: 1) lack of education or years of schooling of the head of the household is associated with a higher probability of being poor; and 2) education poverty is reinforced by income poverty amongst the poor households. Based on the finding, Geda et al., (2005) suggest that promotion of education is central in addressing the problem of moderate and extreme poverty amongst Kenya's poor households. This is further acknowledged by Abuka, Ego, Opolot and Okello's (2007) study where their findings show that an increase in the schooling of household heads not only has a positive impact on their productivity and

earnings but also hence the productivity of other members of the household through persuading them to be educated and/or skill-oriented.

2.4.2 Health and Poverty

Poverty plays a central role in most health problems faced by developing countries. As with child survival, widening income inequality (i.e. income increases faster in high-income than in low-income countries) is reflected in increasing disparities between the least and most healthy (Goesling and Ferebaugh, 2004). The World Health Organisation (WHO) (2008a) reports that between the mid-1970s and 2005, the difference in life expectancy between high-income countries and countries in Sub-Saharan Africa, has widened by 3.8 and 2.1 years, respectively. The WHO estimates that an income per capita of US\$1000 in 1975 would have a life expectancy of 48.8 years. In 2005, it is almost four years higher for the same per capita income. The findings suggest that improvements in nutrition, education, health technologies, the institutional capacity to obtain and use information, and in society's to translate this knowledge into effective health and social action, allow for greater production of health for the same level of wealth. In addition, variation is found in achievement across countries with the same income, particularly among poorer countries. For example, life expectancy in Cote D'Ivoire is 17 years lower (US\$ 1,465 per capita) than in Nepal (US\$ 1,379 per capita), and between Madagascar and Zambia, the difference is 18 years (WHO, 2008a).

In terms of devastating diseases, Todaro and Smith (2006) summarise three major scourges of the developing countries, namely, malaria, parasitic worms, and acquired immunodeficiency syndrome (AIDS). Malaria directly causes an estimated 1 million deaths each year (i.e. most of them among impoverished African children). In particular, Africa faces a resurgent presence of most lethal strain of malaria. McCarthy, Wolf and Wu (2000) find that while the impact of malaria on economic growth differs sharply across countries, it exceeds a 0.25 percent per year in a quarter of their sample countries, and most of these countries are located in Sub-Saharan Africa.

The incidence of debilitating parasitic worms has been nearly ubiquitous, though much progress has been made. Among the many parasitic diseases plaguing people in the developing countries, schistosomiasis (also known as snail fever) is considered to be the

worst in terms of its human and development impact. Effects on children and adults can be fatal. According to WHO estimates (2008a), the disease affects more than 200 million people in 74 developing countries, of whom about 120 million are symptomatic and some 20 million suffer severe consequences, including about 200,000 deaths each year.

Despite the intensive efforts globally, the AIDS epidemic continues to spread rapidly in the developing countries, threatening to halt or even reverse years of human and economic development progress in numerous countries. According to WHO (2008a), AIDS has become the leading cause of death of adult males in the economically active years and nearly 20 million people had died of AIDS since the disease identified in the early 1980s. Hence, failure to control either of these diseases will not only stall a country's economic advancement but also its human development. Thus, a healthy population is an essential step for successful development in all kinds.

The devastating effects of poor health on productivity of adults are also emphasised in the literature at the household level. That is, healthier people earn higher wages than these with ill health (Schultz and Tansel, 1997). Empirical studies have shown that a large part of the effect of health on raising earnings is due to productivity differences and it is not just the reverse causality that higher wages are used in part to purchase better health. In the case of India, the elimination of deformity from leprosy is estimated to more than triple earnings of workers (Max and Shepard, 1989).

In the case of a vulnerable household, payment for health services or illness by the income earner leads to a consequent loss of income that results people ending up poor or falling even deeper into poverty. High fertility, resulting in large households, restrains the income possibilities for women, and malnutrition can follow as resources become scarce. The financial resources normally required to pay for healthcare, food, safe drinking water and good sanitation are not available in poor households. According to World Bank (2003) study poorer regions tending to have health facilities are of low quality that lack many basic medicines, are run by poorly trained staff, and the weak institutions in these communities tend to have social norms that are not conducive to good health. Raising the health level in a country/community may improve the return to

investment in education, increase productivity, and as a result contribute to economic growth.

Gender inequality is also found in women's health. For example, HIV has been found to be the number one killer of women ages 15 to 49 worldwide and that unequal access to sex education and health care leads to millions of preventable deaths each year (James and Weston, 2009). James and Weston (2009) also report that traffic accidents, suicide and breast cancer are the top causes of death in high-income countries, while HIV/AIDS, maternal conditions and tuberculosis account for 1 in 2 female deaths in poorer nations.

Strauss and Thomas (1997) find that taller men earn more money in Brazil, even after controlling for other important determinants of income such as education and experience. They also find that a 1 percent increase in height is associated with a 7 percent increase in wages in the middle-income countries. In addition, taller people receive significantly more education than shorter people. Based on these results, Strauss and Thomas (1998) conclude that health and nutrition have significant impact on employment, productivity, and wages and substantially so among the poorest of the poor. They further claim that "the balance of evidence points to a positive effect of elevated nutrient intakes on wages, at least among those who are malnourished" (1998, p. 806). As a result health is a prerequisite for successful development. Linkages between investments in health and education have also been noted by Todaro and Smith (2006, p. 366), they are as follows:

- health and education are investments made in the same individual.
- greater health capital may raise the return on investment in education because: 1) health is an important factor in school attendance; 2) healthier children are more successful in school and learn more efficiently; 3) deaths of school-age children also increase the cost of education per worker; 4) longer life spans raise the return to investments in education; and 5) healthier individuals are more able to productively use education at any point in life.
- greater education capital may raise the return to investment in health because: 1) many health programmes rely on skills learned in school (including literacy and numeracy); 2) schools teach basic personal hygiene and sanitation; and 3) education is needed for formation and training of health personnel.
- improvement in productive efficiency from investment in education raises the return on a lifesaving investment in health.

School performance is also significantly affected by one's health status. Several studies have shown that better health and nutrition lead to earlier and longer school enrolment, better school attendance, and more effective learning (World Bank, 1993a; Kremer and Miguel, 2004). World Bank (1993a) reports that the probability of attending school among nutritionally stunted children in Nepal is as low as 5 percent comparing to 27 percent for nonstunted children. Moreover, undernourished children were found to lag 20 percent in test score gains in northeast Brazil, one of the worst pockets of poverty in Latin America. Kremer and Miguel (2004) find that low-cost deworming of parasite-infected school children caused significant improvements in their school attendance and other outcomes. The study shows that deworming increases attendance in neighbouring school districts that were not treated, due to reduced contagion through contaminated water.

There are other important spillover benefits to investment in one's health and education. On the one hand, it has been said that an educated person provides benefits to people around him or her, such as treading for them or coming up with innovations that benefit the community (Basu and Foster, 1998). On the other hand, a healthy person is not only less contagious but can also benefit the community in many ways that a sick person cannot. Because of such spillover effects, it is government's ultimate responsibility for the performance of a country's health system (WHO, 2000).

2.4.3 Income Inequality

The issues of the distribution of income and wealth and the related phenomena of inequality and poverty have drawn great attention of economists and other social scientist, ranging from the issues of inter-factoral distribution of a nation's output and income to the issues of distribution of individuals or households (Chatterjee and Srivastav, 1992). Studies by Gini (1912), Lorenz (1905), Pigou (1912) and Dalton (1920) have shown that there are two dimensions in the light of investigating inequality, i.e. technical and policy dimensions. The technical dimension of analysing inequality is considered as a subject of scientific enquiry and concerned with the choice of an appropriate inequality measure in the states of distribution, while policy dimension relates to the question of social justice inherent in the given distributional states.

2.5 Conclusion

Poverty is a multidimensional concept. It is not only about income and consumption but also covers the dimensions of education, health, nutrition, shelter, powerlessness, voicelessness, vulnerability, and freedom. Hence, it requires a solution as comprehensive as the definition of poverty in order to achieve an adequate poverty reduction result. The monetary approach focuses on income and consumption to gauge poverty and it has become a dominant part of the literature that employs a range of statistical techniques to measure poverty.

The capability approach to poverty extends income and consumption with other social factors (education, health, nutrition, powerlessness, vulnerability) to adding well-being as the freedom of individuals to live a life s/he values. The participatory approach helps to reduce the poverty problem because its attentions are focused on the perception of the poor and from the poor themselves, can be informants in finding the needed information on poverty, and involve them as analysts. The basic needs approach view poverty as the deprivation of material requirements for meeting basic human needs and is just as vital as to the capability approach that goes beyond the lack of personal income. Poverty reduction is becoming urgent to the difference between personal income, public services and other forms of non-monetary income and values of social factors. Although it has been argued that social exclusion can be difficult to interpret the concepts of deprivation, the analysis of exclusion suggests that structural characteristics of the society and the situation of groups (i.e. ethnic minorities, the aged, handicapped or the landless) require attention in many developing countries.

Studies find that both the country-level and household-level have shown substantial linkages between the level of education, health and the incidence of poverty. Both education and health plays a significant role in economic growth and technological advancement in reducing poverty. Well-educated and healthy population also enable a country to achieve successful development in all kinds. At the household-level, it is argued that education and being healthy can help a family climb out of poverty directly by increasing household income through increasing the productivity of self-employed workers, or by enabling access to higher paid job.

At the country level, the incidence of poverty has been found to be high in countries characterised by poor economic performance, poor health population, lack of human resource development, poor governance and inhospitable climatic conditions. At the household level, personal characteristics (the household heads' age, gender, race and educational levels) and household characteristics (the household composition and size, household assets, and access to basic social services) are significantly associated with the incidence of poverty.

In understanding the levels and causes of poverty, poverty reduction policies should aim at the causes from the individual and household levels and from the structural and country-level aspects. Such knowledge of the characteristics of the poor is important because it is not just essential in tackling the roots of poverty but also to combat poverty through essential strategies of poverty alleviation that eliminate any further pitfalls in falling into poverty. Issues discussed here will be examined in the case of Fiji in the later chapters.

Appendix A2.1

“Voices of the Poor”

This Appendix provides the views expressed by numerous people in a study by Narayan et al., (2000a) that note the importance of basic needs as components of poverty reduction strategies. The key areas of missing the basic needs and the lacking of amenities in most of the lives of the poor people around the world provide the hardships they face. The voices presented here are “crying out for change” to a better living. Some of the main basic needs areas noted by the people are as follows:

a) Water-Inadequate and unsafe

“I repeat that we need water as badly as we need air”- A woman in Tash-Bulak, Kyrgyz.

“We need boreholes because we rely on unsafe water from streams and unprotected wells. It is a critical problem because most of these streams and wells dry out during the dry season. We have to travel long distances searching for water” – A participant in a discussion group of poor men and women in Madana village, Malawi.

“How can we sow anything without water? What will my cow drink? Drought is so often here. Water is our life” – A resident of Orgakin, Russia.

“Look at our river! The cows stop milking when they drink this water. When I was a boy we used to go fishing there, and there were good fish. Now even the frogs have disappeared. We have no choice but to use it for the gardens so all the metals are soaking in the soil and we eat them. They can take more copper from my lungs and bones than from one meter of cable” - A middle-aged man in Etropole, Bulgaria.

“The water in the estuary is completely contaminated with solid waste (trash, dead decomposing animals, etc.) and liquid waste (sewage) and toxic from the industries in the port of Guayaquil” – A researcher reporting on problems common to all groups in Isla Trinitaria, Ecuador.

b) Isolation and poor access

“A community without roads does not have a way out” – A poor man in Juncal, Ecuador.

“If we get the road we would get everything else, community center, employment, post office, water, telephone” – A young woman in Little Bay, Jamaica.

c) Bad housing and shelter

“It’s drifty, humid, leaking. Just try living here in winter. Our children have fallen ill. And the adults too. There are bugs, cockroaches, what you have. It’s cold” – A group of young Roma men and women in Krasna Polania, Bulgaria.

“A dwelling leaked so much that it woke people up: it was like a court when the judge is arriving and people say “khoti lime!”- or all rise!” – A woman in Malawi.

d) Energy scarcity

“Gas heating is a great joy for us: it was very difficult to stoke with wood that you first need to gather and fetch from far away” – A poor elderly man in Takhtakupyr, Uzbekistan.

f) No sanitation-Filth and stench

“Where I live has two toilets in it, and they broke. I have to eat and sleep on it [the sewage], and it is a mess” – A poor woman in Cassava Piece, Jamaica.

“Dirty roads that are full of rubbish” – A pressing problem listed by a discussion group in El Mataria, Egypt.

Source: Narayan et al., 2000a, p. 72-81.

Chapter 3

The Economy of Fiji: An Overview

3.1 Introduction

Fiji remains the most developed island economy among the Pacific Island nations, but is vulnerable to domestic political instability and external shocks. This is reflected in terms of the country's erratic growth rate over the past two decades. The decline in agriculture sector in recent past has been supported by increase in tourism, which become the largest foreign-exchange earner that bypassed the nation's two largest goods exports (i.e. sugar and garments). Fiji's roots in agriculture are still very strong with over 67 percent of the workforce working in this sector, while tourism remains the largest employer of the indigenous population (Ministry of Tourism, 2009).

Since Fiji's independence in 1970 various development challenges of its resource use, political instabilities, economic and environmental vulnerability, and limited access to the global markets have led to be major obstacles in achieving improvements not only in economic growth but also social development. The socio-economic difficulties compounded by the effects of a series of notorious political upheavals have resulted many people falling into poverty and many on the very edge of the poverty. It is particularly concerning that Fiji's human development ranking, which is based on life expectancy, education and income, has dropped from 44th (out of 174 countries) in 1998 to 81st in 2009 (UNDP, 2009). The highest human development index (HDI) value for Fiji is recorded in 1998, which gives a rank of 44th out of 174 countries. A position most developing countries would envy at the time, especially for such countries as Brazil (74th), Philippines (77th), China (99th), India (128th) and so on (UNDP, 2000). On the other hand, the incidence of human poverty in Fiji has been increased between the 1998 and 2009. For instance, Fiji's human poverty index (HPI) rank has slipped from the 6th (out of 85 developing countries) in 1998 to 45th (out of 95 developing countries) in 2009 (see Appendix 3.1 for HDI, HPI indices over time). Although numerous improvements have been noted in education and health sector, there are still challenges for Fiji in terms

of poverty alleviation, infrastructure development, and housing sector especially those who live in the squatter settlement (Naidu, Barr and Seniloli, 2007).

The gender issues have been some disparities. The gender development index (GDI) for Fiji was ranked 69th in 2009 showing some improvement from 2005 and 2007 rankings. The gender empowerment measure (GEM) slipped to 71st ranking in 2009 from 47th ranking in 1996 and 68th ranking in 1997. Given the deleterious impact of the military coups of 1987, 2000 and 2006, this chapter provides an overview of Fiji's economy by exploring the country's economic and social indicators and provides an evaluation of Fiji's Millennium Development Goals (MDGs). The chapter is set out as follows: section 3.2 examines the economic indicators of Fiji with particular reference to economic growth performance, trade sector performance and trends in labour force. Section 3.3 examines the social indicators, such as the trend in demographic and migration, education, health and housing. By linking the socio-economic indicators, section 3.4 analyses the characteristics of the households in poverty in Fiji. Section 3.5 discusses the national strategies for combating poverty and pro-poor programmes that have been put in place in Fiji. The final section presents the conclusion.

3.2 Economic Indicators of Fiji

In discussing the economic indicators in Fiji, this section sets the scene of the trends in economic growth performance, trade sector and the labour force. Analysis of these major sectors notes the various shocks (i.e. domestic and external) on the performance of these sectors.

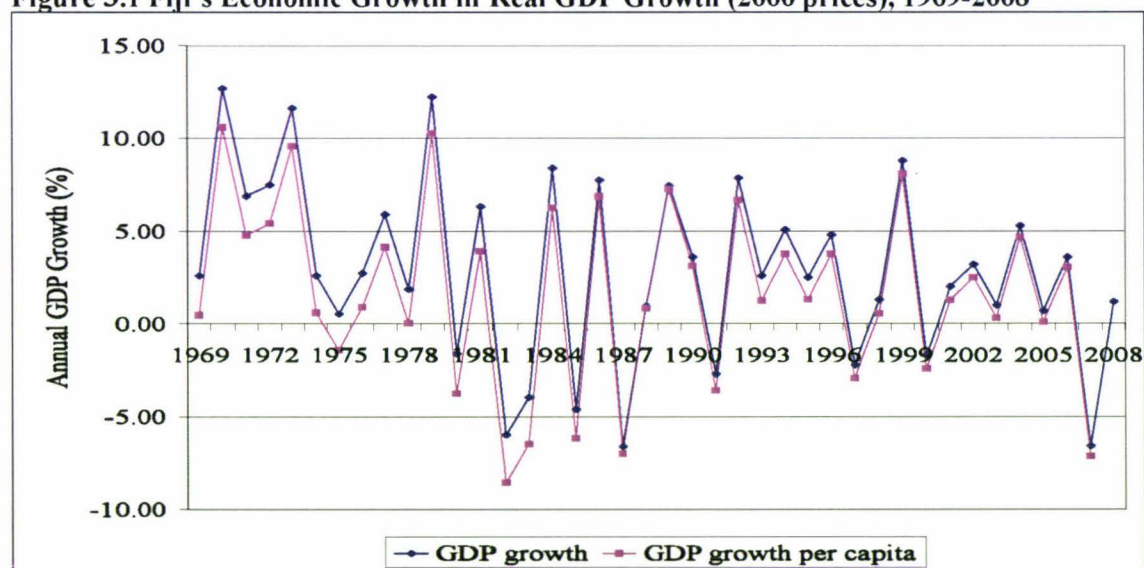
3.2.1 Economic Growth Performance

The economy of Fiji experienced rapid growth during the years immediately after the independence in 1970. The period was characterised by the rapid expansion of public sector, increase in foreign capital inflows, rapid growth in labour market, increase in exports of sugar and copra, rapid growth in tourism, high level of consumer confidence, and rapid increase in economic activities spread across the country. However, during the 1980s, it saw a severe reduction in growth rates as a result of series of natural

disasters, oil crisis, and political instability. In particular, the two military coups of 1987 created instability and uncertainty over economic and social future, which led to a sharp decline in economic growth from 7.7 percent in 1986 to -6.6 percent in 1987 (Figure 3.1).

The aftermath of the 1987 coups is characterised by the collapse in business sector, decline in the number of tourist arrivals, an increase in unemployment and job losses, a severe reduction in sugar production, an increase in the government deficit and balance of payments deficit, an acceleration of inflation, a large-scale departure of skilled professionals, a declining public and private investment, and a rapid depletion of foreign exchange reserves (Kasper, Bennett, and Blandy, 1988; Gounder, 1999, 2002). As the result, the Reserve Bank of Fiji (RBF) had devalued the currency twice (33 percent in total) and imposed strict foreign exchange reins to control the rapid erosion of foreign reserves caused by these events (RBF, 1987).

Figure 3.1 Fiji's Economic Growth in Real GDP Growth (2000 prices), 1969-2008



Source: World Bank (2007); Economist Intelligence Unit (2009).

As shown in Figure 3.1, the widely fluctuating gross domestic product (GDP) growth rates ranged from 12.7 percent to -6.6 percent between 1969 and 2008, experiencing nine years of negative growth in 39 years since independence. Improvements in the growth rates over some years resulted from an expansionary fiscal policy of 1986, devaluations of the currency in 1989 and 1998, and the recovery in the sugar sector following the 1997/1998 droughts. The negative growth rates were due to two oil crises, severe effects of hurricanes and cyclone in the 1980s, the military coups in 1987, 2000

and 2006, tropical cyclone Kina in 1992/1993, cyclone Ami in 2003, the 1997 Asian financial crisis, and the El Nino weather effects in 1997. Expiry of land releases also caused a contraction in growth. Between 2001 and 2006, the annual growth rate recorded an average of 2.8 percent but the economic and political turmoil due to the December 2006 coup immediately led to a sharp decline in GDP growth, down from 3.6 percent in 2006 to -6.6 percent in 2007 (RBF, 2008). The Economist Intelligence Unit (EIU) (2009) estimates the post-coup economic growth recovery in 2008 would be around 1.2 percent.

In the context of political instability and a slow policy implementation environment, the re-establishment of economic growth enhancing strategies did not lead to much improvement in growth performance during most of last decade. The rapidly changing institutional environment and low per capita income led to a decline in the standard of living, resulting into incidence of poverty. The recent government's efforts to promote various economic activities have been affected by the limitations in accessing global markets and the impact of political instability and environmental fragility.²⁵

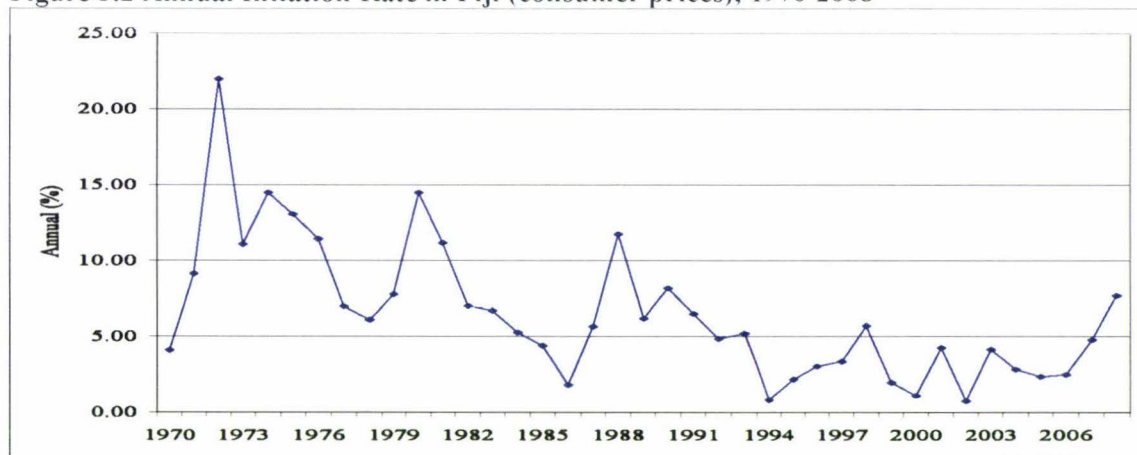
Similar to GDP growth fluctuations the growth in per capita income levels show volatility that have not been sufficient to raise the absolute income of the poor (Figure 3.1). Consequently, the inequality in income distribution has been widened with the emergence of rising poverty. According to Narube (2005), the positive economic growth rates since 1996 have not been enough to transform into an overall improvement in the standards of living in Fiji. The benefits from positive growth in GDP are unevenly distributed across the population, and thus there is little impact on the incomes of the urban and rural poor. Indeed, there is a high socio-economic cost as the result of low and negative growth rates in terms of income inequality, the incidence of poverty, capital and human resources in the long run (Gounder, 2002; Sharma, 2004).

High inflation is another factor that affects the poor. The inflation rate is on average around 6.7 percent per annum, which ranged from 4.1 to 7.7 percent from 1970 to 2008. The highest inflation rate has been recorded at 22 percent in 1972 and the lowest in

²⁵ Briguglio (1995) notes that the smallness of many Pacific Island economies are more likely to experience difficulties in achieving economic growth due to its limited ability to influence prices and to exploit economies of scale. Gounder (1999, 2005) and Sampson (2005) find the significant negative effects of political instability on economic growth.

2002 at 0.7 percent (Figure 3.2). Inflation rate declined after 1973 until 1994 except during the second oil crisis (i.e. 1979-81 period and immediately after the 1987 coup). Devaluation of the Fiji dollar caused a sharp increase in import prices in 1988. A significant decline in the level of inflation and its volatility has been achieved through a series of economic policies, thus consumer prices index (CPI) show a deceleration in inflation from the double-digit rates. Despite the low average rate of inflation for most of 1990s to 2000 period, the year-on-year increased slightly, of which an estimated 3 percentage point was attributed to the imposition of a 10 percent value-added tax (VAT) in mid-1992 (RBF, 1993). From 1994 to 2007, the inflation rate, on average around 2.8 percent per annum has risen to 7.7 percent in 2008. The RBF (2009) estimates the year-end inflation rate for 2009 would be as high as 9.5 percent. The food has been the largest contributor to inflation increase (Fijian Islands Bureau of Statistics, 2009a).

Figure 3.2 Annual Inflation Rate in Fiji (consumer prices), 1970-2008



Source: World Bank (2007); Fiji Islands Bureau of Statistics (2009).

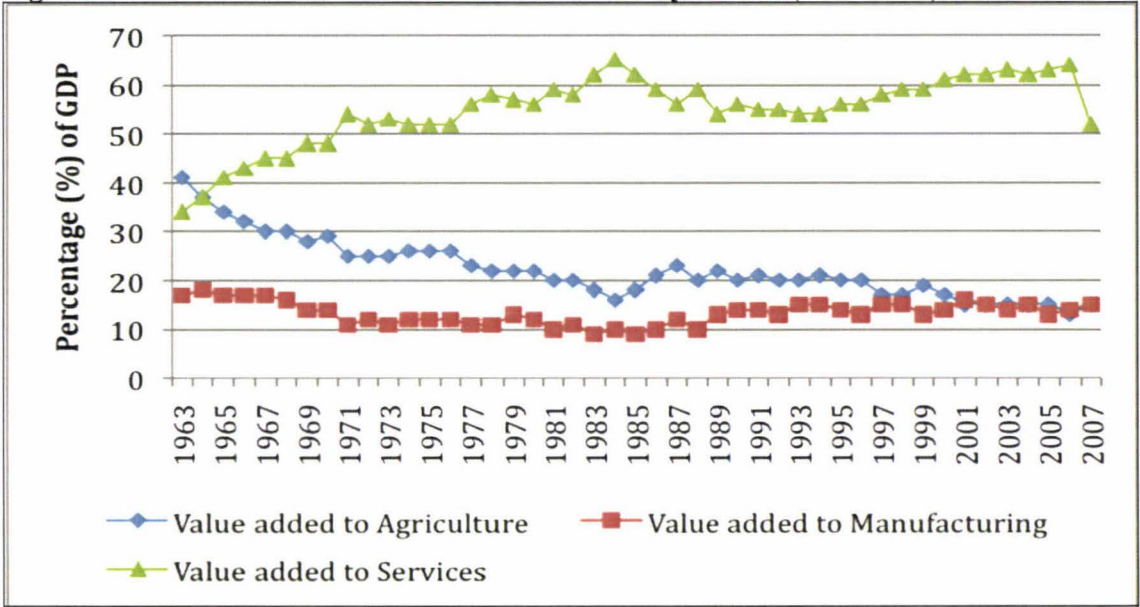
3.2.2 Trade Sector Performance

Fiji's key trade sectors include agriculture, manufacturing and service sectors. Agriculture plays a vital role to GDP contribution. Between 1970 and 1994, sugar was the largest single industry in Fiji which accounted for 70 percent of export earnings (Narayan and Prasad, 2003).²⁶ However, the industry's fragility in 1998 due to a severe drought, followed by a widespread cyclonic flooding saw sugar exports dropped by almost 30 percent and earnings by more than F\$190 million (EUROPA, 2005). Expiry

²⁶ Sugar output was recorded in 1976 at 272,000 tonnes, reached 475,000 tonnes by 1980. The sugar production reached its peak at just over 500,000 tonnes in 1986 and 517,000 tonnes in 1994 (Fiji Sugar Corporation, 2003).

of land leases also resulted in a decline in the annual average sugar production to 321,000 tonnes between 2000 and 2002. The value added to agriculture as a percentage of GDP has considerably decreased from 41.4 percent of GDP in 1963 to 15 percent in 2006 (Figure 3.3). Such a reduction in the agriculture sector not only created the adverse effects on Fiji’s economic performance but also dampened the progress of poverty reduction, as approximately 60 percent of poor households derive their income from the agriculture sector (Narsey, 2008).

Figure 3.3 Value Added in Gross Domestic Product by Sectors (% of GDP), 1963-2007



Source: World Bank (2009); Fiji Islands Bureau of Statistics (2009).

In recent time, the phasing out of sugar subsidies by the European Union (EU) in 2009 has a devastating effect on export earnings. Firstly, the industry contributes, on average, 2.9 percent of total GDP during 1980 and 2007 (Table 3.1). Secondly, the sugar production in Fiji remains in a labour-intensive operation, therefore trade has a significant multiplier effect in the country. Prasad (2003) estimates that over 22,500 people are directly involved in sugar cane cultivation, and some 24,000 more in the harvesting, milling, and transport branches of the industry. Fiji Sugar Corporation (FSC) (2003) notes that sugar industry directly supports 25 percent of economically active labour force. A collapse in the industry would affect over 200,000 people who are directly or indirectly dependent on trade for their livelihoods (EIU, 2009).

Mining and quarrying which is one of the key contributors to GDP has declined to less than 1 percent of total GDP in 2007 (FIBOS, 2009). The EIU (2009) reports that only

significant mining activity is the production of gold, which in 2006 counted for exports worth F\$43.1 million, or 3.6 percent of domestic export earnings. Despite high prices, total gold production and export volumes have been falling in recent years due to the higher fuel costs, lack of skilled staffs and lower-quality ore. In December 2006, the Vatukoula gold mine was closed, which led to an estimated 2,510 job losses (EIU, 2009).²⁷ Other major agricultural exports include coconut, ginger, timber, fish and mineral water. Mineral water has become a huge export earner which has increased by 775 percent since it began in 2000 with the total revenue now surpassing F\$52 million a year (RBF, 2008).

Table 3.1 Fiji's Major Export Commodities (% of GDP), 1980-2007

Year	Hotel & Restaurants	Sugar	Clothing & Footwear	Mining & Quarrying	Fishing
1980	3.24	3.86	n/a	0.05	0.81
1981	3.21	4.33	n/a	0.06	1.42
1982	3.55	4.52	n/a	0.09	1.41
1983	3.20	2.69	n/a	0.08	1.77
1984	3.34	4.27	n/a	0.09	1.49
1989	1.80	1.97	1.29	3.65	1.05
1990	2.96	3.46	1.84	3.43	0.92
1991	2.76	3.35	1.75	2.33	0.93
1992	2.66	3.46	1.88	2.96	0.87
1993	2.70	3.53	2.06	2.97	0.99
1994	2.96	3.97	1.73	2.60	1.06
1995	2.92	3.42	2.36	2.57	1.15
1996	2.90	3.31	3.10	3.27	1.15
1997	4.92	2.78	4.53	2.06	1.56
1998	5.18	2.03	5.63	1.63	1.65
1999	5.26	2.62	5.49	1.78	2.00
2000	4.30	2.49	5.30	1.55	2.14
2001	4.57	2.25	6.62	1.55	1.58
2002	4.83	2.23	5.64	1.44	1.80
2003	4.95	2.15	4.97	1.35	1.20
2004	5.46	2.05	5.88	1.47	1.64
2005	5.97	1.92	2.63	1.01	1.81
2006	5.77	1.96	1.84	0.49	1.63
2007	5.71	1.63	2.07	0.35	1.30

Source: Fiji Islands Bureau of Statistics (1986, 1997, 2009).

The proportion of manufacturing share to GDP has been stable over time at nearly 15 percent (see Figure 3.3). For many years the manufacturing sector was dominated by the processing of sugarcane and other agricultural products, which diversified with the development of a garment export industry based on the tax free factory (TFF) scheme

²⁷ Since 1933, more than 6.4 million ounces of gold have been mined at Vatukoula, and the current reserves are estimated at 1 million oz (EIU, 2009).

and concessional access to the Australian market.²⁸ It saw a rapid growth in total trade, with garment factories accounting for 78 of the 114-implemented TFF projects and 83.4 percent TFF employment between 1987 and 1990. Employment in garment industry has tripled from 3,000 to 10,000 between 1988 and 1992 (RBF, 1993).

As an export commodity, the garment industry accounted on average 2.8 percent of GDP annually between 1980 and 2007 (Table 3.1). The growth in the garment industry contributed to overall improvements in the value added, and the industry played an important role in attracting foreign investments, creating employment and further developing the skills of the labour force. However, the gradual erosion of Australian concessions (reductions in Australian tariffs forced Fiji's garment firms to compete with other countries), loss of market quota agreement with the United States (US) at the end of 2004, and the expiry of the WTO agreement on all textiles and clothing in January 2005, which adversely affected the garment industry (Storey, 2004; EIU, 2009). Storey (2004) notes that closure of several garment firms and low wages significantly effect the poor population in the urban areas. A large scale loss of jobs and redundancies in few firms aggravated economic hardship, especially women and their dependants.

Services (value added) as the percentage of GDP has increased significantly since 1963 and by far outperformed the contribution of agriculture and manufacturing sectors (Figure 3.3). In particular, tourism has expanded rapidly since the early 1980s and is the leading economic activity in islands. Although the industry is sensitive to negative foreign advice in the wake of political upheavals, tourism has been the largest foreign-exchange earner over the years, which earned more than F\$713.3 million, an amount far exceeding the revenue from two largest goods exports, i.e. sugar and garments (Ministry of Tourism, 2009). As shown in Table 3.1, hotels and restaurants category contributes 5.7 percent of total GDP in 2007, which is significantly higher than sugar (1.6 percent) and garments (2.1 percent). In terms of employment, tourism is estimated to provide jobs directly and indirectly for 45,000 people in 2002, i.e. about 14 percent of total paid employment is in tourism and accommodation sectors. Moreover, this sector is

²⁸ The TFF scheme was introduced in 1987 including incentives of a 13-year tax holiday, duty exemptions on capital goods and raw materials, and freedom to repatriate capital and profits (Fiji Trade and Investment Board, 1999).

considered as the major source of paid employment and the largest employer of indigenous population (Ministry of Tourism, 2009).

The positive growth gained in the tourism industry is mainly due to heavy promotional campaigns in its major markets, and devaluation of the Fijian currency.²⁹ On the other hand, the negative growth in this sector has been due to its political upheaval events, climatic vulnerability, and Asian financial crisis.³⁰ Growth in tourism earnings was aided by a 20 percent devaluation of Fijian dollar (RBF, 1998). However, tourist numbers fell sharply from 409,995 in 1999 to 294,070 in the wake of the 2000 coup, which also saw a fall from 545,145 people in 2005 after the 2006 coup to 351,074 people in 2007. The industry recovered strongly in the second half of 2007 and in 2008 as the result of the heavy post-coup discounting campaign (FIBOS, 2009). Cyclone in January 2009 and global financial crises led to low tourist arrivals in the first quarter of 2009, and the continued recessionary conditions may lead for a decline by about 25 percent at the end of 2009 (EIU, 2009).

3.2.3 Labour Force

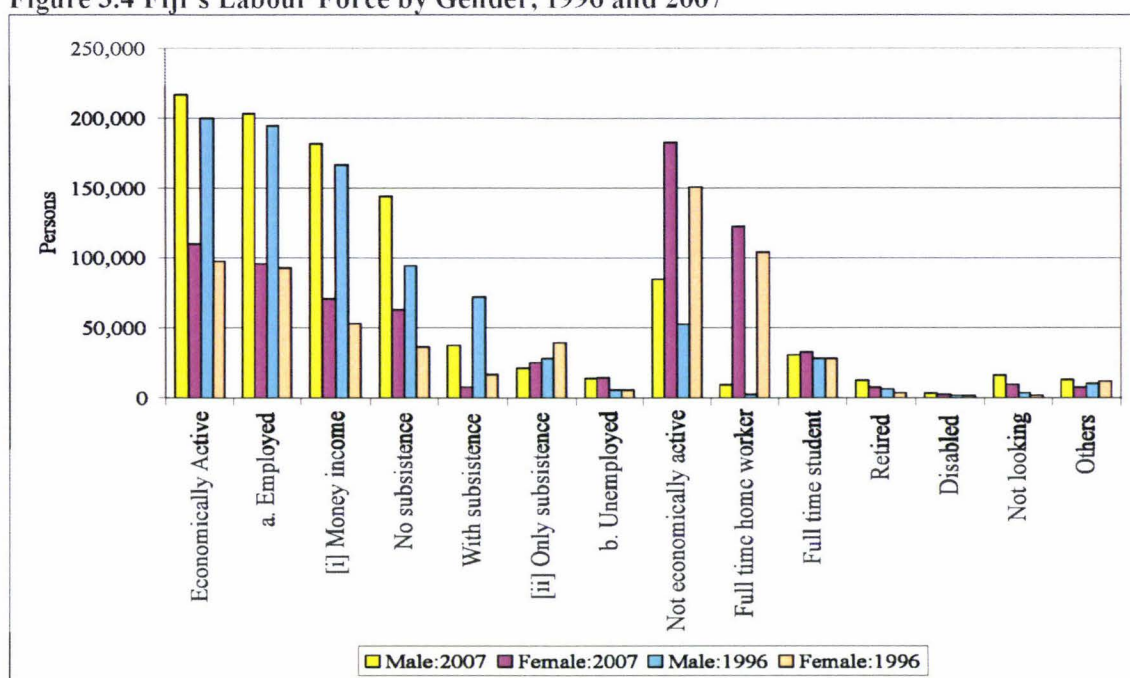
According to the 2007 census, 326,988 persons or 55 percent of the population aged 15 and over are in the labour force (identified as economically active), while 267,162 persons or 45 percent are recorded as not economically active (i.e. not in the labour force) (FIBOS, 2008). Comparing to the 1996 census, this is an 18.6 percent increase in the number of people in the labour force and 31.5 percent increase in the number of people who are not in the labour force (see Figure 3.4).³¹ Between the 1996 and 2007 census period, the participation of male in the labour force has been significantly higher than female participation. However, the female labour force participation rate increased to 15.2 percent, i.e. a twofold rise than the male counterpart of 7.8 percent. This implies a higher growth rate of females' participation in the labour force although there is an increase in total unemployment rate.

²⁹ The main markets are Australia, with large contingents also coming from New Zealand, Japan, the US and United Kingdom (Ministry of Tourism, 2009).

³⁰ For example, the effects of the Asian financial crisis lead to a sharp drop in the number of Asian tourists visiting Fiji in 1997 and 1998, which in return contributed to a substantial drop in GDP.

³¹ Within that population, there is a 23.7 percent increase in full time home worker; 12.9 percent increase in full time student; 104.4 percent increase in retirement; 88.9 percent increase in number of people who are disabled; and 369.7 percent increase in the number of people who are simply not seeking for employment.

Figure 3.4 Fiji's Labour Force by Gender, 1996 and 2007



Source: Fiji Islands Bureau of Statistics (2009).

The overall unemployment rate has increased from 3.7 percent in 1996 to 8.6 percent in 2007 (Table 3.2). This increase “is very significant [and] does not come as a surprise considering that Fiji experienced two coups during this period” (FIBOS, 2008, p. 2). The military coups of 2000 and 2006 have led to a series of lower economic activities having negative effects on the economy. In addition, many cane farmers lost their livelihoods from the land during this intercensal period that resulted from non-renewal of land leases (FIBOS, 2008).

As shown by Table 3.2, the unemployment rate in rural sectors increased from 2 percent in 1996 to 6.6 percent in 2007, and a rise from 5.8 to 10.5 percent in the urban sectors for the same period. Rural unemployment rate is significantly lower than urban unemployment. Female unemployment rate is two times higher than their male counterparts in 1996 and 2007. During this period unemployment rate of Fijians is slightly higher than Indo-Fijians, mainly due to a decrease in the number of Fijians taking part in the subsistence agricultural economic activities (FIBOS, 2008).

Table 3.2 Unemployment for Age 15 and over, 1996 and 2007

Category	Year	All Sectors			Urban Sectors			Rural Sectors		
		Total	Fijian	Indo-Fijian	Total	Fijian	Indo-Fijian	Total	Fijian	Indo-Fijian
Total U/E (%)	1996	3.7	3.5	4	5.8	6.7	4.9	2	1.4	2.9
	2007	8.6	9.8	7	10.5	13.8	7.6	6.6	6.9	6.2
Male U/E (%)	1996	2.9	2.9	2.8	4.5	5.7	3.6	1.5	1.1	2
	2007	6.4	7.9	4.6	8.1	11.8	5	4.7	5.2	4
Female U/E (%)	1996	5.5	4.5	7.4	8.1	8.2	8.2	3.2	1.9	6.3
	2007	12.9	13.1	13.1	14.8	16.7	13.1	10.6	9.9	13.1

Source: Fiji Islands Bureau of Statistics (2008).

Notes: U/E is unemployment rate.

Although participation levels by ethnic groups in Fiji are known to vary across sectors, there is a lack of such disaggregated data. Forsyth (1997) and Narsey (2006; 2007) note that manufacturing, distribution, commercial farming, and service activities are mostly dominated by Indo-Fijians along with a small number of non-Fijian groups and in foreign-owned firms. In these economic activities Fijians play a little part as either owners or entrepreneurs, though large numbers are employed as labour in the modern urban sector, and significant contributions are also made to cane farming and cash-cropping. Tourism in Fiji is dominated by foreign firms, together with a periphery of locally owned operators (Ministry of Tourism, 2009). The role of indigenous Fijians in this sector is almost entirely that of supplying labour, and a relatively low number of enterprises initiated by this group.³² As the trade sector performance has fluctuated over time the labour force also faced various implications, particularly on the social indicators such as migration, education, health and housing.

3.3 Demographic, Emigration and Social Indicators of Fiji

This section sets the scene of the trends in demographic and emigration, education, health, and household utilities. Fiji's multi-racial population recorded at 837,271 in 2007 has 58 percent (486,074) Fijians and Rotumans; 37 percent (313,798) Indo-Fijians; and 5 percent others (Chinese, Europeans and other Pacific islanders) (FIBOS,

³² As claimed by Forsyth (1997, p. 179) that "despite considerable efforts to promote post-secondary education amongst indigenous Fijians, they are still in a minority in the professions, though their presence in public sector employment-including high-level posts in government and in state-owned enterprises has expanded in recent years".

2009). The major demographic shift has taken place in Fiji since 1987 as the result of the military coups.

The episodic events of the military coups swept away a large proportion of skilled professionals. The Organisation for Economic Co-operation and Development (OECD) (2005) report notes that 61 percent of Fiji's skilled workers have either emigrated and/or gone abroad as guest workers, and this loss of skilled workers has been the world's fourth highest, behind Guyana, Jamaica, Haiti, and Trinidad and Tobago. The FIBOS (2009) points out that 630,417 residents left Fiji between the period 1995 and 2007, of which over 80 percent are Indo-Indians. Within this emigrating population are the civil servants, doctors, lawyers, accountants, teachers, business people, entrepreneurs, engineers and skilled people in trade of all kinds. This reduction in knowledge and abilities underpin the success of a modern, knowledge-based economy.

The Fijian society, based on an integrated clan relationship, is of communal nature.³³ The Indo-Fijian societies, on the other hand, are more culturally diverse.³⁴ It has been noted that most aspects of Indo-Fijian lifestyle and culture have comfortably coexisted with the indigenous Fijian way of life for over a century. Occasionally, cultural differences between the two communities have proven rich fodder for political agitations, despite the fact that simmering racial tensions can also be attributed to other factors, including a racially based electoral system (Tavola, 1991; Ewins, 1992; Gaunder, 1999; Firth, 2001b).³⁵ For a long time, the Indo-Fijians have been blamed for the economic plight of indigenous communities. Also, the threat of eventual Indian

³³ Position and importance of males in the Fijian society does not preclude the importance of females in influencing and sustaining or community affairs (Ravuvu, 1983). Household chores and other social and economic activities for the welfare of the family and community depend significantly on the support and resourcefulness of the female members.

³⁴ Females from Indo-Fijian societies can be more likely "influenced by various traditional cultural values originating from South Asia, ... emphasise formal male authority in decision-making...Some Indo-Fijian communities place restrictions on women's mobility and some, particularly rural, communities consider it more socially acceptable or prestigious for women to work only in the home and family compound. Among the urban middle-class, gender values have become more liberal" (ADB, 2006, p. 4).

³⁵ The majority of Indo-Fijians still belong to disadvantaged classes with the domination of a few in economic activities. Then high visibilities in professional and white-collar occupations have often been used by politicians to fan the coals of resentment, especially among the disenfranchised (Ewins, 1992).

domination has been a recurring theme in Fiji politics, where such fear-mongering often succeeded in driving a wedge between the two communities (Firth, 2001b).³⁶

3.3.1 Education

Since 1970 Fiji's education has undergone a number of major reforms. For instance, the 1970s structure of primary years (i.e. class 1 to 8) followed by four years of secondary schooling (i.e. forms 3 to 6) was changed to six years of primary and six years of secondary school. In 1997, the Ministry of Education decided to change back to the eight-year primary cycle, with secondary school commencing at Form 3 rather than Form 1. The change was not compulsory, but many schools followed the new structure. The reasons for the change are twofold: first, it links to the compulsory education initiative, as well as to issues of access and equity. As primary schools are much more widespread than secondary schools, children's chances of completing at least eight years of schooling are optimised. The cost of primary schooling is substantially lower than the cost of secondary levels. Secondly, the structure change allows secondary schools to focus on Forms 3 to 7 where there is an increasing demand for places in recent time (Fiji Education Commission, 2000).³⁷

The Government of Fiji introduced tuition-free scheme in 1973 extending that to the first six years of primary schooling in 1981, which has been extended to the first eight years, and subsequently to ten years of schooling. From 2000, tuition-fee assistance has been extended to senior secondary students in 55 disadvantage and rural schools (Fiji Education Commission, 2000). Thus, children from the low-income families can claim remission of fees in the remaining years of secondary school. The assistance has also been made available for covering boarding costs at the secondary level. The education cost to the parents relate to uniforms, bus fares, textbooks, and various incidentals. These costs can create great financial burdens on the poor urban or rural households, "...in a situation in which even daily personal consumption expenditure puts pressure on

³⁶ When the democratically elected governments were overthrown in 1987 and 2000, the first thing the coup leaders did was to separate the indigenous Fijian government ministers from their Indo-Fijian colleagues (Firth, 2001b).

³⁷ Although access to and participation in education has been widespread for a long time, it was not compulsory until 1997, when government began to progressively put compulsory education into practice across the districts and divisions. It has been gradually implemented throughout the country over a period of four years. Since 2000, education has been made compulsory for the first eight years of school, or from ages six to fifteen (Ministry of Education, 2000).

cash resources, it is hardly surprising that meeting education outlays constitutes an emergency” (Tovola, 1991, p. 37).³⁸

During the period 1995 to 2007, Fijian enrolments have outnumbered Indo-Fijians at both the primary- and secondary-level. The number of secondary school enrolments of Indo-Fijians has dropped from 33,392 persons in 1995 to 25,742 persons in 2007, compared to a significant increase in Fijians from 30,060 in 1995 to 39,474 persons in 2007. Similar trends are also seen at the primary level during this period, i.e. Fijian students (87,870) at primary level increased by two-folds to that of Indo-Fijians (40,118) in 2007 (FIBOS, 2009). By 2007 only marginally fewer girls than boys were seen in schools for both the major ethnic groups.³⁹

3.3.2 Health Indicators

Overall, the health indicators such as higher life expectancy, lower infant mortality rates, and the conquering of immunisable diseases (such as polio and tetanus) have significantly improved over the last two decades (Ministry of Health, 1997; World Health Organisation, 2009).⁴⁰ According to the Health Status Report conducted by the Ministry of Health (1997, p. 2) it has been noted that “Fiji is also fortunate in that it is free of malaria and that there have been notable improvements in sanitation and hygiene”.

The World Health Organisation (WHO) (2009) estimates life expectancy at birth in Fiji to be 69 years based on 2006 mortality data. In general, it is 72 for women and 67 years for man. By ethnic classification, life expectancy at birth is 63.8 years for Fijian males,

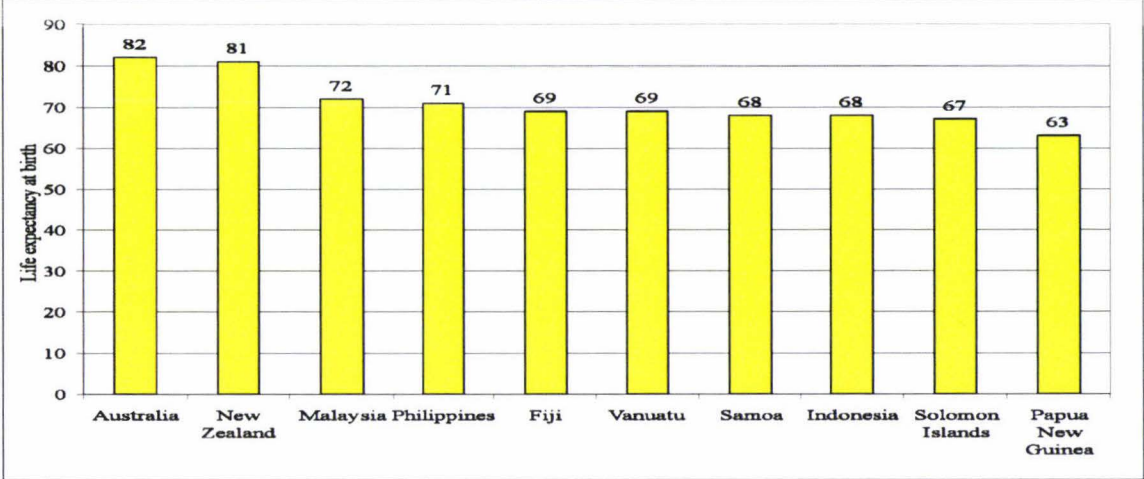
³⁸ The opportunity costs of education are also significant, especially for the poor households. As noted by Becker (1975, p. 58) “the difference between what could have been earned is an important indirect cost of schooling. Tuition, fees, books and supplies, unusual transpiration and lodging expense are other, more direct costs”. The related costs of uniforms, transport, books, school fund-raising and so on are estimated around F\$200 per year, which can be difficult for some low-income families to meet this cost (Fiji Education Commission, 2000).

³⁹ The Fijian girls’ secondary enrolment is 52.5 percent and 47.5 percent for Fijian boys (18,713 pupils), with 51.4 percent for Indo-Indian girls and 48.6 percent for Indo-Fijian boys (FIBOS, 2009). This is a reflection of cultural attitudes as a vast improvement in the situation from the earlier part of the century when very few Fijian and Indian girls attended school at the secondary-level.

⁴⁰ It has been reported that...“no reported cases of Polio Myelitis in Fiji for the last 20 years. This is in line with the global programme to eradicate Polio by the year 2000...[however] Fiji needs to be certain that it follows proper investigative protocols for many suspected cases of Polio including all cases of acute flaccid paralysis” (Ministry of Health, 1997, p. 37).

66.8 years for Fijian females, and 63.7 years for Indo-Fijian males and 68.8 years for Indo-Fijian females (FIBOS, 2009). Figure 3.5 compares life expectancies of selected Western Pacific countries, Fiji shares the fifth ranking position with Vanuatu behind Australia, New Zealand, Malaysia and the Philippines. Within the region, all countries have achieved the WHO’s standard of a life expectancy of “not less than 60 years by the year 2000”, though Papua New Guinea (PNG) has the lowest life expectancy at 63 years.

Figure 3.5 Life Expectancy at Birth by Selected Western Countries, 2007

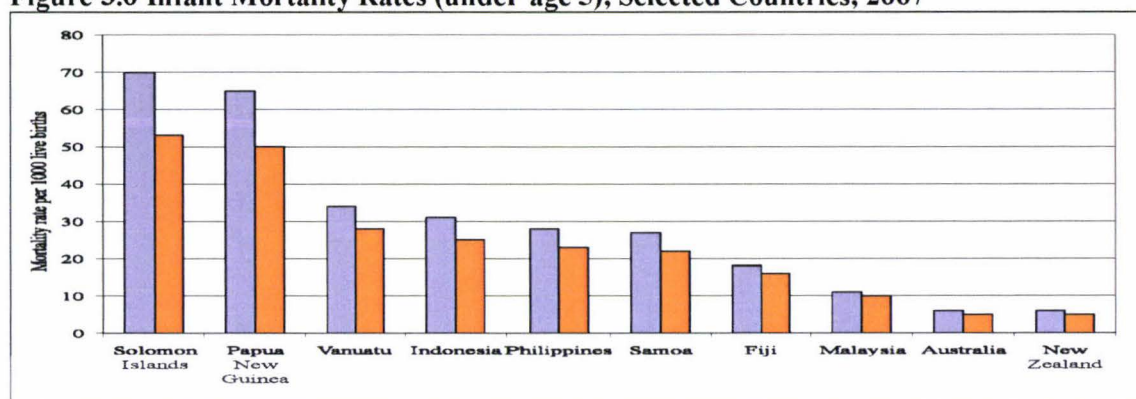


Source: WHO (2009).

Fiji’s infant mortality rate in Fiji in 2006 has been estimated to be 16 per 1000 live births, while the estimation of the under-five mortality rate records at 18 per 1000 live births (WHO, 2009).⁴¹ Comparing with the selected Western Pacific countries, Fiji has a relatively lower rate, except for Malaysia, Australia and New Zealand (see Figure 3.6). Although the child mortality rates are low overall the mortality rate for the Indo-Fijian children at 19.1 per 1000 live births, however was relatively higher than the Fijian children (16.8 per 1000 live births) in 2003 (FIBOS, 2009). The infant mortality rate saw a sharp decline for Fijians and Indo-Fijians for the period 1998 to 2000, however, from 2000 onwards, the infant mortality rate has increased significantly for both these ethnic groups. As the mortality rate for the Indo-Fijian children has increased much faster than for the Fijian children, this could be the implication of a lower overall health status amongst the ethnic Indian communities (FIBOS, 2009). Amongst the island economies Fiji has a relatively lower infant mortality rates to that of Solomon Islands, PNG, Vanuatu, Samoa, and also to that of Indonesia and the Philippines.

⁴¹ Defined as the annual deaths occurring before one year of age divided by the annual number of live births (Ministry of Health, 1997; WHO, 2009).

Figure 3.6 Infant Mortality Rates (under age 5), Selected Countries, 2007



Source: WHO (2009).

The 2006 adult mortality (age between 15 and 60 years old) in Fiji is estimated at 208 per 1000 population by the WHO (2009). Top ten causes of morbidity and mortality in 2007, are presented in Table 3.3. The non-communicable diseases such as heart disease and stroke remain two of the major diseases in Fiji.⁴² There are 1299 cases of gonorrhoea and 904 cases of syphilis reported in 1995. The incidence of HIV/AIDS, though is considered to be low (i.e. less than 0.1 percent in general population), the total cumulative confirmed HIV positive cases between 1989 and March 2007 are 244 cases (FIBOS, 2009). Fiji adopted the Family Planning Programmes since the early 1980s. The family planning protection rate has almost doubled from 27 percent recorded in 1974 to 43 percent in 2004, reaching 46 percent in 2007 (FIBOS, 2009).

Table 3.3 Top 10 Causes of Morbidity and Mortality in Fiji, 2007

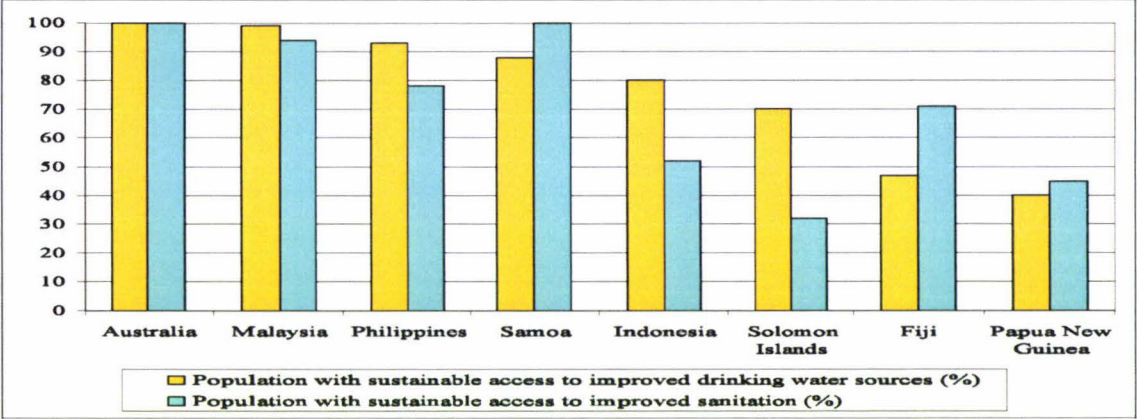
Morbidity		Mortality	
1	Injury		Diabetes mellitus
2	Influenza & pneumonia		Other forms of heart disease
3	Intestinal infectious disease		Ischaemic heart disease
4	Infection of skin and subcutaneous tissues		Hypertension
5	Ischaemic heart disease		Septicaemia
6	Other conditions originating in the perinatal period		Cerebrovascular disease
7	Chronic lower respiratory disease		Other conditions originating in perinatal period
8	Other forms of heart disease		Chronic lower respiratory disease
9	Hypertension		Renal failure
10	Diabetes mellitus		Influenza and pneumonia

Source: FIBOS (2009).

⁴² The number of hospital admissions primarily classified as being for cardiac or hypertensive disease has increased from 699 in 1980 to 883 in 1994. The total hospital admissions classified as primarily cerebrovascular accidents have also increased to 683 in 1994 from 328 in 1980 (Ministry of Health, 1997).

Despite the noticeable improvements in accessing drinkable water and sanitation, Fiji still lagged behind in these areas when compared to other countries in the Western Pacific region (Figure 3.7). The population’s access to improved water source is 47 percent, and 71 percent has improved sanitation in Fiji. A 55 percent of rural and 43 percent of urban population have sustainable access to improved water sources. The percentage of people access to improved sanitation in the urban areas (85 percent) is significantly higher than rural areas (55 percent) (WHO, 2009). The percentage of Fiji population with access to improved drinking water source is significantly lower than Australia, Malaysia, the Philippines, Samoa, Indonesia, and Solomon Islands (only slightly higher than PNG) (Figure 3.7). In terms of accessing to improved sanitation, Fiji is in the fifth position (out of eight selected countries) above Indonesia, Solomon Islands and PNG.

Figure 3.7 Water and Sanitation by Selected Countries, 2006



Source: WHO (2009).

3.3.3 Housing and Utilities

In analysing the housing and utilities in Fiji, seven individual attributes of housing include: outer wall materials; number of rooms; water supply; electricity; lighting; main cooking fuel; and toilets (Walsh, 2002). The standard of housing construction in Fiji, as indicated by outer wall materials, has improved during the period 1986-1996. Walsh (2002) notes that concrete housing increased from 19.8 percent in 1986 to 34.9 percent in 1996, while there was a decrease in the use of wood (including poor wood). *Bure* (i.e. thatched hut) houses declined accompanied by a significant increase in the use of tin (i.e. corrugated iron), while the makeshift materials decreased over time. Also, housing for Fijian have improved both in urban and rural areas, more so in the rural areas. In addition, the use of tin walls is found to be common amongst Indo-Fijians’ housing in

rural and urban areas. However, there still exist inequalities in terms of accessing to better quality houses in Fiji. Walsh (2002) notes that Fijian and Indo-Fijian urban dwellers are better housed than their rural counterparts.⁴³ Narsey (2006) estimates that more than 52 percent of the dwellings occupied by the poor have walls constructed of iron, with only 17 percent of concrete, and homes with wooden walls is fairly uniform across the country.

Fiji's housing standard refers to the number of living rooms, which includes kitchens that excludes bathrooms, washhouses and other small rooms (Walsh, 2002), which is an important indicator of the household welfare. The size of a dwelling is a priority among the squatters where the extra space to accommodate and entertain in larger rooms is commonly appreciated by the Fijian households, whereas Indo-Fijians valued more but smaller rooms for privacy (Walsh, 1978). This is also reflected in the Household Income and Expenditure Survey (HIES) 2002-03 where Fijian households on average have 2.6 rooms compared to 3.3 rooms in the Indo-Fijian households.

Having a safe and adequate water supply is considered to be not just a basic human need but also an important precondition for a healthy population. In 1996, although 92.9 percent of urban water supply was piped and metered, the rural areas had a much lower level at 30.8 percent, but with a further 37 percent of the households in the Fijian villages had share piped communal stands. A proportion of village households also depend on wells and river water. The Indo-Fijian households had 69.8 percent access to piped water, and 17.2 percent depended on the well or river in 1996. Water from borehole and wells, river and creek water is classified as least safe water sources (Walsh, 2002). Narsey (2008) notes that only 27 percent of poor rural population have access to so-called safe water (which is sourced from a metered water supply) compared to 91 percent of poor urban households.

Electricity supply has increased since 1986, and by 1996 the rate of not using electricity decreased by one-third for all ethnic groups in both rural and urban areas.⁴⁴ The

⁴³ In particular, one in three urban Indo-Fijians, and one in four urban Fijians lives in dwellings whose outer walls were tin.

⁴⁴ According to Walsh (2002) the extent to which electricity is used in Fiji for lighting, cooking and other purposes varied greatly. Private generation is considered to be most costly and less reliable. He classifies

declining use of wick lamps between 1986 and 1996 implies an improvement in the living conditions. However, the HIES 2002-03 survey reveals that while 65 percent of the poor households have electricity lighting, a very large 34 percent still use kerosene or benzene. Some 58 percent of the poor households in the rural areas have electricity as a light source, compared to 80 percent in the urban areas. The differences in access to lighting in rural areas would have a positive impact on the ability of rural school children to study at home.

A tendency for greater use of firewood for cooking purposes is found in the HIES 2002-03, this could be the result of price increase in kerosene and cooking gas, which explains why some 38 percent of all households in the poorest 30 percent income bracket cook only with wood. The 2002-03 HIES also reveals that while a very high percentage of people use only wood (i.e. 46 percent) in the rural areas, a substantial proportion of people (i.e. 20 percent) also use wood in the urban areas.⁴⁵ Safe sanitation is also vital for well-being. According to the HIES 2002-03, of the poorest 30 percent of the population only 37 percent enjoy flush toilets compared to 60 percent for the middle 40 percent, and 81 percent for the top 30 percent of the population (Narsey, 2008). In the rural areas, some 38 percent of poor households use pit toilets while 22 percent of the poor urban households have pit toilets.

The rural-urban migration, lack of affordable formal housing options, expiry and non-renewal of native land leases, creation and extension of new towns and boundaries, and natural increase in population have caused many people in Fiji to move into squatter settlements. The Ministry of Women, Social Welfare and Housing estimated that over 90,000 people are living in the 184 registered squatter settlements. Furthermore, the United Nation Economic and Social Commission for Asia and the Pacific (UNESCAP) Report (2002) argues that issues of insufficient infrastructure and services are more visible in the squatter settlement and is the single most common aspect of dissatisfaction amongst the squatter settlement occupants.⁴⁶ This includes poor road

the use of electricity and LPG as most adequate; kerosene and wood stove as somewhat less than adequate; and the open wood fire as totally inadequate as the everyday means of cooking.

⁴⁵ "This explains the phenomenon of a very large number of urban outlets, including service stations, selling *dogo* firework, with the volumes sold appearing to increase in recent months" (Narsey, 2008, p. 93).

⁴⁶ The squatter settlement in Fiji is usually defined as a residential area which has developed without legal claims to the land and/or permission from the concerned authorities to build (UNESCAP, 2002).

access, electricity, water and poor drainage as many settlements are located in the low-lying areas prone to flooding. Problems of lack of public services, such as rubbish collection, degradation of environmental conditions due to poor drainage, household waste and periodic flooding cause health risks to these households.⁴⁷ Narsey (2008) notes that, during the 2002-03 period, there were 35 percent (5,394 people) in the poorest 30 percent of the population living in squatter settlements, 40 percent (6,100 people) in the middle 4 deciles, and 25 percent (3,750 people) in the top 3 deciles. Therefore, approximately 65 percent of the squatter population are considered not genuinely poor.

3.4 Poverty Issues in Fiji

The most recent estimation of poverty levels in Fiji by Narsey (2008) has been based on 2002-03 Household Income and Expenditure Survey. The basic needs approach remains a main framework for poverty measurement in Fiji that consists of two main categories, namely food and non-food items. Two poverty lines have been set up for these items, i.e. the food poverty line (FPL) and the non-food poverty line (NFPL). In relation to the food poverty line, 2,100 calories per adult per day is the required minimum level. This level as a threshold determines the level of poor and non-poor.

The estimates of the incidence of poverty in 2002-03 are presented in Table 3.4. About 35 percent of the population or 29.6 percent of the households in Fiji are in poverty. Some 69 percent of the poor live in rural areas and 31 percent in urban areas. Indo-Fijians in the rural areas are in the poorest category (43.1 percent) followed by Others (41.3 percent), and Fijians (38 percent). Indo-Fijians are also the poorest in the urban areas, which accounted for 29.1 percent below the poverty line, followed by Fijians (27.2 percent) and Others (17.3 percent). According to Narsey (2008), the poorest groups are those heavily dependent on subsistence income (i.e. home consumption) with 77 percent classified as poor, followed by people in households dependent on casual

⁴⁷ Only 19 percent of the households had their rubbish collected while over a half (52 percent) of the households either burned or buried their rubbish with 21 percent disposing of their rubbish by throwing it in a nearby river or simply left their rubbish in a nearby vacant space where it accumulated. Illness across the squatter settlements were widespread, i.e. fever and flu symptoms, scabies and related skin conditions (UNESCAP, 2002).

wages (58 percent poor). Overall, 35.6 percent of Indo-Fijians live in poverty closely followed by 34.2 percent of Fijians and 24.1 percent of Others.

Table 3.4 Poverty Lines (F\$) and Incidence in Fiji, 2002-03

	FPL	FPL pAE	NFPL pAE	BNPL pAE	hh in poverty (%)	pop in pov (%)
Rural						69
Fijian	79.43	19.86	11.42	31.28	32	38
Indo-Fijian	68.55	17.14	14.26	31.39	39.6	43.1
Others	79.43	19.86	11.42	31.28	35.8	41.3
Urban						31
Fijian	80.8	20.2	15.39	35.59	23.2	27.2
Indo-Fijian	71.53	17.88	18.69	36.57	25.2	29.1
Others	80.8	20.2	15.39	35.59	12.4	17.3%
National	76.76	19.19	14.43	33.62		
Fijian	80.12	20.03	13.41	33.44	28.9	34.2
Indo-Fijian	70.04	17.51	16.48	33.98	31.4	35.6
Others	80.12	20.03	13.41	33.44	18.4	24.1
ALL					29.6	35

Source: Narsey (2006; 2008).

Notes: FPL = Food Poverty Line; NFPL = Non-Food Poverty Line; Basic Needs Poverty Line = BNPL; pAE = per Adult Equivalent; hh = household; pop = population; pov = poverty.

3.4.1 Household Characteristics' as Determinants of Poverty in Fiji

Based on the 2002-03 HIES, the average overall household income per adult equivalent (pAE) per week, estimated as F\$82.12, shows 33.82 percent of Fijians, 33.69 percent of Indo-Fijians and 2.63 percent of Others live below the national average poverty income. Urban households earn, on average, F\$37.50 pAE per week more than their rural counterparts with Others group as the highest mean income pAE per week in both rural and urban areas. Also, some 20.17 percent of those whose income below the national average are rural Fijians, and 20.08 percent are urban Indo-Fijians (Narsey, 2006).

The study by Narsey (2008) shows that basic needs poverty line of F\$ 33.62 pAE per week in the bottom 3 ten-percent household income groups is far below the poverty line (Table 3.5). Distribution of total household income and expenditure spreads relatively evenly across the ten-percent group with households ranked by income pAE. The top 3 ten-percent groups share a total of 62.03 percent of household income pAE per week (F\$508.06) and 57.53 percent of recorded expenditure of F\$377.24 pAE pw. The lowest 30 percent groups have 9.6 percent of recorded income (F\$78.63 pAE pw) and 12.63 percent of recorded expenditure (F\$82.79 pAE pw). With some level of caution on

survey reporting, nevertheless, there is a clear indication of high income inequality amongst the poor and non-poor, where the bottom ten-percent group only has, on average, F\$17.49 pAE per week which is 16 times less than those in the top-ten percent group (i.e. F\$284.93 pAE per week).

Table 3.5 Distribution of Household Income and Expenditure, 2002-03

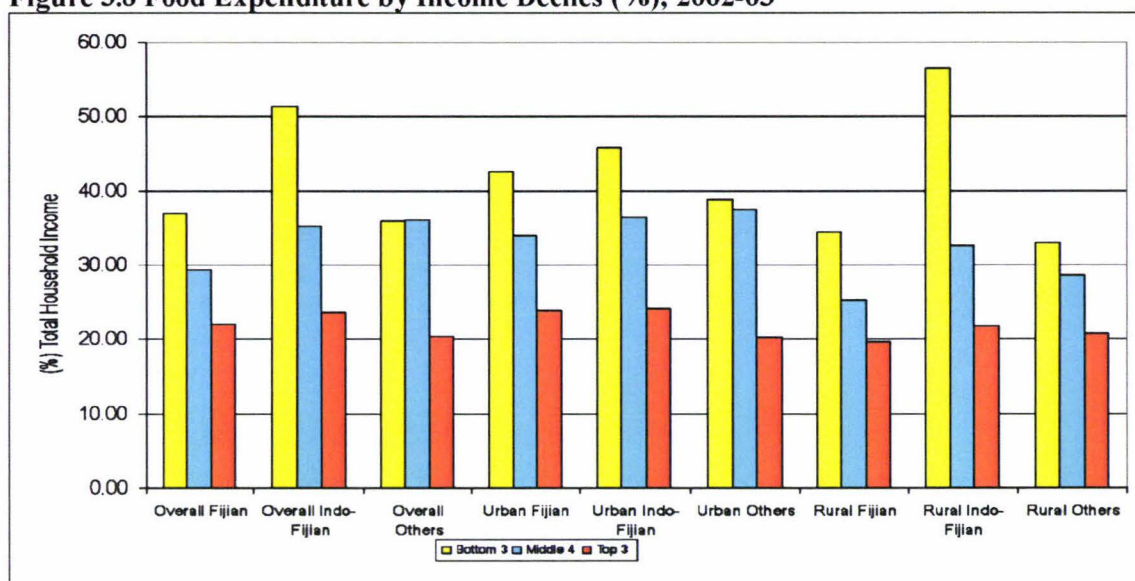
Ten Percent Group	Hh_Income pAE pw (F\$)	Hh_Expenditure pAE pw (F\$)	Hh_Income pAE pw (%)	Hh_Expenditure pAE pw (%)
Bottom 1	17.49	21.83	2.14%	3.33%
Bottom 2	25.59	28.2	3.12%	4.30%
Bottom 3	35.55	32.76	4.34%	5.00%
Bottom 4	43.27	38.55	5.28%	5.88%
Bottom 5	52.06	43.79	6.36%	6.68%
Bottom 6	62.33	53.23	7.61%	8.12%
Bottom 7	74.65	60.11	9.11%	9.17%
Bottom 8	93.45	76.24	11.41%	11.63%
Bottom 9	129.68	103.82	15.83%	15.83%
Top 10	284.93	197.18	34.79%	30.07%
Total	819	655.71	100.00%	100.00%
Lowest 30 percent	78.63	82.79	9.60%	12.63%
Highest 30 percent	508.06	377.24	62.03%	57.53%

Source: Estimation based on the 2002-03 HIES survey.

Notes: Hh_In pAE pw = Household Income per Adult Equivalent per week; Hh_Exp pAE pw = Household Expenditure per Adult Equivalent per week.

Figure 3.8 presents the food expenditure proportions of total household income that shows that households in the bottom 3 ten-percent groups spend significantly higher proportion of their income on food items (44 percent) compared to the middle 4 groups (33 percent) and top 3 ten-percent groups (23 percent). The Indo-Fijian households spend more than half of their income on food, compared to 37 percent for Fijian households and 36 percent for Others. Within the bottom 3 ten-percent groups, that is also the case in rural areas, where Indo-Fijian households spend, on average, 57 percent of total household income on food. Urban Fijian households in the bottom 3 ten-percent groups spend 42.54 percent of their income on food, while rural Fijian households in this group spend 34.5 percent of their income on food annually. On the other hand, urban and rural Indo-Fijian households in the bottom 3 ten-percent groups spend rather a greater amount at 45.8 and 56.58 percent of their income on food, respectively.

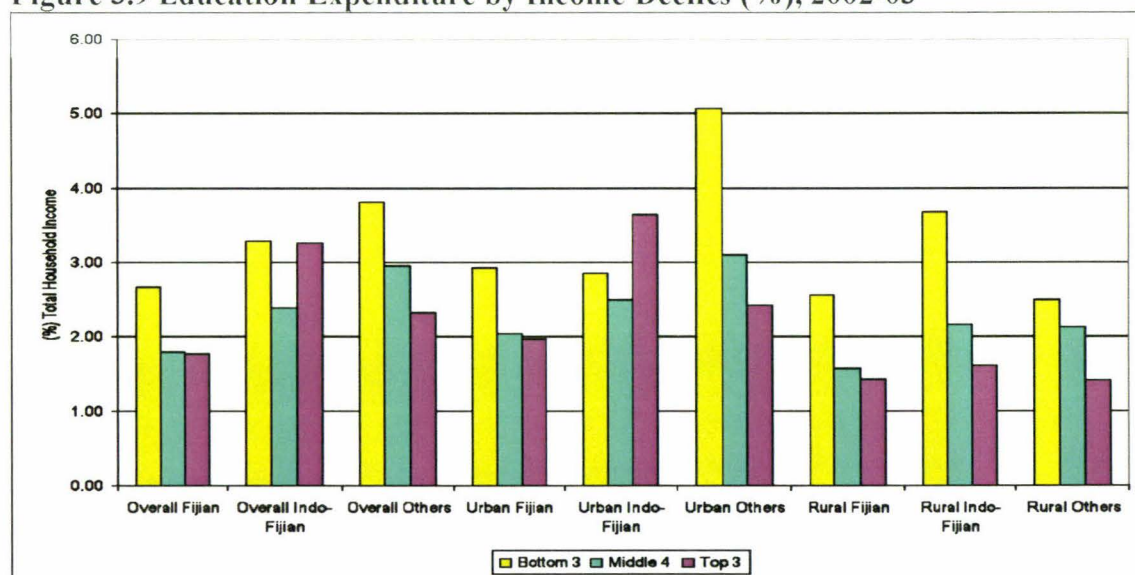
Figure 3.8 Food Expenditure by Income Deciles (%), 2002-03



Source: Estimation based on the 2002-03 HIES survey.

Despite the limited financial resources, households in the bottom 3 ten-percent groups spend relatively more of their income on education compared to those in the middle 4 and top 3 percent groups (Figure 3.9). It is seen that urban households spend higher proportion of their income on education than their rural counterparts. Also, the Indo-Indian households spend rather (3.3 percent) a greater amount of their income on education than Fijian households (2.7 percent) despite the demographic fact that Indo-Fijian households have fewer children than Fijian households.

Figure 3.9 Education Expenditure by Income Deciles (%), 2002-03



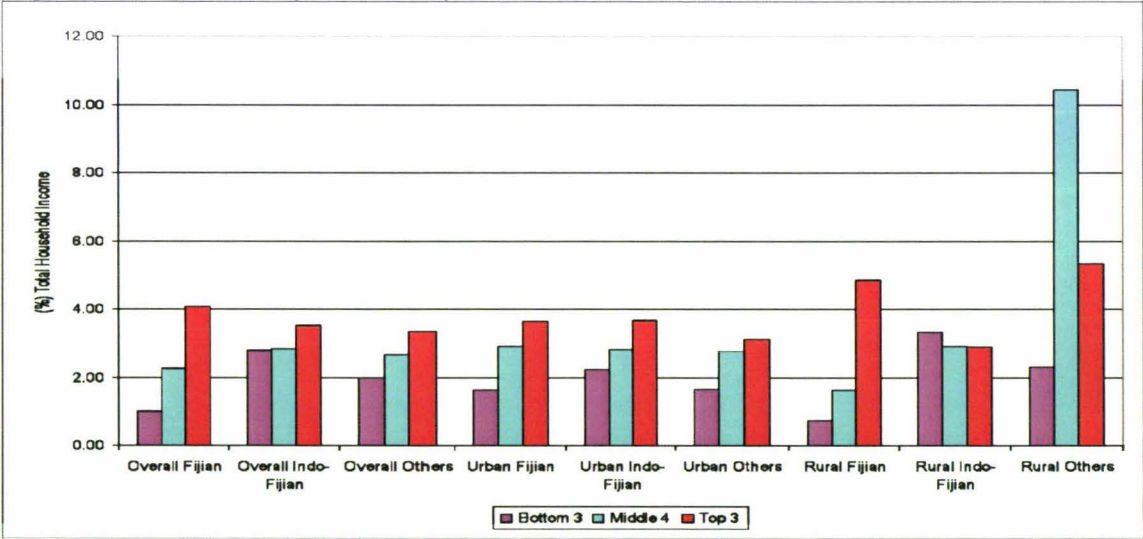
Source: Estimation based on the 2002-03 HIES survey.

Notes: Education expenditure are related to the costs such as preschool fees, primary school fees, secondary school fees, tertiary fees and commercial school fees

The variations in education expenditure can be partly explained by the lower level of state support for Indo-Fijian children as well as their higher emphasis on educating their children (Narsey, 2008). Higher education cost also contributes to a greater tendency for the children of the poor households to drop out of education earlier, thereby increasing their likelihood of remaining in the cycle of poverty.

The medical expenditure items have been considered as a higher priority area for most families, Fijian households in the bottom 3 ten percent groups spend the least amount (i.e. 1 percent) of their income on medical expenditure than Indo-Fijian and Other households in the same groups (Figure 3.10). Rural Fijians households also have much lower medical expenditure percentage (0.7 percent) than any other ethnic groups. Thus, poor Fijian households could be affected by poor health, which may have contributed to the factors such lack of access to medical services and medicines, ease of access to subsidised rural health centres, lack of cash incomes, or greater dependency on the traditional medicines and healers, as well as tradition home remedies (Ravuvu, 1983; Narsey, 2008).

Figure 3.10 Medical Expenditure by Income Deciles (%), 2002-03



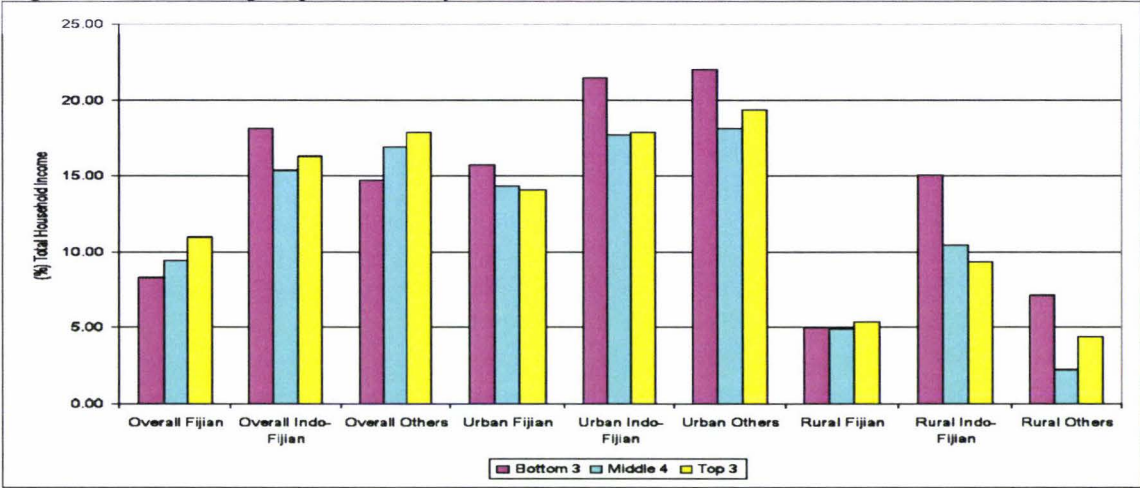
Source: Estimation based on the 2002-03 HIES survey.

Notes: Medical expenditure are related to household spending on such items as medical products, therapeutic appliances, medical fees, hospital fees and accident health insurance.

The Indo-Fijian households spend more on housing than Fijian and Other households across the entire ten-percent groups (Figure 3.11). Urban Fijian households in the bottom 3 ten-percent groups spend proportionally (15.7 percent) higher on housing than rural (4.96 percent). On the other hand, urban and rural Indo-Fijian households in the

bottom 3 ten-percent groups spend significantly larger proportions, i.e. 21.48 and 15.04 percent of their income on housing annually, respectively.

Figure 3.11 Housing Expenditure by Income Deciles (%), 2002-03



Source: Estimation based on the 2002-03 HIES survey.

Notes: Household expenditure on housing is related to the costs such as housing rent and rent not recorded, fuelpower, capital housing, land rates and other housing costs classified in the HIES 2002-03.

It is worth noting that household expenditure on alcohol and tobacco are significantly low across all ethnic groups in Fiji, which is less than 1 percent of the total household income (Table 3.6). However, households in the bottom 3 ten-percent groups spend 5.2 percent of their income annually, compared to 3.28 percent for the middle 4 ten-percent groups and 3.32 percent for the top 3 ten-percent groups. In particular, rural Fijian households in the bottom 3 ten-percent groups spend a higher share (12.55 percent) of their income compared to urban Fijian households, i.e. 2.2 percent of their income annually. On the other hand, Indo-Fijian households in both urban and rural areas spend less than one percent of their income annually.

The standard of living is dependent on the household size. Table 3.7 shows that Fijian households are larger (average of 5.4 persons) than Indo-Fijian households (average of 4.4 persons). In addition, the differences in the household size are also seen throughout all the 10 ten-percent groups. For instance, on average 6.3 persons are in Fijian households in the bottom 3 ten-percent groups, compared to 4.4 persons in the top 3 ten-percent groups. On the other hand, Indo-Fijian households in the bottom 3 ten-percent groups have on average 5 persons, compared to 3.7 persons in the top 3 ten-percent groups. The ethnic difference in household sizes can be attributed to the number of children per household. Also, those in the bottom 3 ten-percent groups have on

average more children in the family. Overall, the Fijian and Indo-Fijian households in the lowest ten-percent group have significantly larger number of (6.7) children, compared to those in the highest ten-percent group. Hence, it can be argued that these poorest households would more likely have a proportionately greater burden of dependents. That in turn indicates that these households will be facing greater struggles than the average household to acquire basic consumption needs of the household.

Table 3.6 Household Expenditure by Gift-given, Alcohol and Tobacco, 2002-03

	All Regions				Urban			Rural		
	Overall	Fijian	Indo-Fijian	Others	Fijian	Indo-Fijian	Others	Fijian	Indo-Fijian	Others
Gift given as % of total household income										
Bottom 3 TPG	5.2	9.35	0.56	8.23	2.2	0.48	0.81	12.55	0.64	15.97
Middle 4 TPG	3.28	5.77	1.09	1.02	1.67	1.1	0.96	9.54	1.05	2.36
Top 3 TPG	3.32	4.99	2	2.15	2.68	1.99	1.8	7.75	2.08	3.22
Alcohol expenditure as % of total household income										
Bottom 3 TPG	0.24	0.13	0.35	0.37	0	0.21	0.19	0.19	0.47	0.55
Middle 4 TPG	0.38	0.12	0.61	0.69	0.17	0.7	0.6	0.07	0.41	1.17
Top 3 TPG	0.6	0.38	0.82	0.49	0.4	0.79	0.48	0.47	0.98	0.59
Tobacco expenditure as % of total household income										
Bottom 3 TPG	0.66	0.74	0.59	0.5	0.56	0.57	0.32	0.81	0.6	0.69
Middle 4 TPG	0.71	0.62	0.79	0.9	0.53	0.79	1.05	0.7	0.79	0.11
Top 3 TPG	0.6	0.58	0.64	0.64	0.51	0.59	0.62	0.63	0.87	0.84

Source: Estimation based on the 2002-03 HIES survey.

Notes: TPG = Ten-Percent Group.

Table 3.7 Household Size and Number of Children (ages 0 to 14) per household

Average number of persons per household													
TPG	One	Two	Three	Four	Five	Six	Seven	Eight	Nine	Ten	Total	B3	T3
Fijian	6.7	6.2	5.9	5.5	5.6	5.3	5.1	5.2	4.4	3.4	5.4	6	4
Indo-Fijian	5.3	5	4.7	4.6	4.7	4.4	4.2	3.9	3.7	3.1	4.4	5	4
Others	6.5	6.1	6.5	5.2	5.1	5	5.5	4.4	4.8	3.2	4.8	6	4
Average number of children (0 to 14) per household													
Fijian	2.7	2.3	2.2	2	2	1.9	1.7	1.8	1.4	0.9	2.1	2	2
Indo-Fijian	1.6	1.6	1.4	1.2	1.3	1.1	0.9	0.8	0.7	0.6	1.1	2	1
Others	1.9	2	1.9	1.8	1.7	1	1.5	1.3	1.4	0.9	1.5	2	1

Source: Estimation based on the 2002-03 HIES survey.

Notes: TPG is ten-percent group. B3 and T3 represent bottom 3 and top 3 ten-percent group, respectively.

3.4.2 Household Head's Characteristics' as Determinants of Poverty

The age of the household head is considered to be a major determinant of poverty by many studies (Sikander and Ahmed, 2008; Babatunde, Olorunsanya and Adejola, 2008; Verner, 2008). They find that age of the household head is significantly associated with the possibility of remaining or falling into poverty. In the case of Fiji (based on the HIES 2002-03 data) the estimated average age of the household head is about 49 for the bottom 3 ten-percent groups, 45 for the middle 4 ten-percent groups and 41 for the top ten-percent groups.

Years of schooling of the head of the household is also significantly associated with the incidence of poverty. In general, the household heads have a relatively higher level of education in Fiji, i.e., the average household heads in the bottom 3 ten-percent groups have junior secondary education, secondary education for the middle 4 ten-percent and tertiary education for the top 3 ten-percent groups (Table 3.8).

Table 3.8 Average Years of Schooling and Gender of Household Heads, 2002-03

	Bottom 3 TPG	Middle 4 TPG	Top 3 TPG
Average years of schooling of the head of the household			
Overall	10	12	16
Fijian	10.53	11.92	15.12
Indo-Fijian	10.35	12.37	15.93
Others	11.02	12.26	16.65
Household head's gender as a % of the total sample population			
Overall			
Male	26.91	35.02	26.10
Female	4.08	4.98	3.91
Urban			
Male	10.20	20.32	19.18
Female	1.62	3.37	2.78
Rural			
Male	15.71	14.70	6.92
Female	2.46	1.60	1.12

Source: Estimation based on the 2002-03 HIES survey.

Notes: TPG = Ten Percent Group

Comparing the major two ethnic groups, Indo-Fijian household heads in the bottom 3 ten-percent groups have the least years of schooling (10.35), compared to Fijian household heads of 10.53 years of schooling. Fijian household heads have the lowest level of schooling at 15.12 years for the top 3 ten-percent groups, while Indo-Fijian household heads in the top 3 ten-percent groups having the highest years of schooling

(15.93). The gender of the household head also influences the poverty level. As shown in Table 3.8, the rural households headed by female are found to be most prevalence in the bottom 3 ten-percent groups (2.46 percent), compared to 1.6 percent for the middle 4 ten-percent groups and 1.12 percent of the top 3 ten-percent groups.

A large proportion of the rural households in the bottom 3 ten-percent groups have had worked for money (39.6 percent) compared to urban household heads (16.8 percent). Also a lower share of urban (i.e. 6.6 percent) in the bottom 3 ten-percent groups have had worked for money, compared to a significantly large number of rural Fijian households heads (22.4 percent) in that the period. Similar trends are also found in Indo-Fijian households, whereby a relatively lower 9.5 percent of urban Indo-Fijian household heads in the bottom 3 ten-percent groups compare to 16.2 percent of rural Indo-Fijian households heads in the same groups have worked for money (Table 3.9).

Across the bottom 3, middle 4 and top 3 ten-percent groups, the percentage of household heads classified as unpaid/community workers' is much more prevalent in the rural sectors, i.e. 53 percent, 35.2 percent and 11.9 percent, respectively. Moreover, a greater proportion of rural Fijian household heads in the bottom 3 ten-percent groups (31.2 percent) take part in unpaid family work activities or get involved in the community affairs compare to urban Fijian households heads (12.5 percent). The trend is also similar to Indo-Fijian household heads in the bottom 3 ten-percent groups in rural areas (20.7 percent) and urban areas (18 percent). It is also shown that some 38.6 percent of household heads in the bottom 3 ten-percent groups work for subsistence, compared to 41.6 percent in the middle 4 and 19.8 percent for the top 3 ten-percent groups with a large percentage of those household heads in the rural sectors (45.9 percent).

Table 3.9 Income Earning Characteristics of the Heads of Households, 2002-03

	Bottom 3 TPG	Middle 4 TPG	Top 3 TPG	No. of Household Head
Work for money as a % of no. of household heads				
Overall	26.7	40.4	32.9	3965
Fijian	13.4	18.8	15	
Indo-Fijian	12.4	20	15.5	
Others	0.9	1.6	2.5	
Urban	16.8	41.3	41.9	2251
Fijian	6.6	15.6	9	
Indo-Fijian	9.5	23.5	22.1	
Others	0.7	2.3	3.9	
Rural	39.6	39.3	21.1	1714
Fijian	22.4	23	13.8	
Indo-Fijians	16.2	15.5	6.8	
Others	1.1	0.8	0.6	
Unpaid family/community worker as (%) of no. of household heads				
Overall	40.3	38.7	21	1286
Fijian	20.1	18.7	8.5	
Indo-Fijian	19.1	18.4	10	
Others	1.2	1.9	2.5	
Urban	31.6	41.2	27.3	763
Fijian	12.5	15.7	8.7	
Indo-Fijian	18	22.3	14.7	
Others	1.2	3.2	3.9	
Rural	53	35.2	11.9	523
Fijian	31.2	23.1	8.2	
Indo-Fijians	20.7	11.9	3.3	
Others	1.2	0.2	0.4	
Subsistence worker as (%) of no. of household heads				
Overall	38.6%	41.6%	19.8%	2331
Fijian	23.6%	25.9%	12.6%	
Indo-Fijian	13.7%	14.2%	6.5%	
Others	1.3%	1.5%	0.7%	
Urban	25.6%	44.9%	29.5%	837
Fijian	13.1%	23.3%	20.1%	
Indo-Fijian	11.2%	18.9%	8.7%	
Others	1.2%	2.8%	0.7%	
Rural	45.9%	39.8%	14.3%	1494
Fijian	29.5%	27.4%	8.4%	
Indo-Fijians	15.1%	11.5%	5.3%	
Others	1.3%	0.8%	0.7%	

Source: Estimation based on the 2002-03 HIES survey.

Notes: TPG = Ten Percent Group.

3.5 Millennium Development Goals and Poverty Reduction

Fiji's national poverty reduction strategy, linked to the Millennium Development Goals (MDGs) has been committed to reduce poverty by half by the year 2015.⁴⁸ The MDGs include 8 specific goals distributed amongst 18 targets and 48 indicators (United Nations, 2009, p. 30). These goals aim to combat extreme poverty in such dimensions as income poverty, hunger, disease, lack of adequate shelter, and exclusion, while promoting gender equality, education, and environmental sustainability. The 48 indicators may be adjusted for particular countries and regions as appropriate, and are intended for use in monitoring progress towards each of the targets (ADB, 2003). Fiji's progress in achieving the MDGs is noted by illustrating the existing pro-poor programmes and exploring the potential pro-poor growth policies.

3.5.1 Progress Towards the MDGs in Fiji

Goal 1: Eradicate extreme poverty and hunger

The first MDG goal aims to halve the proportion of people whose income is less than US\$1 per day and the proportion of people who suffer from hunger. The proportion of population below US\$1 a day in Fiji is recorded at 26 percent in 1990 (see Appendix Table A3.2). However, this measure has created difficulties for monitoring the Pacific Islands countries progress toward MDGs due to lack of official estimates of purchasing power parity (PPP) adjustment factors.⁴⁹ Nevertheless, the proportion of Fiji's population in poverty has risen from 15 percent in 1977 to 25 percent in 1991 and to approximately 35 percent in 2002-03 (Stavenuiter, 1983; UNDP and Fiji Government, 1997; Narsey, 2006, 2008).⁵⁰ This indicates the possibility of not reaching its poverty reduction target, although poverty reduction has always been the central policy of the government. For example the government's target of reducing poverty by 5 percent annually is reflected in the allocation of F\$62.7 million for upgrading of squatter settlement and existing subdivisions, housing assistance and income-generating projects

⁴⁸ The Millennium Declaration of 2000 was adopted by 189 nations and signed by 147 heads.

⁴⁹ As a result, there are no official measures of national per capita consumption adjusted for PPP that can be assessed against US\$1 a day criteria (UNDP and Secretariat of the Pacific Community, 2004). Wood and Naidu (2008) further point out that the one dollar a day line is an artificial measure based merely on average poverty lines from several countries, and that is of limited relevance to the Pacific Island countries as the US\$1 poverty line may indicate little relation to actual deprivation experienced by the Pacific Islands' inhabitants.

⁵⁰ It noted that the incidence of poverty in Fiji in 1991 should be round about 32 percent (Narsey, 2008).

(e.g. micro-finance schemes), education assistance and the Family Assistance Allowance Scheme (FAAS).⁵¹

Goal 2: Achieve universal primary education. Goal 3: Promote gender equality and empower women

Fiji is more likely to achieve these two goals though an increase in net primary enrolment ratio and the literacy rate for 15-24 years old which are high by international standards. Although the proportion of children who stay at school from class 1 to class 5 was rather high, it has fallen since 1990. This may reflect the difficulty for some families in affording education for their children (Ministry of Finance and National Planning, 2007). In terms of promoting gender equality and empowering women, the state of supportive environment in promoting these issues are strong as the regulations prohibits discrimination on the basis of gender, but also the government's active role by becoming signatory to the Convention to Eliminate All Forms of Discrimination Against Women (CEDAW). For example, in 2004, there has been a 50 percent increase in women's access to micro-credit assistance and 30 percent increase in accessing formal credit through affirmative action programmes (Ministry of Finance and National Planning, 2007).

To ensure gender perspectives, issues, concerns and women's accessibility and full participation have been seen in power structures and decision-making processes. The government policy requires that 50 percent of those appointed to Government Boards and other public bodies should be women. In 2007, women comprise 19 percent of the total appointments and are concentrated on minor Health and Welfare Boards and Committees. With some 8 percent of membership in state owned enterprises board of directors is female (Ministry of Finance and National Planning, 2004, 2007). In addition, the Women's Plan of Action scheme will receive a total of F\$0.37 million in 2009 from the government to cover the five priority areas such as women and the law; advancing women in decision making; eliminating all forms of decimation and violence against women; promoting and supporting formal sector employment and livelihoods; and women's health-reproductive health and HIV.

⁵¹ Under the scheme, the recipients receive benefits and are encouraged to set up or be involved in small projects that will help them earn income. The minimum monthly Family Assistance allowance has increased from F\$30 to F\$60 (Ministry of Finance and National Planning, 2006, 2007).

Goal 4: Reduce child mortality, Goal 5: Improve maternal health & Goal 6: Combat HIV/AIDS and other diseases

It has been argued that it would be difficult for Fiji to meet the MDG goals of reducing child mortality rate by a further two-thirds and three-quarters for maternal health rate as both are in fact already low by international standards (Ministry of Finance and National Planning, 2004). Nevertheless, through the Ministry of Health, the Fiji government operates a network of primary health care centres throughout the country, and has achieved higher levels of child immunisation. On the other hand, a network of maternal-child health services has been established throughout the country, which in turn ensured that almost 99 percent of birth attended in Fiji is attended by trained medical personnel (Ministry of Finance and National Planning, 2007).

To combat the incidence of HIV/AIDS, Fiji is considered as a low prevalent country (e.g. less than 0.1 percent in general population). The total cumulative confirmed HIV positive from 1989 to March 2007 is 244 cases. Of other disease specifically monitored in the MDG goals, malaria is not an issue in Fiji but the Non-Communicable Diseases (NCDs) such as diabetes and cardiovascular conditions such as heart disease, cancer, hypertension and strokes, continue to be a major challenge of achieving the MDG goals. As discussed previously, the NCDs are the commonest cause of morbidity and mortality in Fiji, which have contributed to the changing lifestyles and diet, obesity, declining physical activity, and increasing tobacco consumption. Furthermore, evidence suggests that substantial and increased input of resources by the government is not achieving the desired impacts on the health of the citizens (Ministry of Finance and National Planning, 2007).

Goal 7: Ensure environmental sustainability. Goal 8: Develop a global partnership for development

Achieving environmental sustainability is a crucial aspect of the MDGs, as both human health and development are profoundly lined to the condition of the environment. To meet MDG goal 7 for environmental sustainability, the government has made various regional and international commitments on sustainability. Despite the relevant issue of insecurity of land tenure resulting in growing numbers of urban squatters, housing remains a priority area that government focuses on, as most of the population lives in cities, towns and in peri-urban areas (Ministry of Finance and National Planning, 2004).

Although the MDG 7 target indicators from 25 to 28 are fairly covered by the Ministry of Environment to monitor the changes, there remains a great challenge to achieve sustainable development and overcoming environmental challenges (e.g. deforestation, land degradation, logging of watersheds, over-exploitation of terrestrial and aquatic biological resources, improper waste management and pollution control, impact of climate change, attitude of people in terms of unsustainable use of their resources).⁵²

The MDG goal 8 addresses the ways developed countries can assist developing countries to achieve the MDGs through a combination of additional development assistance, improved access to markets, and debt relief. The aid donor countries have focused on poverty reduction, education and health to target various programmes. Since 1999, the volume of foreign aid declined significantly as some donor countries have cut back their development assistances following the May 2000 military coup. Once again, the donor funds dropped sharply in the wake of the 2006 military coup. A proper guideline and procedures are required to ensure the state's priorities are addressed for sustainable development (Ministry of Finance and National Planning, 2008).

The MDG goal 8 also addresses issues of obligatory debt servicing payments, implementing strategies for decent and productive work for youth, providing access to affordable and essential drugs, and making available the benefits of new technologies (i.e. information and communications). Fiji's debt level decreased to 50.3 percent in 2007 from 52.2 percent in the previous year through tight financial restraint (RBF, 2008). Because Fiji has a narrow-based economy that relies heavily on two major sectors: tourism and agriculture, the poor performance of one potentially triggers negative chain-effects throughout the entire economy leading to corresponding reductions in government's revenue. That in turn reduces the capacity to meet this MDG. The government has allocated a total of F\$21.4 million for agriculture development in 2009 (e.g. to develop export potential products, such as papaya, taro, cassava and ginger).

Also several tourism incentive packages for the industry are established to generate revenue to meet development goals (Ministry of Finance and National Planning, 2008).

⁵² Indicator 25: Proportion of land area covered by forest. Indicator 26: Land area protected to maintain biological diversity. Indicator 28: Carbon dioxide emissions per capita.

A vital programme is the employment of youth to address MDGs.⁵³ Many of these unemployed youth have entered the informal sectors of the economy. The government has allocated a total of F\$4.46 million in 2009 for programmes and project such as *Apprentice Scheme* (F\$1.06 million), *Integrated Human Resource Development* (F\$1.5 million), *National Youth Service Scheme* (F\$1 million) and *Pacific Youth Festival* (F\$0.9 million) to increase employment, development and training opportunities for the youth (Ministry of Finance and National Planning, 2008).

The possession of computers in the households is an important indicator of households' recognition of the importance of investing in education of the family. According to the 2002-03 HIES survey, less than 3 percent of the households in Fiji had invested in personal computers. The use of the internet can assist to achieve the MDGs, particularly in the areas of health, education and poverty reduction. However, based on the *Millennium Development Goals Report 2009* (UN, 2009), in 2007, 64 percent of the population of developed countries were using the internet, while there are only 13 percent in developing regions and 1.5 percent in the lower-income countries. In the case of Fiji, it has been estimated that 10 out of 100 people would have internet access, and 85,000 telephone lines throughout the country (Ministry of Finance and National Planning, 2008).

3.5.2 Pro-poor Programmes in Fiji

Poverty reduction is about improving well-being. Sen (1987) articulated the concept of well-being in terms of functionings and capabilities. Functioning is an achievement whereas capability is the ability to achieve. Thus, functionings are directly related to the life people actually live, whereas capabilities are connected with the freedom people have in their choice of life or functionings. Pro-poor growth can be defined as one that enables the poor to actively participate in and significantly benefit from economic activity (Kakwani and Pernia, 2000). Pro-poor growth activities can also rapidly raise the absolute income of the poor by increasing growth rate of the economy and the extent to which that growth benefits the poor (Berry and Papanek, 2005). It is a major

⁵³ According to the 2004-05 Employment and Unemployment Survey (Narsey, 2007), some 7.6 percent of those who under 18 are unemployed and 8.8 percent for the ages between 18 to 30, compared to only 2.4 percent of those 31 to 55.

departure from the trickle-down development concept.⁵⁴ Its inclusive economic growth is to eliminate deprivation of minimum basic capabilities. Consequently, the gap in well-being between the poor and the rich is to foster overall well-being of the society (Kakwani and Pernia, 2000; Ravallion and Chen, 2001; Berry and Papanek, 2005). Promoting pro-poor growth requires a strategy that is deliberately biased in favour of the poor in the case of Fiji given its increasing levels of poor in poverty.

The Fiji government's strategy for poverty alleviation and to improve the standard of living focuses on creating income-earning opportunities for the poor, review housing and poverty related policies and encourage effective partnerships with civil society organisations, such as NGOs, donor agencies. In addition, several pro-poor growth programmes are made available to ensure that all categories of the poor are able to meet their basic needs (Ministry of Finance and National Planning, 2008, p. 87-88). They are as follows:

- Poverty Alleviation Project (PAP): the programme is designed to ease the financial burden of individuals through housing assistance and income-generating projects.
- Women's Plan of Action (WPA): the programme is designed to cover the five priority areas that Fiji committed to at the Fourth World Conference for Women in Beijing in 1995. In particular, it argues that the WPA has been able to generate formal sector employment and livelihoods to women, especially those living in the rural areas over the years.
- Pro-poor Tax Measures: are specially designed for the poor and disadvantaged, as follows: 1) value Added Tax (VAT) exemption of essential food items, such as tinned fish, flour and sharps, powdered milk, edible oil, rice and tea, and continuation of reduced duty for these essential foods; and 2) VAT exemption of the first F\$30 of electricity bill for residential consumers.
- Poverty Relief Fund for Education (PRFE): the PRFE aims to support access of education for the children of poor families. In order to encourage funding support for the PRFE, a 200 percent tax deduction to be granted for cash contribution in excess of F\$50,000 by taxpayers.

The series of pro-poor based poverty reduction strategies have been reflected in the socio-economic infrastructure development in Fiji. Also Wood and Naidu (2008) highlight various pitfalls and solutions necessary to address the MDGs. A key issue in the case of Fiji is also to have an inclusive approach for resource allocations to poverty

⁵⁴ Trickle-down theory of development implies a vertical flow from the rich to the poor that happens of its own accord. The benefits of economic growth go to the rich first, and then in the second round the poor begin to benefit when the rich start spending their gains (Todaro and Smith, 2006)..

reduction given its ethnicity diversity, and rural-urban areas (Naidu, 2005; see also Naidu, Lee, Seniloli, 1999).

3.5.2.1 Economic Infrastructure and Pro-Poor Growth Policies

Rapid economic growth is built on a combination of good macroeconomic and microeconomic policies. The macroeconomic policies include monetary, fiscal, and exchange-rate policies that maintain overall external and internal balance to avoid shortages of foreign exchange and excessive inflation. The microeconomic policies improve the productivity of the firms and industries that make up the economy (Baumol and Blinder, 1988; Mankiw, 1997). In general, good microeconomic policy raises the productive potential of the economy, while good macroeconomic policy ensures that actual economic performance lives up to that potential.⁵⁵

In the case of Fiji, such microeconomic and macroeconomic policies are vital to address the balance-of-payment deficit and also needs to increase its competitiveness in the world market. In order to achieve this, it may consider the two key aspects.⁵⁶ Hence, the well-designed macroeconomic policies can be the driving force to the rapid pro-poor growth and sustained poverty reduction. Since majority of the poor households derive most of their income from labouring activities, increasing demand for labour therefore is the key to pro-poor growth. Pro-poor growth thus requires both macroeconomic and trade policies that provide incentives to labour intensity. Special incentives should be installed and remove barriers to labour-intensive exports and import substitutes.

In addition, providing an environment that is attractive for all investors is the most important step toward attracting foreign investors.⁵⁷ The government should give the greatest incentives to the foreign investors who make the greatest contribution to pro-

⁵⁵ The interaction of microeconomic and macroeconomic policies can cause an adverse effect on the economy as a whole. For instance, high real interest rates or restrictive monetary and fiscal policies can lead to resource underutilization that can fail to reach its potential. Another is by failing to take full advantage of productive potential in tradable goods and services by overvaluing the exchange rate. Hence, macroeconomic and microeconomic policies should be a complementary, set of policies for successful economic performance.

⁵⁶ Mild undervaluation has had some considerable benefits for the poor in the case of Indonesia, Egypt, and Peru (Gernot, 1998) and China (Yang and Bajoux-Besnainou, 2006)

⁵⁷ Those who provide the access to the technology and the markets required to break into new export lines, especially for labour-intensive exports.

poor growth by: 1) investing in the creation of the new productive capacity rather than buying existing firms or buy properties; 2) bring their own capital rather than borrowing domestically; 3) bring in new but appropriate technology, developing new industries, breaking into a new market, or otherwise improving the country's competitive situation (such as telecommunication and internet providers); and 4) developing labour-intensive activities.⁵⁸

Strengthen tax-collection that is especially important to increase government expenditures on infrastructure, education, health care, and other human-capital building, and government's poverty alleviation programmes. Raising the effectiveness of the tax system is often feasible and better than raising tax rates because a low tax intake signals both inefficiency and corruption in the tax agency, with resulting horizontal inequalities. In addition, it should also maintain a tax structure that is favourable to pro-poor growth. That is, tax rates on the basic food and non-food items, and the income and consumption of the poor should be kept relatively low.

3.5.2.2 Social Infrastructure and Pro-Poor Growth Policies

As discussed in Chapter 2, education is widely regarded to be central for promoting efficient growth and for increasing the assets of the poor to bring them out of poverty, although with some of the highest payoff investments lags in these effects. The health factors, such as prevention and cure of diseases and disability also have important roles in pro-poor growth, along with education. There is evidence of strong productivity effects of better health and nutrition have the added advantage that contribute directly to the quality of life (Todaro and Smith, 2006).

Many types of education and health investments have yielded high returns, suggesting that these investments remain, though may vary from one investment to another. Education, interpreted as learning, may increase productivity and improve welfare and also includes learning at home, in the community, and on the job prior to, during, and subsequent to formal schooling and training programmes, as well as focus on health and nutrition support among the policy tools. The allocation of quality resources toward

⁵⁸ Gemot (1998), Yang and Bajeux-Besnainou (2006), and Mankiw (2008), for details.

education and health programmes are vital from early childhood. Policies therefore need to be evaluated with careful attention to local conditions, directed toward all educational and health services, monitored and updated.

A higher priority to health-related investments prevents poverty directly and reduces a poor household's vulnerability to the risk of catastrophic health-care costs. Expanding opportunities in rural areas and access to rural credit, adopting community health schemes, and investments in areas such as food security, and rural infrastructure (particularly roads, water, sanitation), improved housing, and improved environmental conditions, add to pro-poor services. These include:

- better health education for adults and children;
- effective regulation of private health care through control of unlicensed drug vendors;
- adoption of policies in public health-care facilities; and
- improve access to key health-related services.

A gender-equitable pro-poor growth strategy is one that promotes economic opportunities of poor women, in both self-employment and paid employment. The pro-poor policy for gender could emphasis two key aspects. Facilitate women's productive self-employment and improve women's opportunities for wage employment. Many women from poor households are self-employed in agriculture, micro-enterprise, along with their domestic activities, thus raising incomes in either of these activities can be a viable path out of poverty.

The improvement in women's access to microfinance. Because the improved access to and efficient provision of savings, credit, and insurance facilities can enable poor women to enhance their income-earning capacity by engaging in new productive activities and by diversifying their existing economic activities. Such access can also help women smooth their consumption and better withstand economic shocks.

Improvement in provision of technology, vocational and management skills, marketing information, and advisory and business support services to women complement the microfinance credit package, while the third aspect is related to promoting greater equality in property rights. Also facilitating women's productive self-employment is to promote adult education programmes, i.e. female literacy, numeracy, and education

programmes, training and technical skills are essential for entrepreneurial growth. Equitable access to primary and secondary education is the key step to promoting long-term progress.

3.6 Conclusion

The last two decades have seen little improvement in the overall state of Fiji's economy despite the implementation of expansionary fiscal policy since 1987 due to continued political instability and lack of economic activities and loss of livelihoods for a significant proportion of the population. Also, the benefits from the positive growth have been eroded by severe natural disaster, external shocks of the Asian financial crisis, oil price shocks, global financial crisis and economic and social vulnerabilities. The low levels of economic growth have not been sufficient to raise the absolute income of the poor resulting in increasing inequality in income distribution and incidence of poverty.

Given the deleterious impact of military coups and the sluggish economic performance over time many people have fallen into poverty or barely kept themselves on the very edge of poverty ever than before. Poverty reduction has become a central government policy in conjoining the United Nations Millennium Development Goals, and addressing the pro-poor growth programmes to ensure that poor actively participate and benefit from economic activities. In analysing the economic and social characteristics of poverty issues the next chapter investigates the determinants of poor households based on these factors to provide a basis for effective pro-poor growth policy.

Appendix 3.1

Appendix Table A.3.1 presents the HDI, HPI, GDI and GEM values and ranking from 1991 to 2009.

Table A.3.1 The HDI, HPI, GDI and GEM Value and Rank for Fiji, 1991-2009

Year	HDI Value	HDI Rank	HPI Value	HPI Rank	GDI Value	GDI Rank	GEM Value	GEM Rank
1991	0.689	71 (160)						
1992	0.713	64 (160)						
1993	0.73	71 (173)						
1994	0.787	59 (173)						
1995	0.86	46 (174)						
1996	0.863	47 (174)			0.734	50 (174)	0.325	47 (174)
1997	0.863	46 (175)	8.6	7 (92)	0.763	53 (175)	0.329	68 (175)
1998	0.869	44 (174)	8.4	6 (85)	0.77	52 (174)	0.332	78 (174)
1999	0.763	61 (174)			0.749	60 (174)	0.327	79 (174)
2000	0.769	66 (174)			0.755	59 (174)	0.384	61 (174)
2001	0.757	67 (162)	21.3	37 (90)	0.744	63 (146)		
2002	0.758	72 (173)	21.3	38 (88)				
2003	0.754	81 (175)	21.3	41 (94)	0.743	67 (144)		
2004	0.758	81 (177)	21.3	42 (95)	0.747	69 (144)	0.335	71 (178)
2005	0.752	92 (177)	21.3	49 (103)	0.742	71 (140)	0.381	70 (174)
2006	0.758	90 (177)	21.3	45 (102)				
2007/2008	0.762	92 (177)	21.2	50 (157)	0.757	82 (157)		
2009	0.758	81 (177)	21.3	45 (95)	0.747	69 (144)	0.335	71 (178)

Source: UNDP (various years).

Notes: Total numbers of countries ranked are in parenthesis.

Legend: HDI is human development index, HPI is human poverty index, GDI is gender-related development index, and GEM is gender empowerment measure.

Appendix 3.2

Appendix Table A.3.2 presents the progress toward the Millennium Development Goals (MDGs) in Fiji from 1990 to 2015.

Table A3.2 Progress Towards the MDGs in Fiji, 1990-2015

Millennium Development Goals (MDGs)	1990	2000	Latest	2015 (Target)
1 Reduce incidence of extreme poverty and hunger by half				
a: proportion of population below \$1 (PPP) per day (%)	25.5	n/a	n/a 0.14* (2003)	12.8
b: poverty gap ratio	0.32	n/a	(2003)	
c: shared of poorest quintile in national consumption (%)	5.1 (1996)	n/a	7.6* (2003)	
2 Achieve universal primary education				
a: net enrolment ratio in primary education	92	94.7	n/a	100
b: proportion of pupils starting grade 1 who reach grade 5	91.4	88.4	n/a 99.3 (2004)	100
c: literacy rate of 15-24 years old	97.8	99	(2004)	100
3 Promote gender equality and empower women			0.92	
a1: ratios of girls to boys in primary education	0.94	0.98	(2007) 1.09	1
a2: ratios of girls to boys in secondary education	1.05	1.07	(2007)	1
b: ratios of literate women to men 15-24 years old	n/a	1	n/a	1
c: share of women in wage employment in the non-agricultural sector	29.9	31.8	35.9 (2003)	
d: proportion of seats held by women in national parliament	0	4.2 (1997)	8.5 (2005)	
4 Reduce child mortality		22	18	
a: under-five mortality rate (per 1,000 births)	22	(2002)	(2006)	14.7
5 Improve maternal health	41.1 (1988)	57.6	35.3 (2002)	26.5
a: maternal mortality ratio (per 1,000 births)				
6 Combating HIV/AIDS, malaria and other disease				
a: HIV prevalence among 15-24 years old pregnant women	0	<0.1	<0.1 (2007)	Halt & Reverse
7 Ensure environmental sustainability				
a: without access to an improved water source (% of population)	n/a	35 (2002)	53 (2006)	17.5
b: without access to an improved sanitation (% of population)	15 (1997)	40 (2002)	29 (2006)	7.5
8 Develop a global partnership for development				
a: ODA received as proportion of the GNI	3.8	1.78	n/a	
b: debt service as a percentage of exports of goods and services	12.0	2.1 (2001)	n/a	

Source: ADB (2003); UNDP and Secretariat of the Pacific Community (SPC) (2004); FIBOS (2009); WHO (2009).

Notes: Poverty gap ratio is calculated based on income per capita per week derived from the HIES 2002-03. The shared of poorest 20 percent in national consumption is based on the weekly expenditure of the bottom 2 ten-percent groups in the HIES 2002-03.

Chapter 4

Determinants of Poverty in Fiji: A Logistic Regression Analysis

4.1 Introduction

The issue of poverty reduction has been one of the main agendas for the developing countries since its inception of the United Nations (UN) Millennium Development Goals (MDGs). In September 2000, 189 countries of the UN signed the MDGs with the aim to halve the poverty levels by 2015, i.e. reducing to half the proportion of the world population living on US\$1 a day by 2015. Although, the population of the poor has been declined to 1.4 billion in 2005 from 1.8 billion in 1990, yet a significant proportion of the population is still suffering from poverty or is on the very edge of poverty (United Nations, 2009).

The small island nations have also signed the UN MDG to poverty reduction. As discussed in the previous chapter, the incidence of poverty in Fiji has been viewed as the outcome resulting from various political, social and economic processes and their interactions, creating deprivation, and thus lowering the living standards of the people. It is important from both the theoretical and empirical perspectives to understand the determinants of poverty and the various driving factors that affect it. This chapter identifies the determinants of poverty at the household level by analysing two major groups, i.e. aspect of the determinants that comprises of the household head's characteristics and the other based on the household level characteristics. A set of various demographic and socio-economic variables for Fiji is derived from the Household Income and Expenditure Survey (HIES) 2002-03 for 5,245 households.

The econometric methodology applied to investigate the household level determinants of poverty is the logistic regression approach to interpret the incidence of poverty in the probabilistic terms. This chapter first estimates the probability of the households with specified characteristics that fall below the official poverty line of Fiji. The sensitivity

analysis of the findings is discussed to determine if the findings are robust according to these benchmark poverty lines. This is mentioned in terms of basic needs and food poverty lines. The rest of the chapter is set out as follows: section 4.2 provides a brief literature review on the possible determinants of poverty under the two major categories, namely, the household head's characteristics and the households' characteristics. The models incorporate several demographic and socio-economic determinants of poverty that reflect various causes and its impact on those households with low income and living in poverty. Section 4.3 discusses the selection of data, methodology and model specifications. Section 4.4 presents the empirical results followed by the conclusion in the final section.

4.2 Literature Review

In understanding the levels and causes of poverty, it is important to ensure that poverty reduction policies which aim at the causes from the individual and household levels and from the structural and country-level aspects. Such knowledge of the characteristics of the poor is not just essential in tackling the roots for poverty but also to combat poverty through essential strategies of poverty alleviation that eliminate any further pitfalls in falling into poverty. Determinants of poverty at the household level are generally relied on the household survey database. Household surveys not just provide a rich source of data on economic behaviour and its links to policy reforms, but also collect information at the level of the individual households on who buys what goods and services and how much they spend on them. Information on how poor people spend their money has been used to describe poverty and to build the case for social reform since the end of the eighteenth century (Deaton, 1997; World Bank, 2002, 2005).

Many authors have utilised the household level data for poverty analysis. Studies by Sikander and Ahmed (2008) adapted household survey data on the households of Punjab province in Pakistan, while Mok, Gan and Sanyal (2007) used the primary data on the households of urban region of Malaysia. Geda, Jong, Kimenyi and Mwabu (2005) utilised the household level data of Kenya for poverty analysis. Poverty studies by Minot and Boulch (2005) also used the primary data for the case of Vietnam and Qureshi and Arif (2001) analyse poverty profile in the case of Pakistan. In addition,

Meng and Gregory (2007) provide an alternative way of analysing the urban poverty in China by utilising the panel data from 1986 to 2000. In the case of Fiji, the household level data from HIES 2002-03 and Employment and Unemployment Survey 2004-05 have been used by Narsey (2008) to analyse the level of poverty.

Several country case studies have used different models to analyse the determinants of poverty. Some use categorical data models, while some use ordinary least square (OLS) and some employ both. For instance, Sikander and Ahmed (2008) use the logit and probit models for determining the factors responsible for the household level poverty. Meng and Gregory (2007) analysis of urban China, and Minot and Boulch (2005) in the case of Vietnam use both probit and the log-linear OLS models in their studies.

Mok et al., (2007) and Qureshi and Arif (2001) use the logit model while Geda et al., (2005) utilise ordered logit model in addition to the logit model to analyse the determinants of poverty. In addition, Khaild, Shahnaz, and Bibi (2005) employ multinomial logit model, and Malik (1996) uses the log linear regression model to determine the factors responsible for the incidence of poverty. These studies note that the household level determinants of poverty can be classified in two major groups. One comprises of the household head's characteristics and the other one consists of the household level characteristics. These two groups analysed by the household-level characteristics reflect disaggregated factors which contribute to the determinants of poverty of each group of people. In line with the existing literature, the present study evaluates both of these two groups separately in the case of Fiji, as well as by ethnicity and rural-urban sectors. The literature discussed below identifies the factors related to the household's head characteristics followed by the household characteristics that are responsible for them remaining poor.

4.2.1 Household Head's Characteristics' as Determinants of Poverty

Various socio-economic factors have contributed to the nature of people falling below the poverty line. The age and the education level of the head of the household are considered to be the important determinants of poverty (Malik, 1996; Qureshi and Arif, 2001; Khalid et al., 2005; Meng and Gregory, 2007; Mok, Gan and Sanyal, 2007; Awan, Malik and Sarwar, 2008; Babatunde, Olorunsanya and Adejola, 2008; Sikander

and Ahmed, 2008; Verner, 2008). While Sikander and Ahmed (2008) find that the age of the household head is significant, but it has lower level of magnitude effect on reducing the possibility of remaining poor in the Punjab province of Pakistan. Babatunde et al., (2008) find that the poverty rate is higher among the households with older household head in south-western Nigeria. Verner (2008) also finds elder household heads in Haiti are more likely to experience poverty than younger household heads. Other studies such as Malik (1996), Qureshi and Arif (2001), Khalid et al., (2005), and Meng and Gregory (2007) find that the household heads who belong to a higher age group significantly lowers the probability of remaining as the poor households. In analysing the impact on poverty reduction, Awan et al., (2008) note that the middle school level, matriculation, intermediate, bachelors and professional education attainment significantly reduce the probability of being poor by 57.5 to 99.4 percent compared to the primary education level in Pakistan.

The other factors that also influence the poverty levels include gender of the household head and the household head's occupation. Sikander and Ahmed (2008) and Geda et al., (2005) find that the households headed by males reduce the probability of being in poverty. Similarly Mok et al., (2007) explain that in Malaysia the households headed by the migrant are more likely prone to poverty. Minot and Boulch (2005) find that the household heads who are classified as skilled professionals are less likely to remain in poverty than those who are less skilled or unskilled in the case of Vietnam. Justino and Litchfield (2003) note that neither the head of the household with a "white-collar" job nor being employed in the agriculture sector significantly reduces the possibility of being poor. Moreover, the study by Datt and Jolliffe (1999) reports a positive correlation between the employment sectors and the various levels of household consumptions. Although the employment sectors they classified are the type of the industries in which the household head is employed, yet the empirical results suggest that the industry specific employment is necessary for reducing poverty. That in turn increases the per capita consumption and ultimately per capita food consumption. Sikander and Ahmed (2008) also included the determinants related to employment sector in their analysis, and reach a similar conclusion that the industry specific employment is one of the major sources of poverty reduction.

4.2.2 Household Characteristics' as Determinants of Poverty

Several factors have been noted for the household characteristics as the key determinants of poverty. In noting these factors of the household characteristics' as the determinants of poverty, the variables such as the number of children and elderly in the household are found to be significantly associated with the incidence of poverty (Malik, 1996; Deaton, 1997; McCulloch and Baulch, 1997; Meng and Gregory, 2007; Sikander and Ahmed, 2008). For instance, a cross-country analysis carried out by Deaton (1997) shows that the elderly are most likely to be poor in Ghana, Taiwan and Ukraine, children are most likely to be poor in Pakistan, and the ranking of these two groups is rather mixed in Thailand and South Africa.

McCulloch and Baulch (1997) include the household size and dependency ratio to evaluate the depth of the poor and differentiate between the transitory and chronically poor. They find that for chronically poor households, the higher dependency ratio and larger family size lead to a greater probability of being poor but not for the transitory poor as the dependency ratio was found to be insignificant. The reason for this, as they argued, is that a larger family may face the prospect of extra burden but it may also experience the possible economy of scale and extra income to the household. The finding is consistent with Sikander and Ahmed (2008), which suggests that the small household size is an important factor as it is highly correlated with that of dependency ratio and can play an important role in bringing down the incidence of poverty by reducing the probability of remaining in the poor household category in Pakistan. They further find that the number of potential earners is significant and negatively associated with the level of poverty.

Other determinants of poverty associated with household characteristics include whether the households have agriculture landholding, receive remittances receipts, have ownership of dwelling, access to credit and financial resources, have household tangible assets, as well as place of residence (i.e. rural versus urban) and nuclear families are also discussed in the literature to significantly affect the likelihood of remaining in the poor group (Malik, 1996; McCulloch and Baulch, 1997; Qureshi and Arif, 2001; Minot and Boulch, 2005; Khalid et al., 2005; Meng and Gregory, 2007; Sikander and Ahmed, 2008). For example, Mok, Gan and Sanyal (2007) find that households with the

ownership status of dwelling significantly reduce the risk of a household falling into poverty in the case of Malaysia, while Grootaert's (1997) study shows similar findings in the case of Cote d'Ivoire.

The review of the poverty related literature suggests modelling the different household head's characteristics and household characteristics as possible covariates to explain poverty. Thus, the use of Logic Model is a useful technique to be employed while the dependent variables can be defined in multiple ways, such as poor and non-poor based factors on a household's income or expenditure are compared with a threshold poverty line. The variables noted here are utilised to examine the determinants of poverty in Fiji.

4.3 Model Specification, Methodology and Data

This section examines Fiji's household head's characteristics and household characteristics that may be potentially responsible for remaining poor. The methodological approach, assumptions and the associated econometric issues are discussed in detail including the data used for the analysis.

4.3.1 Model Specification

Logistic regression is an appropriate approach utilised to examine the probability of a household remaining poor, which is similar to the Ordinary Least Square (OLS) regression. However, with logistic regression, the approach to prediction is a dichotomous outcome. That is, the dependent variable takes the values of 0 and 1, and the error term is dichotomous as well. Hence, the two potential problems arise from the use of the dichotomous variable instead of the actual continuous variable in the OLS. First, it can cause a loss of information in the dependent variable. Second, the dichotomous variable treated as latent variable is not actually latent, rather it has been observed and therefore should not be used in the binary response, as the objective is to obtain the probability of being poor or non-poor (Ravallion, 1996; Gujrati, 1995, 1999).

In the logistic regression, a complex formula is required to convert back and forth from the logistic equation to the OLS-type equation. The normal logistic equation can be expressed as follows:

$$Prob(y^* < 1|x) \Rightarrow y^* = 1 \text{ if } y/z < 1 \text{ or } 0 \text{ otherwise} \quad (4.1)$$

Where y is the observed dependent variable, z is the threshold level and x is the matrix of various household levels characteristics. The required regression of logistic model can be replaced with the levels regression (e.g. OLS) by regressing the x matrix on the y/z dependent variable that can be estimated even though the assumptions of the distribution of error term are weak enough (Ravallion, 1996). However, Geda, Jong, Kimenyi and Mwabu (2005) criticise that the levels regression does not provide results about poverty in the probabilistic terms. Instead, they employ a logistic regression to examine the probability of remaining poor based on a set of characteristics at the household level in the case of Kenya.

In general, the following equation (4.2) is considered to analyse the probability of a household being poor with a set of demographic and socio-economic variables:

$$Y_i = f(X_{1i}, X_{2i}, \dots, X_{ki}) \quad (4.2)$$

Where Y_i is the dependent variable that represent the households' level of poverty (i.e. poor or non-poor) and take the values of 0 and 1. The X s are the various socioeconomic and demographic indicators that determine the level of poverty of a household. Suppose that y^* in equation (4.1) captures a true status of the household either as poor or non-poor, then the estimation can be carried on using the following specification:

$$y^* = \alpha + \sum_{j=0}^k \beta_j X_{ij} + u_i \quad (4.3)$$

Where y^* cannot be observed and is a latent variable. However, variable y can be observed as a dummy variable that takes the value 1 if $y^* > 0$ and takes the value of 0 otherwise. The β is the vector of parameters and α a scalar. The error terms are denoted with u . Although the error terms have the common assumption of zero mean in the

logistic models, the underlying distribution is different which the error terms are more likely to follow a logistic distribution (Hogg and Tanis, 2001; Gujarati, 1995, 1999).

In equation (4.4) below, P_i represents the probability of the i th household below the benchmark poverty lines based on the vector of predictors X . Moreover, the study assumes that P_i is a Bernoulli variable, so that:

$$P_i(X) = \frac{e^{\alpha + \beta X}}{1 + e^{\alpha + \beta X}} \quad (4.4)$$

Since the β is a row vector of parameters and α a scalar, then the logistic model to be estimated takes the form as follows:

$$\text{Logit}(P_i) = \ln\left(\frac{P_i}{1 - P_i}\right) = \alpha + \sum_{j=0}^k \beta_j X_{ij} + u_i \quad (4.5)$$

Where P_i is the probability of a household remaining poor and $(1 - P_i)$ is the probability of non-poor. The ratio $P_i / (1 - P_i)$ is known as the odds ratio, which simply represents the odds in favour of the household remaining in poverty. The natural log of this odds ratio is called the Logit, and therefore equation (4.5) is called the Logit equation (Gujarati, 1995). The explanatory variable X_{ij} is a set of characteristics of the household head's and the households. This includes the household head's age, gender, race, physical status, formal education attainment, professional and technical education attainment, professions; the household characteristics such as family size, dependency ratio, and social network (i.e. access to a phone and receive remittances from the abroad and within the country). The β_j represents the logistic regression estimates of the explanatory variables, while u_i represents error terms.

The equation (4.5) indicates that the log of the odds ratio is a linear function of explanatory variables X_{ij} and the slope coefficients β_j provides the change in the log of the odds ratio per unit change in the explanatory variables. In addition to that, the marginal effects or elasticities at the mean values of the explanatory variables are also

computed to show the change in the probability when there is a unit change in the explanatory variables. The formula for computing the marginal effects, following Gujarati (1995), Sikander and Ahmed (2008), Awan, Malik and Sarwar (2008), takes the form as:

$$\frac{\partial \log[P_i/(1-P_i)]}{\partial X_j} = -\beta_j \quad (4.6)$$

These equations have been utilised to estimate the determinants of poverty in the following section that discusses the data and methodology.

4.3.2 Data and Methodology

To assess the level of welfare, the household income and household expenditure data are most commonly used. In choosing between these two indicators for poverty measurement, the household expenditure provides more detailed information than income. According to the World Bank (2005) poverty manual, in the poor agrarian economies, incomes of rural households may fluctuate in line with seasonal harvest cycle during the year. In the urban economies, a large number of people have non-permanent income from the informal sectors which implies their income may also be erratic. In this situation, it is difficult for individuals or households to recall their income correctly. As a result, the information on income in the survey may affect the quality of collected data.

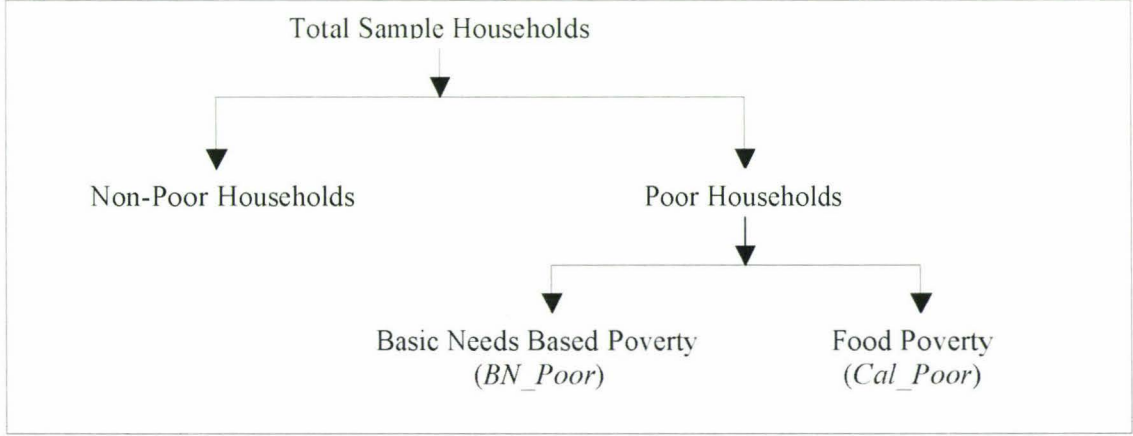
Consumption data, on the other hand, can be easily obtained by recording the respondents' daily expenditure or monthly expenditures. By recalling their real consumption, the possibility to produce incorrect data can be minimised (World Bank, 2005). In addition, Hemmer and Wilhelm (2000) suggest that consumption is a more reliable yardstick than income in terms of the possibility to meet basic needs. This is because income can be more affected in a short-term economic fluctuation than expenditure. In addition to that, Coudouel, Hentschel and Wodon (2001) claim that consumption has the advantage of being closer to an individual's well-being and better reflects the ability of an individual or a household to meet their basic needs. Coudouel et al., (2001) further note that the household expenditures reflect the goods and services

that a household can acquire based on its current income. That in turn represents the permanent income of a household.

The use of weekly expenditures per capita instead of income is preferred in the present study due to the tendency that income is often understated and less accurate when income level fluctuates. The minimum expenditures required to maintain a specific level of well-being is set as a threshold or called poverty line. The official basic needs poverty line of Fiji is estimated around F\$33.62 per Adult Equivalent (pAE) per week for the period 2002-03 (Narsey, 2006, 2008). On the other hand, the official food poverty line of Fiji is calculated by selecting a basket of food items to meet the minimum required level of calorie intake of 2100 calories per Adult per day, and the cost of such a basket at the prevailing prices is calculated around F\$19.19 to meet this nutritious level of a single person per week (Narsey, 2006, 2008).

The household income and expenditure (HIES) data for Fiji’s total sample of households for the analysis of the determinants of poverty is disaggregated into non-poor households and poor households. This nested structure of poverty status is presented in Figure 4.1. To examine the incidence of poverty, the two models evaluated are by measuring the basic needs poverty and food poverty. This present study employs the logistic regressions on equation (4.5) with two different dependent variables of dichotomous nature. The households are classified as either poor or non-poor based on whether the household per Adult Equivalent expenditures per week can meet their basic needs (*BN_Poor*) or the minimum weekly calorie intake (*Cal_Poor*).

Figure 4.1 A Nested Structure of Poverty Status of Households for Fiji



To determine the goodness-of-fit described in equation (4.5), three different tools of model adequacy are used to examine the two competing models based on the two different dependent variables *BN_poor* and *Cal_poor*. The least square principle of regression, which is the sum of squares of the residuals should be minimum is the first tool to select between the two models (Gujrati, 1995). The second tool that explains the level of variation explained by the model is called McFadden R-Squared, which can be calculated by the following formula:

$$\text{McFadden } R^2 = 1 - \frac{\ln \hat{L}(M_{Full})}{\ln \hat{L}(M_{Intercept})} \quad (4.7)$$

Where M_{Full} is the model with the explanatory variables, while $M_{Intercept}$ is the model without the predictors. The estimated likelihood is expressed as \hat{L} . A small ratio of log likelihoods indicates the full model is a better fit than the intercept model. Therefore, equation (4.7) implies that the higher value of the McFadden R-squared, the better is the goodness-of-fit of the models (Tang, 2001).

The Hosmer-Lemeshow (H-L) statistic is the third measure of the model's goodness of fit, which shows the possible deviation from the underlying fitted distribution of the model. Hosmer and Lemeshow (1980) recommend partitioning the observations into 10 equal sized groups according to their predicted probabilities. The value of the H-L statistic can be computed as follows:

$$G_{HL}^2 = \sum_{j=1}^{10} \frac{(O_j - E_j)^2}{E_j(1 - E_j/n_j)} \quad (4.8)$$

Where O_j represents the observed number of cases in the j th group, E_j is the expected number of cases in the j th group, and n_j is the number of observations in the j th group. A significant value of the H-L (G_{HL}^2) in equation (4.8) indicates a lack of fit for the data and thus an insignificant the H-L value suggests a good fit (Hosmer and Lameshow, 1989). Another tool generally used to examine the goodness-of-fit is the percentage of correct predictions made after fitting the model with the observed data. The rate of the

model prediction can be computed using STATA (Hamilton, 2009). The logistic regression estimates of equation (4.5) are estimated using the STATA package, and utilising the Household Income and Expenditure Survey 2002-03 data. Before reporting the estimated results for the logistic models, the next section presents the variable definition and descriptive statistics.

4.3.3 Variable Definitions and Descriptive Statistics

The variable definitions and descriptive statistics of the empirical models, based on the latest available Household Income and Expenditure Survey 2002-03, was provided by Fiji Island Bureau of Statistics (FIBOS). This survey provides comprehensive information on various social and economic factors at the household level. A total of 5,245 households from each of the 15 provinces have been included in the survey. The sample survey is large that gives credible result not only at the overall and regional levels but also at the household level, which is especially useful in the analysis of the national incidence of poverty.

One hundred and thirty (130) different social and economic indicators utilised through the various agencies, departments and stakeholders were in the building up of the household profile.⁵⁹ In the present study, various socio-economic and demographic indicators, as suggested in the literature, are collected from the dataset and used for investigating the determinants of poverty in Fiji. Several socio-economic indicators that are not mentioned in the literature are also included in the analysis based on the hypotheses and the socio-economic characteristics of the households in Fiji. The list of variables and definitions is presented Table 4.1.

⁵⁹ The survey methodology adopted by FIBOS includes a two-stage sampling strategy. At the first stage, the representative samples of Urban and Rural Enumeration Areas (EA) were selected. The listing stage then collected demographic, economic activity and housing information from all households in the selected EAs (i.e. a sample of 860 EAs). In the second stage, each stratum of the EA were selected with the probability proportional to size, measured in terms of the total households in the framework. Within each EA a fixed number of households were selected by a systematic random sampling (i.e. a sample of 5,245 households) (See FIBOS, 2006).

Table 4.1 Variable Description and Definitions

Variables	Definition
<i>Dependent</i>	
BN_poor	Basic needs based poverty category (Poor = 1, Non-poor = 0)
Cal_poor	Calories based category (Poor = 1, Non-poor = 0)
<i>Explanatory</i>	
Age_Head	Age of the head of the household (Completed years)
Squage_Head	Age squared
Fijian	The household is Fijian (Yes = 1, No = 0)
Indo_Fijian	The household is Indo-Fijian (Yes = 1, No = 0)
F_Head	Gender of the head of the household (Female = 1, Male = 0)
Prim_Head	Household head with primary education (Yes = 1, No = 0)
Sec_Head	Household head with secondary education (Yes = 1, No = 0)
Tertiary_Head	Household head with tertiary education (Yes = 1, No = 0)
Disable	Household head is disabled (Yes = 1, No = 0)
Agriculture	Household head works in the agricultural sector (Yes = 1, No = 0)
Manufacture	Household head works in the manufacturing sector (Yes = 1, No = 0)
Construction	Household head works in the construction sector (Yes = 1, No = 0)
Trade	Household head works in wholesale and retail trade and restaurants and hotels sectors (Yes = 1, No = 0)
Trspt_Comm	Household head works in the transport, storage and communication sector (Yes = 1, No = 0)
Service	Household head works in business, financial, community, social and personal services (Yes = 1, No = 0)
Self_E	Household head is self-employed (Yes = 1, No = 0)
FSZ	Family size
FSZSQ	Family size square
Dependent	Dependency ratio = (age 14 and below + age 65 and above)/ age of 15 and below age of 65
Squatter	Household lives in squatter settlement (Yes = 1, No = 0)
Remittance	Household receives remittances either from overseas or within the country (in F\$ per annum)
Income_Agric	Income received by the household from agriculture sector (in F\$ per annum)
Phone	Household has access to a telephone (Yes = 1, No = 0)
Rural	Household in rural areas (Yes = 1, No = 0)

The dependent variables of basic needs (*BN_Poor*) and food poverty (*Cal_Poor*) take the value for the households of 1 or 0 for the poor and non-poor. Descriptive statistics for the explanatory variables, presented in Table 4.2 below, support the general hypothesis that the characteristics of the households across rural and urban regions are different and need a strong consideration for the identification of possible determinants of poverty in Fiji. The age of the household head (*Age_Head*) is relatively higher in the rural areas (47 years) than those in the urban areas (44 years). The standard deviations are also slightly higher for the rural areas showing relatively higher dispersion from the mean age. Most of the Fijian households (*Fijian*) reside in the rural areas while most of Indo-Fijian households (*Indo_Fijian*) live in the urban areas, and household size and the dependency ratio are found to be relatively higher in the rural areas compared to the

urban areas. In addition, there is also a relatively larger number of urban households that live in squatter settlement (*Squatter*) (Table 4.2).

Table 4.2 Descriptive Statistics

Variable	Overall (5245)		Rural (2230)		Urban (3015)	
	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.
Age_Head	45.70	13.03	47.01	13.54	44.73	12.56
Fijian	0.47	0.50	0.60	0.49	0.38	0.48
Indo_Fijian	0.48	0.50	0.38	0.49	0.55	0.50
F_Head	0.13	0.34	0.12	0.33	0.14	0.34
Prim_Head	0.16	0.36	0.22	0.42	0.11	0.31
Sec_Head	0.28	0.45	0.37	0.48	0.21	0.41
Tertiary_Head	0.48	0.50	0.35	0.48	0.57	0.49
Prof_ED	0.17	0.37	0.10	0.30	0.21	0.41
Disable	0.03	0.17	0.04	0.19	0.02	0.15
Agriculture	0.21	0.41	0.41	0.49	0.06	0.23
Manufacturing	0.07	0.26	0.04	0.19	0.10	0.30
Construction	0.05	0.21	0.03	0.16	0.06	0.24
Trade	0.15	0.36	0.19	0.39	0.12	0.32
Trspt_Comm	0.08	0.27	0.04	0.19	0.11	0.31
Service	0.22	0.42	0.13	0.34	0.29	0.45
Self_E	0.23	0.42	0.39	0.49	0.12	0.33
FSZ	4.86	2.17	5.01	2.21	4.74	2.13
Dependent	0.66	0.68	0.76	0.73	0.58	0.63
Squatter	0.09	0.28	0.06	0.24	0.10	0.30
Remittance	549.81	2115.81	408.44	1308.54	654.38	2548.88
Income_Agric	1046.67	2569.73	2135.42	3335.29	241.39	1317/84
Phone	0.47	0.50	0.25	0.43	0.63	0.48

Notes: Values in parentheses are numbers of observation used in the logit models.

The households headed by a female (*F_Head*) are relatively higher for urban areas than rural areas and the distribution of the disabled heads is relatively higher in the rural areas than in the urban areas. There is a relatively larger number of rural household heads with primary (*Prim_Head*) and secondary (*Sec_Head*) education, while most of urban household heads in the survey have tertiary education. Moreover, the distribution of the disabled heads is relatively higher in the rural areas than in the urban areas.

As shown in Table 4.2, the pattern of employment in the two sectors of rural and urban is an interesting observation, and these variables are found to be as expected. The rural areas are dominated by the households whose heads are either self-employed or employed in one of the three rural sectors of the agricultural, forestry and fishing, while

most of the urban household heads are populous in the construction, transportation and communication, manufacturing and service sectors. The total annual income, on average, received by the rural households (i.e. F\$2135.42 per annum) are also significantly higher than the urban households (i.e. F\$241.38 per annum).

The mean of the family size (*FSZ*) variable indicates no evidence is found to support the assumption that larger families are more prevalence in the rural areas. However, the rural areas are found with higher values for the standard deviation and leads to the finding that the *FSZ* is comparatively less stable in the rural areas (a standard deviation of 2.21) than in the urban areas (a standard deviation of 2.13). The dependency ratio (*Dependent*) is comparably higher in the rural sectors than the urban sectors as the result of relatively larger number of children (under 15 years old) and elderly (over 65 years old).

In terms of receiving financial assistance, urban households receive relatively larger amount of remittances (on average F\$654.38 per annum either from abroad or within country than the rural households (on average F\$408.44 per annum). It is also worth noting that a comparably large number of urban households have access to the telephone (*Phone*), which may imply that infrastructure in the urban areas is relatively better than that in the rural areas. Moreover, the reason of including the variable *Phone* in the logit models is that access to a phone is an important proxy of social capital. As a measure of social capital, ownership of a phone ensures a steady flow of information, which is particularly important for the large share of households involved in informal or semi-informal private entrepreneurial activities (Fafchamps and Minten, 2002). The variable of *Phone* is to see whether or not of having access to the phone increases household welfare and reduces the incidence of poverty empirically. The next section presents the results of the magnitude of poverty determinant variables as noted above.

4.4 Empirical Results

The empirical results reported for the probability of households with specified characteristics to fall below the official poverty lines in Fiji are organised in two stages. The stage one reports the results presented for the comparison of the two logistic

models with two dependent variables, whereby the Model 1 contains the dependent variable *BN_poor* (based on the basic needs poverty line) and the Model 2 contains the dependent variable *Cal_poor* (based on the food poverty line). The coefficients and their marginal effects of percentage change in the probability when there is a unit change in the explanatory variables are also provided for the comparison of the two models. In the second phase (stage two), the results report the separate models by regions, i.e. rural and urban areas.

4.4.1 Results for Poverty Determinants: Basic Needs and Food Poverty

The estimated coefficients for the poverty measures of basic needs and food poverty line are presented in Table 4.3. The age and gender of the head of the household (*Age_Head* and *F_Head*) are important determinants of poverty. For both the models (*BN_Poor* and *Cal_Poor*), the coefficient of the variable *Age_Head* is negatively associated with the incidence of poverty, while the *Sqage_Head* captures the opposite effect of declining ability with age.

The variable *Age_Head* causes a decrease in the likelihood of being poor by 1.2 percent in the Basic Needs Model 1 and 0.2 percent in the Food Poverty Line Model 2, while the marginal effect of the variable *Sqage_Head* on the incidence of poverty is less than 0.001 percent for both the models.

The coefficient of the female household head variable *F_Head* is positive and significant in the Basic Needs, while the variable *F_Head* is positive but insignificant in the Food Poverty Line. The estimated coefficient in the model 1 indicates that being a female household head would increase the chance of remaining poor by 4.5 percent.

Table 4.3 Logit Models for Overall Household Analysis, HIES 2002-03

Dependent Variable: Official Poverty Line - Model 1 Basic Needs and Mode 2 Food Poverty				
Independent Variable	Model 1 (BN Poor)		Model 2 (Cal Poor)	
	z-statistic	Marginal Effect	z-statistic	Marginal Effect
Age_Head	-3.93***	-0.0120	-2.47**	-0.0020
Sqage_Head	4.22***	0.0001	2.26**	0.0001
Fijian	0.47	0.0171	-1.41	-0.0134
Indo_Fijian	4.56***	0.1672	1.12	0.0110
F_Head	2.19**	0.0454	0.66	0.0036
Prim_Head	-1.86*	-0.0439	-1.19	-0.0068
Sec_Head	-1.82*	-0.0417	-2.14**	-0.0119
Tertiary_Head	-5.83***	-0.1396	-4.18***	-0.0278
Disable	2.36**	0.0917	2.72***	0.0280
Agriculture	1.34	0.0306	0.06	0.0003
Manufacturing	-2.23**	-0.0565	-3.71***	-0.0241
Construction	-1.64*	-0.0475	-3.27***	-0.0212
Trade	-3.42***	-0.0743	-3.75***	-0.0201
Trspt_Comm	-2.34**	-0.0618	-3.7***	-0.0252
Service	-6.05***	-0.1194	-3.53***	-0.0192
Self_E	0.42	0.0072	2.18**	0.0114
FSZ	8.3***	0.0863	5.63***	0.0156
FSZSQ	-2.85***	-0.0022	-1.99**	-0.0004
Dependent	3.43***	0.0326	1.85*	0.0044
Squatter	2.9***	0.0667	2.54**	0.0171
Remittance	-3.31***	-0.0001	-0.54	-0.0001
Income_Agric	-7.73***	-0.0001	-6.18***	-0.0001
Phone	-17.3***	-0.2514	-9.48***	-0.0484
Rural	7.27***	0.1128	3.97***	0.0179
Constant	-2.28**		-2.58***	
No. of observations	5245		5245	
LR $\chi^2_{(24)}$	1465.65***		619.6***	
Log likelihood	-2393.5051		-1020.1485	
McFadden R^2	0.2344		0.2329	
Correctly predicted (%)	77.88		93.02	
H-L $\chi^2_{(8)}$	17.71		5.25	

Notes: Critical values for the z-statistic significance levels at the one, five and ten percent are as follows: 2.58, 1.96 and 1.65. The estimated H-L test statistic value indicates a food fit to the data (see Hosmer and Lemeshow, 1989, for details).

When comparing the effect of two major ethnic groups, both Fijian households and Indo-Fijian households have commonly shared the risk of falling into poverty, though the Indo-Fijian households have greater tendency of falling into or remaining in the basic needs poverty. For instance, the marginal effect of the variable *Indo_Fijian* on the probability of being a poor household is about 16.7 percent in the Basic Needs Poverty Model 1. In the Food Poverty Line Model 2, the variable *Indo_Fijian* is positive and

insignificant, and the variable *Fijian* is also insignificant and shows a negative sign. In terms of the place of residence, the households in rural sectors are more likely to be subjected to poverty. The *Rural* coefficient significantly shows a contribution of 11.3 percent (Model 1) and 1.8 percent (Model 2) in increasing the likelihood of being in poverty in the rural areas. Households that live in the squatter settlement (*Squatter*) are also prone to poverty, the likelihood of remaining in the basic needs poverty is about 6.7 percent (Model 1) and in the food poverty is around 1.7 percent (Model 2).

The results in Table 4.3 show that education is an important determinant of poverty reduction, which supports the findings of most studies (e.g. Khalid et al., 2005; Meng and Gregory, 2007; Mok et al., 2007; Awan et al., 2008). The coefficients on years of schooling for the head of the household are classified into primary (*Prim_Head*), secondary (*Sec_Head*) and tertiary education (*Tertiary_Head*). In the Basic Needs Model 1, the variable *Prim_Head*, *Sec_Head*, and *Tertiary_Head* show a contribution of 4.4 percent, 4.2 percent and 14 percent in reducing the possibility of remaining poor. In the Food Poverty Line Model 2, the variable *Sec_Head* and *Tertiary_Head* are negative and statistically significant and the magnitude effect of the household head with the secondary and tertiary education attainment is round 1.2 and 2.8 percent respectively. The investment in human capital is crucial for growth and social development. Hence, education is widely regarded to be central for promoting efficient growth and for increasing the assets of the poor to bring them out of poverty over time. Education also has non-monetary effects on the welfare of the individuals. The common trend noted in many studies suggests that if the head of the household is highly educated, the descendents will also be likely to acquire higher education. The households where the head is not able to participate in the employment activities due to either some physical or mental disabilities are more prone to poverty. The coefficient of the head of the household being disabled (*Disable*) is statistically significant and contributes positively to the probability of becoming a poor household by 9.2 percent in the Basic Needs Model 1 and 2.8 percent in the Food Poverty Model 2.

Employment in the sectors such as manufacturing (*Manufacturing*), construction (*Construction*), trade⁶⁰ (*Trade*), transportation and communication⁶¹ (*Trspt_Comm*), and

⁶⁰ Trade sector refers to wholesale and retail trade, and trading activities in restaurants and hotels.

service⁶² (*Service*) are vital determinants of the poverty and lowers the probability of a poor household. The signs of these estimated variables are negative and highly significant for both the models. These variables show significant effects in reducing the probability of remaining in poverty from 1.9 to 11.9 percent. In the Basic Needs Poverty Model 1, the highest effect on reducing the possibility of remaining poor is being in the service sector (11.9 percent) followed by the trade sector (7.4 percent), transportation and communication (6.2 percent), manufacturing (5.7 percent), and construction sector (4.8 percent). On the other hand, the sectors such as transportation and communication, manufacturing, construction, trade and service help to reduce the probability of remaining poor by 2.5 percent, 2.4 percent, 2.1 percent, 2 percent and 1.9 percent, respectively, in the Food Poverty Model 2 (Table 4.3).

Although the coefficients for household heads employed in the agriculture sector (*Agriculture*) are positive they are however insignificant for both the models. But it is noted that those in agriculture sector may remain poor and also the majority of the poor are engaged in the agriculture sector (see also Narsey, 2006, 2008). The income earned from the agriculture sector potentially reduces the incidence of poverty as the variable *Income_Agric* shows a negative and significant correlation with poverty at 1 percent level for both the *BN_Poor* and *Cal_Poor* models. However, the marginal effect of having income from the agriculture sector is less than 0.02 percent. On the other hand, household heads coefficient who are self-employed (*Self_E*) is positive and significant at the 5 percent level for the dependent variable of *Cal_Poor*, which shows a contribution of 1.1 percent in increasing the likelihood of remaining poor.

High dependency ratio (*Dependent*) and larger family size (*FSZ*) contribute positively to the probability of becoming a poor household for both the models. The marginal effect of having an extra person in the household increases the likelihood of being poor by 8.6 percent in the Basic Needs Poverty Model 1, and 1.6 percent in the Food Poverty Model 2. The coefficient of the dependency ratio (*Dependent*) shows a contribution of 3.3 and 0.4 percent in increasing the likelihood of poverty for the model 1 and 2, respectively. The coefficient of family size squared (*FSZSQ*) is also significant and negative in

⁶¹ Transportation and communication sector includes land transport, water transport, air transport carries, services allied transport and communication services (such as postal, wire and wireless services).

⁶² Services sector includes: 1) finance, insurance, real estate and business services; and 2) community, social and personal services.

relation to poverty reduction for both the models. The *FSZSQ* has a contribution of 0.2 percent (Model 1) and 0.04 percent (Model 2) in reducing poverty. The results imply that the very large families not only have potential income earners but also extra helpers for the domestic duties, which in turn reduce being in poverty through larger participation in the workforce.

The households with access to telephone (*Phone*) are less likely of falling into poverty. The reason for this is that ownership of a phone ensures a steady flow of information, which is particularly important for the large share of households involved in informal or semi-informal private entrepreneurial activities (Fafchamps and Minten, 2002). Information provision and communication play an important role in increasing household welfare. The lack of social capital as such causes social exclusion by isolating households through separation from relatives, friends, social institutions and social activities. The variable *Phone* shows a contribution of 25.1 percent in the Basic Needs Model 1 and 4.8 percent in the Food Poverty Model 2 in reducing the possibility of falling into poverty. Moreover, remittances (*Remittance*) received by the household either from abroad or within the country also significantly contribute to a 0.01 percent in lowering the possibility of remaining poor in the Basic Needs Poverty Model 1. The variable *Remittance* is negative but insignificant in the Food Poverty Model 2. This may be due to the fact that the amount of remittances at this level of poverty is not large enough to cover household consumptions on food and non-food items (such as education, clothing, housing and health care).

Comparing both the Model 1 (i.e. *BN_Poor* as dependent variable) and Model 2 (i.e. *Cal_Poor* as dependent variable), the chi-square test shown in Table 4.3 strongly rejects the hypothesis of no explanatory power for both the models. The Basic Needs Poverty Model 1 correctly predicted 77.9 percent of the observations while the Food Poverty Model 2 correctly predicted 93 percent of the observations.

Although, the McFadden R-squared of *Cal_poor* (i.e. 0.2329) is slightly lower than that of the *BN_poor* (i.e. 0.2344), yet this is often the case that the higher R-squared that is caused by a problem of collinearity in the regressors (Hosmer and Lemeshow, 1982, 1989). Therefore, the higher R-squared value is not highly likely and can be ignored in favour of the other three measures of model adequacy. In addition, the insignificant

value of the Hosmer-Lameshow (H-L) statistic suggests that both the models have a relative good fit to the data, although the data is fitted better in Model 2 (i.e. H-L equals to 5.25) than in Model 1 (i.e. H-L equals to 17.71).⁶³ Hence, the support for the selection of *Cal_poor* as an adequate dependent variable for modelling poverty determinants in the stage two is taken. However, the purpose of the current analysis is to empirically examine what factors are responsible for remaining poor. Therefore, it is necessary to examine what household heads' characteristics and household characteristics that have contributed not only for being extreme poor (i.e. food poverty) but also for being moderately poor (i.e. basic needs poverty) by regions.

4.4.2 Results for Food Poverty and Basic Needs Poverty Line: By Regions (Stage Two)

The empirical results of the separate logistic regressions (i.e. equation 4.5) provide the opportunity to see the magnitude and direction of the effect on the dependent variables of *Cal_poor* and *BN_Poor* for the rural and urban areas (see Tables 4.4 and 4.5). Firstly, the factors that help in reducing the possible of being extreme poor (i.e. food poverty) are discussed followed by the determinants of moderate poor (i.e. basic needs poverty).

4.4.2.1 Results for Food Poverty Line: Rural versus Urban

The coefficient of *Age_Head* has a negative and significant effect on the likelihood of remaining in food poverty in the urban sectors, whereas the age of the rural household head appeared to be insignificant for extreme poverty. Although the variable *Sqage_Head* shows a positive and significant linkage with the incidence of poverty, the magnitude of opposite effect of declining ability with age is rather minimal for the urban household heads (i.e. less than 0.001 percent). This finding is consistent with that of Sikander and Ahmed (2008), Khaild et al. (2005) but does not coincide with the findings of Baulch and McCulloch (1998) who report that no significant effect on the poverty status is made by the age of the head of the household in the rural Pakistan.

⁶³ The lower value and its insignificance H-L test statistic levels the better fit to the data, while the larger value of the significant H-L results indicate a lack of fit for the data (see Hosmer and Lameshow, 1989, for details).

Though it needs to be pointed out that the coefficient of age of the head of the household is highly significant but its marginal effects are relatively weaker in the urban areas than in the rural areas (Table 4.4).

Table 4.4 Logit Model for Food Poverty Line: Rural versus Urban

Dependent Variable: Official Food Poverty Line				
	Rural		Urban	
	z-statistic	Marginal Effect	z-statistic	Marginal Effect
Age_Head	-1.49	-0.0028	-2.07**	-0.0014
Sqage_Head	1.39	0.0001	1.9*	0.0001
Fijian	-1.31	-0.0355	-0.86	-0.0057
Indo_Fijian	0.61	0.0163	0.54	0.0037
F_Head	1.98**	0.0290	-1.23	-0.0050
Prim_Head	0.03	0.0005	-0.99	-0.0041
Sec_Head	-0.5	-0.0084	-2.2**	-0.0079
Tertiary_Head	-1.06	-0.0187	-4.79***	-0.0257
Disable	1.38	0.0301	2.23**	0.0205
Agriculture	-0.42	-0.0055	0.09	0.0005
Manufacturing	-2.73***	-0.0503	-2.29**	-0.0102
Construction	-1.68*	-0.0312	-2.58***	-0.0117
Trade	-3.47***	-0.0441	-1.4	-0.0068
Trspt_Comm	-2.7***	-0.0469	-2.19**	-0.0112
Service	-3.82***	-0.0518	-1.25	-0.0049
Self_E	3.04***	0.0327	-0.98	-0.0051
FSZ	4.43***	0.0324	2.91***	0.0058
FSZSQ	-1.72*	-0.0009	-0.55	-0.0001
Dependent	1.33	0.0071	1.51	0.0031
Squatter	2.14**	0.0423	1.75*	0.0079
Remittance	-1.93*	-0.0001	0.61	0.0001
Income_Agric	-6.5***	-0.0001	-1.03	-0.0001
Phone	-4.63***	-0.0454	-8.39	-0.0481
Constant	-2.18**		-0.5***	
No. of observations	2230		3015	
LR $\chi^2_{(23)}$	327.16***		253.94***	
Log likelihood	-600.1187		-396.4169	
McFadden R^2	0.2142		0.2426	
Correctly predicted (%)	89.42		95.89	
H-L $\chi^2_{(8)}$	3.25		9.66	

Notes: Critical values for the z-statistic significance levels at the one, five and ten percent are as follows: 2.58, 1.96 and 1.65. The estimated H-L test statistic value indicates a food fit to the data (see Hosmer and Lameshow, 1989, for details).

Rural households headed by the females (*F_Head*) are prone to food poverty. The coefficient of *F_Head* contributes a 2.9 percent increase in the likelihood of being poor.

Moreover, the urban household heads who are underprivileged (*Disable*) are more likely to be falling into or remaining in food poverty. The coefficient *Disable* shows a contribution of 2 percent in increasing the likelihood of being extreme poor.

Education is one of the key determinants of human capital, where a good quality of human capital is by having a higher level of education and training. Education is an effective tool for getting people out of poverty, where the coefficient indicates that urban household heads with either secondary (*Sec_Head*) or tertiary (*Tertiary_Head*) education increase the likelihood of getting out of food poverty by 0.8 percent and 2.6 percent, respectively. In rural sectors, the coefficients of *Prim_Head*, *Sec_Head* and *Tertiary_Head* are negative and insignificant.

The household heads employed in the sectors such as manufacturing (*Manufacturing*), construction (*Construction*) and transportation and communication (*Trspt_Comm*) help in reducing food poverty for both the rural and urban areas. In addition, the trade and service sectors contribute some 4.4 percent and 5.2 percent, respectively, food poverty reduction in the rural areas.

Although the variable *Agriculture* is insignificant for both the rural and urban areas, the income earned from the agriculture sector potentially reduces the incidence of food poverty for rural households by 0.001 percent. On the other hand, rural household heads who are self-employed (*Self_E*) are more likely to remain in food poverty. The possible reason might be that the self-employed rural household heads have less access to the market information, education and training in small business, and are being more distant to the major markets as compared to their urban counterparts. Nevertheless, the entrepreneurship is not only important in reducing poverty but also an important factor for the urban areas.

The family size (*FSZ*) and dependency ratio (*Dependent*) are important determinants of food poverty for both the rural and urban households. The magnitude of marginal effect of family size and dependency ratio on the incidence of food poverty is greater in the rural households than in the urban households. For example, the marginal effect of having an extra person in the household increases the likelihood of being poor by 3.2 percent in the rural areas compared to 0.6 percent in the urban areas. The coefficient of

the dependency ratio (*Dependent*) for the rural households shows a contribution of 0.7 percent in increasing the likelihood of food poverty, compared to 0.3 percent for the urban households. The estimated coefficient of family size squared (*FSZSQ*) is negative and significant, which has a contribution of 0.08 percent in reducing food poverty in the rural areas. The results imply that the very large families can reduce the likelihood of remaining poor due to the higher number of possible income earners. However, this situation is not highly desirable due to the fact that the marginal effect is at a very low level, i.e. 0.08 percent, while the variable family size (*FSZ*) causes an increase in the probability of remaining in food poverty by 3.2 percent.

The rural and urban households with an access to the phone (*Phone*) are more likely to get out of food poverty, as this variable contributes a 4.5 percent and 4.8 percent decrease in the likelihood of being in food poverty for the rural and urban areas, respectively. The variable *Remittance* is negative and significant in reducing the chance of being in food poverty for the rural households, though the magnitude of the marginal effect is less than 0.001 percent. Households live in the squatter settlement increase the probability of being poor by 4.2 percent (rural households) and 0.8 percent (urban households).

4.4.2.2 Results for Basic Needs Poverty Line: Rural versus Urban

The age and gender of the head of the household, family size and dependency ratio are all important determinants in explaining the basic needs poverty for both the rural and urban sectors. Similar to the food poverty scenario, rural households headed by the females (*F_Head*) are less likely to meet their basic needs. The coefficient of *F_Head* shows a contribution of 11.4 percent in increasing the possibility of not meeting their basic needs and remaining in poverty. Household heads who are disabled also subject to the basic needs poverty. The magnitude of the marginal effects of *FSZ*, *FSZSQ* and *Dependent* on the incidence of poverty is greater in the rural sectors than the urban sectors. Moreover, Fijian households and Indo-Fijian household are commonly share the risk of falling below the basic needs poverty line, though Indo-Fijian households are more likely subjected to the poverty. For instance, the estimated coefficients of Indo-Fijian show 15 percent and 12.2 percent increase in the likelihood of falling below the basic needs poverty line in the rural and urban areas, respectively (Table 4.5).

Table 4.5 Logit Model for Basic Needs Poverty Line: Rural versus Urban

Dependent Variable: Official Basic Needs Poverty Line				
Independent Variable	Rural		Urban	
	z-statistic	Marginal Effect	z-statistic	Marginal Effect
Age_Head	-2.94***	-0.018	-2.55**	-0.0076
Sqage_Head	3.24***	0.001	2.67***	0.0001
Fijian	-1.12	-0.095	1.54	0.0521
Indo_Fijian	1.74*	0.150	3.86***	0.1218
F_Head	2.72***	0.114	0.66	0.0129
Prim_Head	-0.13	-0.008	-1.86*	-0.0391
Sec_Head	0.01	0.001	-2.2**	-0.0420
Tertiary_Head	-2.66***	-0.161	-4.69***	-0.0992
Disable	0.85	0.060	2.41**	0.1034
Agriculture	0.35	0.016	1.46	0.0434
Manufacturing	-1.77*	-0.117	-1.36	-0.0293
Construction	-1.2	-0.087	-1.12	-0.0276
Trade	-2.28**	-0.109	-2.29**	-0.0481
Trspt_Comm	-0.08	-0.006	-2.42**	-0.0534
Service	-4.91***	-0.234	-3.88***	-0.0666
Self_E	1.5	0.045	-0.6	-0.0126
FSZ	5.79***	0.129	5.45***	0.0534
FSZSQ	-2.16**	-0.004	-1.62	-0.0012
Dependent	2.73***	0.048	2.25**	0.0224
Squatter	1.62	0.084	2.37**	0.0482
Remittance	-4.2***	-0.001	-1.44	-0.0001
Income_Agric	-8.2***	-0.001	-1.43	-0.0001
Phone	-8.41***	-0.246	-15.22***	-0.2437
Constant	-0.36		-1.67**	
No. of observations	2230		3015	
LR $\chi^2_{(23)}$	632.2***		634.43***	
Log likelihood	-1186.7225		-1171.8881	
McFadden R^2	0.2103		0.213	
Correctly predicted (%)	72.87		82.79	
H-L $\chi^2_{(8)}$	5.88		6.91	

Notes: Critical values for the z-statistic significance levels at the one, five and ten percent are as follows: 2.58, 1.96 and 1.65. The estimated H-L test statistic value indicates a good fit to the data (see Hosmer and Lemeshow, 1989, for details).

Education once again played an important role in reducing poverty. On one hand, the urban household heads with primary, secondary and tertiary education significantly reduce the likelihood of being poor by 3.9 percent, 4.2 percent and 9.9 percent, respectively. On the other hand, the rural household heads with tertiary education will increase the chance of getting out of poverty by 16.1 percent.

While the trade and service sectors help in increasing the probability of meeting the basic needs for both the rural and urban households, the manufacturing sector helps rural households in increasing the possibility of meeting their basic needs by 11.7 percent. And the transportation and communication sector helps urban households to increase the chance of meeting their basic needs by 5.3 percent. Remittance receipts help both the rural and urban households in reducing the possibility of falling below the basic needs poverty line by less than 0.05 percent. The variable *Phone* contributes a 24.6 percent and 24.4 percent decrease in the likelihood of falling below the poverty line for the rural and urban areas, respectively.

4.5 Conclusion

The chapter examines the possible factors at the household level that are responsible for the incidence of poverty in Fiji. These possible determinants are classified as demographic and socio-economic variables. Using the household income and expenditure survey data for the period 2002-03, the empirical results show that the household head's age is negatively associated with probability of being poor.

The gender of the head of the household is an important determinant of poverty which can not be ignored due to its long-term implications. Although the number of households with female heads is not significantly large, it still requires attention for both the rural and urban areas. Most of the female heads in the survey is either widowed or divorced and therefore she has a lower level of income for her household. The empirical results have shown that the households headed by the females are more significantly prone to poverty as revealed by the Basic Needs Model 1 and Food Poverty Model 2, and in the rural and urban areas. On the other hand, the households where the head is not able to participate in the employment activities due to either some physical or mental disabilities are also subject to face poverty. This finding is important given that other similar studies on the determinants of poverty at the household level had ignored this effect between the incidence of poverty and disability.

In terms of policy making, households headed by the females or the disabled must be provided with subsidies on food, education and financial resources from the pro-poor

programmes to exclusively target these households. The poverty report on Fiji by the Asian Development Bank (2001) states that poor must also be provided not only with the consumption security, but also with prospects and empowerment. The risk of losing a share of possible consumption generally adds to the pressure on the households. Blundell and Preston (1998) have been observed that the insurance against such a risk can mitigate its effect given that the markets are complete. In addition, the female household heads and the household headed by the disabled could be supported with technical training to setup small household level enterprises that may bring prosperity, self employment and establish a permanent source of income.

The level of education of the head of the household decreases the possibility of remaining poor. However, the larger family size increases the likelihood of being poor limits the consumption level of the food and non-food items and gradually reduces the changes of getting out of low per capita consumption. Hence, the results here suggest that higher dependency ratio leads to higher probability of remaining poor. The composition of smaller family size and the extra potential earner to the family can reduce the change of remaining poor, where the potential earner can take part in economic activity and can cause an increase in household income over time. This ultimately leads to an exit from the poverty trap due to the lack of employment opportunities, the target of full employment is difficult to achieve in a short period of time, therefore the government could take measures to create awareness of the incidence of poverty to mitigate hardships.

Education and training in the areas of employment in agriculture, manufacturing, construction, trade, transportation and communication, and services are vital to reduce the likelihood of being poor. In addition, it is vital for the government to reconsider the role of the telecommunication in the process of poverty reduction. The findings of this empirical chapter suggest that the policy/decision makers may enable to address the effects of various household and head of the household characteristics to reduce poverty in Fiji. The findings suggest relevance of directing the pool of resources to target poverty reduction. Although the process of poverty alleviation is rather complex, the social and welfare development in education, health and housing are potential means of reducing poverty. Therefore, the next chapter presents an in-depth analysis of education, health and housing on poverty reduction.

Chapter 5

The Impact of Education and Health on Poverty Reduction: Empirical Evidences for Monetary and Non-Monetary Models

5.1 Introduction

The theoretical and empirical literature of educational impact on poverty reduction has been reviewed in chapter 2 that reveals that education benefits both the individuals and the society. At the household level, an individual's productivity and increased income are two possible outcomes as education increases the chance of a well-paid employment. On the other hand, at the country level, an educated workforce is considered to be the building block for a knowledge-based economy and thus contribute to economic growth. The findings from the empirical studies (e.g. Romer, 1990; Mankiw, Romer, and Weil, 1992; Barro, 1997; World Bank, 2005) suggest that investment in human capital is the precondition for developing countries to absorb modern technology and improve productivity, which in turn leads to higher income and improved economic performance. Indeed, an improvement in a country's educational level not only increases its fellow citizens' understanding of their rights and opportunities given, but also has an empowering effect on women which can lower the fertility rate and child mortality (World Bank, 2005; Todaro and Smith, 2006).

As discussed in chapter 2, poverty is much more complex than simply income deprivation. Poverty entails the lack of empowerment, lack of knowledge and lack of opportunity as well as lack of income and capital. Despite various governments' efforts of increasing access to education by setting primary education at zero-fee tuition, the poorest families are still not able to avail to it because the direct and opportunity costs attached to it are quite high for them. As a result, children of poor families are less likely to attend and complete schooling because of its associated costs.⁶⁴ The cost of

⁶⁴ The cost of uniforms, supplies, learning materials and transportation may well be beyond the means of a poor family, especially when the family has several children of school age.

schooling has often led to school drop out or, worse yet, to deny schooling to girls, thereby contributing directly to maintaining the inferior status of women. The opportunity costs of children from poor families are high such as their loss of labour input and the forgone income which increases the likelihood of school dropout rates. Moreover, school dropout are high because of poverty and it virtually guarantees perpetuation of the poverty cycle since the income-earning potential of the child is reduced, as well as overall productivity, receptivity to change, and capacity to improve the quality of life (World Bank, 2005; Todaro and Smith, 2006).

Education, hence, is both an outcome and a means to poverty alleviation. Returns to education can also be a useful tool for policy-making in a number of ways. For instance, Tilak (1994) suggests that returns to education give an indication of which sector of the educational system the government should invest in most. If the returns to primary and secondary education are significantly different, then policy-makers can make more efficient allocation choices by allocating more public resources to the level of education that yields higher returns. Evidence provided by a large number of studies also show a positively significant association between education and health outcomes, especially substantial social and economic gains that has been achieved from women's education (Auster, Leveson, and Sarachek, 1969; Fuchs, 1980; Leigh, 1981; Lee, 1982; Friedman, 2002).

If education is essential for a satisfying and rewarding life, then health is central to well-being. Todaro and Smith (2006) note that good health is a prerequisite for increasing productivity and successful education relies on adequate health. Therefore, both health and education can be seen as vital components of growth and development. Such dual role as both inputs and outputs gives health and education their central importance in economic development.

This chapter examines the hypotheses that the influence of education on poverty reduction that goes beyond its impact on income and wages by analysing both the monetary and non-monetary effects of education on poverty reduction. Firstly, in analysing the monetary returns to education, the study employs the recently developed technique of quantile regression (Koenker and Bassett, 1978; Koenker and Hallock, 2001). This technique is useful by examining the lowest to highest levels of the

distribution function of the dependent variables, and the impact of monetary effects on the poorest and the richest households. In the non-monetary hypothesis the impact of education and health is also examined. Section 5.2 presents the model specification and methodology utilised in analysing the monetary effect of education on poverty reduction. The model specifications of non-monetary returns to education and the methodologies are discussed in section 5.3, followed by data and variable definitions in section 5.4. The empirical results are presented in section 5.5 with conclusions noted in the final section.

5.2 Role of Education on Poverty Reduction: Monetary Model Specification and Methodology

The causal relationship between education and income earnings has been one of the most heavily and carefully explored subjects in the empirical literature of labour economics.⁶⁵ The empirical and theoretical difficulties in regard to the analysis of such a relationship have been approached with a remarkable variety of econometric tools on diverse data sets. A well known problem is that it is difficult to isolate the causal impact of additional education on earnings (Gujarati, 1995, 1999; Stanovnik, 1997; Wooldridge, 2003). Nevertheless, there are important reasons as to why economists and policy makers are interested in obtaining accurate measures of the earnings premium associated with acquiring more education. From private returns viewpoint, under certain conditions, it provides a measure of the return to investment in additional to schooling. From a social point of view, the returns to education could give an indication of the relative scarcities of people with different levels of education and hence it may provide a guide for educational policies (Psacharopoulos and Ng, 1994).

The underlying monetary model of education used in the present study is associated with Mincer's (1974) wage function. Model extension has been made to control for a number of other variables that relate to the personal characteristics rather than just schooling factors. This semi-logarithmic framework applied to the model takes the following form:

⁶⁵ See Card (1999) for a comprehensive review.

$$\ln Y_i = f(S_i, X_i, Z_i) + u_i \quad (5.1)$$

The dependent variable of equation (5.1) is the logarithm of the total income of the household, which is described as $\ln Y$. It is appropriate as information for all households are available to analyse rather than working with employed persons only. Moreover, using the log of the total household income also fits the purpose of addressing poverty conditions that are not determined exclusively by labour income of individuals, but by any available income for the household as a whole. Other variables included in the model are as follows: S is the completed years of schooling of the household head i ; X is a vector of characteristics of the head of household i ; Z_i is a vector of characteristics of the household i ; u is a random error term that captures unobserved characteristics; and i is $1, \dots, N$, households.

The specification of equation (5.1) is further classified into two functional forms that estimate the monetary effects of education on poverty reduction. The first functional form takes the following specifications:

$$\ln THAI_i = \beta_0 + \beta_1 School_i + \beta_2 Age_i + \beta_3 Age_i^2 + \beta_4 Female_i + \beta_5 Ethnicity_i + \beta_6 Children_i + \beta_7 Rural_i + u_{1i} \quad (5.2)$$

$$\ln THAI_i = \alpha_0 + \alpha_1 PRIM + \alpha_2 SEC + \alpha_3 TER + \alpha_4 Age_i + \alpha_5 Age_i^2 + \alpha_6 Female_i + \alpha_7 Ethnicity_i + \alpha_8 Children_i + \alpha_9 Rural_i + u_{2i} \quad (5.3)$$

Where $\ln THAI$ is the logarithm of total household annual income;
School is the household head's completed years of schooling;
PRIM is the dummy variable for household head with primary education;
SEC is the dummy variable for household head with secondary education;
TER is the dummy variable for household head with tertiary education;
Age is the household head's labour market experience;
Age2 is the squared of the household head's experience;
Female is the dummy variable that represents the female household head;
Ethnicity is the dummy variable that takes value of 1 if the household head is Indo-Fijian and 0 is Fijian;
Children is the number of children in the household⁶⁶;
Rural is dummy variable for the households live in the rural areas;
 u_{1i} and u_{2i} are random error terms; and
 i is $1, \dots, N$, households.

⁶⁶ Children are defined in the present study are these who are 14 years of age or under.

The second specific functional form of the monetary model for the education estimates (equation 5.3) is based on disaggregated returns of schooling (i.e. primary, secondary and tertiary level of education). The term $\beta_1 School_i$ in equation (5.2) is replaced by dummy variables for various levels of education, i.e. *primary* (1-8 years), *secondary* (9-13 years), *tertiary* (tertiary education, 13 years plus).

The dependent variable in equations (5.2) and (5.3) is total household income rather than individual's wages seen in Mincer's log wage equation that avoids the potential biases and limitations of the standard Mincer's wage equation. The major problem frequently discussed in the literature arises from the omitted variable bias and measurement error as noted for the income variables (Gujarati, 1995, 1999; Stanovnik, 1997; Wooldridge, 2003).⁶⁷ Wooldridge (2003) claims that one striking feature of the standard Mincer's wage equation is the problem of missing variables. In addition, in the cross-sectional studies the years of schooling and wages have not been able to identify the pure impact of income from the effects of unobserved characteristics (such as family background, school quality, individual ability and other factors) that may be correlated with income. The problem of omitted variable can be solved by introducing an appropriate variable as a proxy for the unobserved factors (Blackburn and Neumark, 1992; Gujarati, 1995, 1999; Stanovnik, 1997; Wooldridge, 2003), such as ability, family background or exogenous influences on schooling decisions.⁶⁸

Another issue in the measurement error problem that may generate downward bias in the estimated effects of education on income outcomes is relevant when these variables are correlated with household income (such as family background and community characteristics). Moreover, according to the theoretical assumption an individual makes his or her schooling decisions based on their expected returns. Thus, if the return to

⁶⁷ For instance, Stanovnik (1997) and Wooldridge (2003) argue that the standard log wage equation does not include any measure of ability. Since ability and schooling are positively correlated, omitting measures of ability would result in biased upward schooling coefficients.

⁶⁸ For example, Blackburn and Neumark (1992) uses IQ scores as a proxy variable for ability in the standard log wage equation in measuring the rates of return to education in the United States. They find that the estimated return to education without the proxy variable (i.e. IQ) is 6.5 percent, and the return to education falls to 5.4 percent when IQ is added to the log wage equation. According to Blackburn and Neumark (1992), this 1.1 percent decline in the return to education is accounted for omitted ability bias. Similar evidence is found in Hernstein and Murray's (1994; cited in Wooldridge, 2003) work, which shows the return to education falls after adding the proxy variable of IQ to the log wage equation. They also find a significant positive effect of IQ on wage earnings after controlling for several factors. Based on their observation, they claimed that although the effect of education on earning is not as large as originally estimated, education still is an important determinant of increasing earnings.

education changes so does the educational investment decision, then schooling and income are two simultaneously determined variables.

The choice of years of schooling for an individual cannot necessarily be regarded as independent of the expected earnings of that person. Aside from questions of ability, if earnings are extremely variable, then current earnings may dominate future earnings and the household may choose to reduce schooling when labour market prospects are buoyant. In this case the Ordinary Least Square (OLS) coefficient on schooling would be a downward biased estimator of the true return (Card, 1999). To solve the problem of endogeneity generally encountered in these estimations are to use instrumental variables for schooling (Angrist and Krueger, 1991; Card, 1993; Harmon and Walker, 1995; Wooldridge, 2003). Harmon and Walker (1995) exploit the exogenous changes in the distribution of education of the individuals due to an increase in minimum school-leaving age in the United Kingdom. Angrist and Krueger (1991) use the season of birth of individuals as an instrumental variable for schooling.⁶⁹ Card (1993) considers the distance to school as an instrumental variable for school attainment. He finds that individuals who live closer to an educational institution are more likely to attend school than those living far away. A recent study by Zuluaga (2007) includes two instrumental variables in exploring exogenous variations on the schooling attendance of individuals in Colombia. (i.e. the change in minimum school-leave age and effect of schooling of young parenthood).⁷⁰

In line with Zuluaga (2007) the present study utilises exogenous variations on schooling attendance of the individuals in the case of Fiji. The first instrument variable reflects the educational expansion that Fiji experienced since the 1970s. According to the *2000 Education Commission Report*, the Government of Fiji introduced tuition-free education since 1973 for primary school class 1 intake (Ministry of Education, 2000). In this regard, dummy variable (*PRIMFree1973*) is created to identify the exogenous influence on schooling decisions resulting from the free primary education scheme. The second

⁶⁹ They argue that due to the compulsory school attendance laws affect in all states across the US, students who are born early in the year generally begin school at an older age than students born at the end of the year. Thus, students who are in the first age group reach school-leaving age earlier and may drop out after completing less schooling than students from the second age group.

⁷⁰ Zuluaga (2007) uses a dummy variable to identify individuals that have become household heads before reaching the age at which secondary school is culminated. She finds these two instrumental variables are significant and have positive and negative signs, respectively.

instrumental variable captures the impact of schooling of young parenthood by creating a dummy (YP_i) to identify individuals that have become head of households before reaching the age at which secondary school is normally culminated.

The third instrumental variable reflects the impact of school attendance of the head of household as the result of their physical or mentally underprivileged. It has been acknowledged that people with disabilities are more likely to remain in poverty (as estimated in chapter 4 that the possibility of remaining in basic needs poverty is around 9.2 percent and 2.8 percent in the food poverty) and also lack of access to employment and education. It has been estimated that nearly 90 percent of children with disabilities in developing countries do not attend school, and the global literacy rate for adults with disabilities is as low as 3 percent and 1 percent for women with disabilities in 1998 (UN, 2009). An estimated 386 million of the world's working-age are disabled in 2008, claims the International Labour Organisation (ILO). Unemployment among the disabled is as high as 80 percent in some countries, and often the employers assume that persons with disabilities are unable to work. A dummy variable (*Disable*) is utilised to identify whether the head of the household had withdrawn from school or less schooling years as a result of the disabilities. To overcome the potential problem of endogeneity and obtain consistent estimated coefficients, equation (5.2) is estimated using the two-stage least square (2SLS) regression technique. The model has the following form:

$$School_i = \delta_0 + \delta_1 PRIMFree1973_i + \delta_2 YP_i + \delta_3 Disable_i + \delta_4 Age_i + \delta_5 Age_i^2 + \delta_6 Female_i + \delta_7 Ethnicity_i + \delta_8 Children_i + \delta_9 Rural + e_i \quad (5.4)$$

Where *School* is the household head's completed years of schooling;

PRIMFree1973 is dummy variable that measures the impact of the 1973 tuition-free scheme;

YP is the dummy variable that captures the impact of becoming young parenthood;

Disable is dummy variable that measures the impact of the school attendance;

Age is the household head's labour market experience;

Age2 is the square of the household head's experience;

Female is the dummy variable for the household head being female;

Ethnicity is the dummy variable that takes value of 1 if the household head is Indo-Fijian and 0 is Fijian;

Children is the number of children in the household;

Rural is the dummy variable for the household living in the rural areas; and

e is the random error term.

It has been noted that the household heads' years of schooling and the error term may be correlated, i.e. $Cov(School_i, u_i) \neq 0$ (see Gujarati 1999, Wooldridge, 2003). On the other hand, instrumental variables in equation (5.4) are based on two assumptions, i.e. 1) *FreePrim1973*, *YP*, and *Disable* are uncorrelated with u_i (see equation (5.2)); and 2) the instrumental variables are exogenous in equations (5.2), which may be correlated with years of schooling (Gujarati, 1995, 1999; Wooldridge, 2003).

In estimating the poverty conditions in the case of Fiji, it is useful to measure the effects of education for different quantiles of the response variable (i.e. household income distribution) to distinguish the impact by income quantile. In this regard, the ordinary least square (OLS) regarded to capture only the relationship between covariates and the conditional mean of the dependent variable (Gujarati, 1995; 1999; Wooldridge, 2003). On the contrary, the quantile regression econometric technique captures the relationship between covariates and any conditional quantile of the response variable (Koenker and Bassett, 1978).⁷¹ The quantile regression technique also allows to draw attention on the lowest and highest household income groups and to estimate the returns to schooling for individuals at different quantiles of the conditional distribution of earnings which the present study views as reflecting the distribution of unobserved ability.

The quantile regression estimates the quantile-specific effects that not just describe the impact of covariates on the centre but also on the tails of the outcome distribution (Koenker and Hallock, 2001). Thus, this study measures level of these effects. The effect of education on the low tail of household income distribution will be of more interest than the effects of education on the mean of the distribution. Therefore, the core interest in this section is to obtain quantile regression estimates for equations (5.2) and (5.3) to empirically investigate the monetary effect of education on poverty reduction. The next section discusses the non-monetary model of education and health in reduction poverty.

⁷¹ The quantile regression technique was first introduced by Koenker and Bassett in 1978, which has been used extensively in many empirical studies (e.g. Portnoy, 1991; He and Shao, 1996; Portnoy and Koenker, 1997; Koenker and Hallock, 2001; Koenker, 2005). They note that OLS regression is a useful tool for summarising the average relationship between the outcome variable of interest and a set of regressors, based on the conditional mean function, $E(y | x) = \beta X + u$. However, this provides only a partial view of the relationship whereas the quantile regression technique provides complete information about the relationship between the outcome y and the regressor X at different points in the conditional distribution of y .

5.3 Role of Education and Health on Poverty Reduction: Non-monetary Model Specification and Methodology

The influence of education on poverty goes beyond its impact on income and wages. There are certain decisions and the behaviour of people that might have changed accordingly as the level of education increases, which in turn allow people to avoid or escape from poverty. In particular, education enables people to make more informed decisions that increases the probability of success in reaching their basic needs, such as health, housing, water and sanitation, etc (Sen, 1985; 1999). In this section the effects of education on two different non-income dimensions of poverty are discussed, namely, health (i.e. whether households engage in health prevention activities) and housing conditions (i.e. whether households have access to better sanitation facilities such as safe water supply and flush toilet).

Education, Health and Housing

It has been argued that ill health can be both a consequence and cause of poverty, and is closely linked to education (Todaro and Smith, 2006). For instance, in the case of a vulnerable household, payment for health services or illness by the income earner leads to a consequent loss of income that results people ending up being poor or falling even deeper into poverty. High fertility, resulting in large households, restrains the income possibilities for women, and malnutrition can follow as resources become scarce. The financial resources normally required to pay for healthcare, food, safe drinking water and good sanitation are not available in poor households. According to the World Bank (2003) poorer regions tend to have health facilities that are of low quality and lack many basic medicines. They are run by poorly trained staff and the weak institutions in these communities tend to have social norms that are not conducive to maintaining good health. Raising the health level in a country or community may improve the return to investment in education, increase the productivity, and as a result contribute to economic growth.

A large number of health economics studies have also established that schooling is associated with better health outcomes, even when the factors such as income are controlled for. For instance, Friedman (2002) finds that a well-educated person is more likely to select the right food needed to attain proper levels of nutrition even with little

money. Also it has been found that a person's level of schooling positively and significantly affects his or her own and family health status, and on aggregate level, more education decreases mortality (Auster, Leveson, and Sarachek, 1969; Fuchs, 1980; Leigh, 1981; Lee, 1982). A study by Lee (1982) finds that, in South Asia, women with education are more likely involved in the immediate care of children and in the critical decisions about food, sanitation and general nurturing, all of which influence the children's health and development. More importantly, education not just enlarges the possibilities for an individual to engage in behaviours that promote health but also makes them aware of the importance of health risks coping strategies. Furthermore, to the extent that better health has externalities (such as reducing contagious disease or influencing the utility of others), some of the benefits of improved health will spill over into the community (Grossman, 2005; Sen and Rout, 2007; Zuluaga, 2007).

Grossman (2005) examines the influence of education on non-market outcomes. He finds that the relationship between the levels of schooling and health demand is significantly correlated, i.e. an increase in extra year of schooling will increase the quantity of health demand by 0.21 percent. Sen and Rout (2007) also find a similar correlation between the levels of schooling and health in the case of Urban Orissa state in India. Their main findings are as follows: 1) well-educated individuals experience better health than the poor educated; and 2) low educational attainment is associated with higher rate of infectious diseases and many chronic non-infectious diseases. Zuluaga (2007) finds that the level of education plays an important role in modifying the behaviour and the decisions of individuals in regard to their health.⁷² She notes that as labour activities are the main asset of the poor people, any factors (such as direct investment in health, indirect investment in health through educational investment) favourably affects the quality of such an asset, which happens to be relevant in fighting poverty. Health is important not only for its instrumental value, but also for its intrinsic value (Zuluaga, 2007). In other words, to be healthy is not only an end in itself, but also a means to reach other goals.

In addition to that, mothers' education plays a decisive role in raising nutritional levels in rural areas. The level of child stunting, a valid indicator of child under nutrition, is

⁷² This effect is separated from the significant income effect.

much lower with higher education attainment of the mother at every income levels. Alderman and Garcia (1992) find that the incidence of child stunting would be reduced to 47.1 percent from 63.3 percent if women were to attain primary-level education in the case of Pakistan. They note that this is almost ten times the projected impact of a 10 percent increase in per capita income.

To analyse the non-monetary effects of health and education for poverty reduction, the relationship between these factors and non-monetary outcomes is described as follows:

$$P_{ij} = f(E_i, y_i, X_i) \quad i = 1 \dots N \quad (5.5)$$

Where P is the probability of the household i to reach the basic needs j ;

E is a vector of educational variables inside the household i ;

y is the per capita income of the household i ;

X is a vector of characteristics of the head of the household i ; and

i is $1, \dots, N$, households.

In the light of the analysis derived from equation (5.5), two basic needs indicators used in the non-monetary model of education are health prevention and housing conditions. The framework of equation (5.5) will be utilised for analysing two hypotheses as follows: 1) whether education has a positive influence on the tendency of people to engage in health prevention such as acquiring for life-accident insurance policy or medical and therapeutic appliances; and 2) whether the higher the education levels of the head of the household help his or her family to reach the basic needs such as improving their housing conditions (i.e. safer water supply and flush toilet).

As per the hypotheses related above equation (5.5) tests if the non-monetary impact of the household head's education attainment, on satisfying the households basic needs, is statistically significant. It would then, be interesting to examine which levels of education have contributed more or increases the likelihood of improved housing conditions. Given that non-monetary models of education (equations 5.6, 5.7 and 5.8) have qualitative dependent variables that take the value of 1 and 0 (i.e. *HlthPVT* and *Sanitation*), the logitics regression technique has used to estimate the equations. The equations identify how the independent variables affect these qualitative dependent

variables.⁷³ The independent variables are *School*, *PRIM*, *SEC*, and *TER* that explain the different levels of educational attainment of the household heads'. *THAI* defines the total household annual income. Age and female are two characteristics that determine health prevention and sanitation. Also ethnicity defines two major ethnic groups in Fiji, namely, Fijian and Indo-Fijian. The household impact is also identified if it is in the rural area. The hypothesis of education-health nexus is as follows:

$$HlthPVT_i = b_0 + b_1School_i + b_2\lnTHAI_i + b_3Age_i + b_4Female_i + b_5Ethnicity_i + b_6Rural_i + v_{1i} \quad (5.6)$$

Equations (5.7) and (5.8) below examine the relationship between the households housing conditions and education of the head of the household.

$$Sanitation_i = c_0 + c_1School_i + c_2\lnTHAI_i + c_3Age_i + c_4Female_i + c_5Ethnicity_i + c_6Rural_i + v_{2i} \quad (5.7)$$

$$Sanitation_i = d_0 + d_1PRIM_i + d_2SEC_i + d_3TER_i + d_4\lnTHAI_i + d_5Age_i + d_6Female_i + d_7Ethnicity_i + d_8Rural_i + v_{3i} \quad (5.8)$$

Where *HlthPVT* is the dummy variable that represents whether or not the household engages in health prevention activities such as acquiring life-accident insurance, medical and therapeutic appliances;

Sanitation is the dummy variable that captures whether or not the household has access to metered water supply and flush toilet.

School is the household head's completed years of schooling;

PRIM is the dummy variable for household head with primary education;

SEC is the dummy variable for household head with secondary education;

TER is the dummy variable for household head with tertiary education;

lnTHAI is the log of total annual income of household;

Age is the age of the household head;

Female is the dummy variable that identifies the female household head;

Ethnicity is the dummy variable that takes the value of 1 if it is indo-Fijian and 0 if it is Fijian;

Rural is the dummy variable for the household living in the rural areas;

v_{1i}, v_{2i}, v_{3i} are random error terms; and i is 1, ..., N, households.

To examine the determinants of health prevention and affiliation to better sanitation in relation to education (discussed above), the health prevention and access to sanitation qualitative dependent variables are estimated as follows:

⁷³ See Gujarati (1995, 1999). The OLS and quantile regression techniques require quantitative, continuous, unbounded dependent variables.

$$L_i^{HlthPVT} = \ln \left[\frac{P_i^{HlthPVT}}{1 - P_i^{HlthPVT}} \right] = Z_i^{HlthPVT} \quad (5.9)$$

and

$$L_i^{Sanitation} = \ln \left[\frac{P_i^{Sanitation}}{1 - P_i^{Sanitation}} \right] = Z_i^{Sanitation} \quad (5.10)$$

Where $L^{HlthPVT}$ is the odds in favour of engaging in health prevention;

$L^{Sanitation}$ is the likelihood of a household has access to metered water supply and flush toilet;

$P/(1-P)$ is the odds ratio;

$\ln[P/(1-P)]$ is the natural log of $P/(1-P)$ regarded as the logit coefficient.

As the value of P in above equations goes from 0 to 1 (i.e. as Z varies from $-\infty$ to $+\infty$), the logit L value goes from $-\infty$ to $+\infty$. That is, although the probabilities (of necessity) lie between 0 and 1, the logits are not so bounded (Gujarati, 1995). Before estimating the equations discussed here, the next section defines the data and variables used in this study.

5.4 Data and Variable Definition

In the present study, various socio-economic and demographic indicators are used, as suggested in the literature, to estimate the role of education and health in poverty reduction. The variables are from the HIES 2002/2003 dataset that are used for modelling purposes to measure the effects of these factors on poverty reduction. A total of 4,977 Fijian and Indo-Fijian households are included in this analysis. Variables and description of each variable used in equations (5.2, 5.3, 5.4, 5.6, 5.7 and 5.8) are presented in Table 5.1.

Table 5.1 Variable Description and Definitions

Variables	Definition
<i>Dependent Variables</i>	
<i>lnTHAI</i>	Natural log of total household income ⁷⁴
<i>HlthPVT</i>	Household engages in health prevention (Yes = 1, No = 0)
<i>Sanitation</i>	Household has access to metered water supply and flush toilet (Yes = 1, No = 0)
<i>Explanatory Variables</i>	
<i>Age</i>	Age of the household head
<i>Age2</i>	Age of the household head squared
<i>Female</i>	Dummy variable (Female household head = 1, Male household head = 0)
<i>Ethnicity</i>	Dummy variable (Indo-Fijian household = 1, Fijian household head = 0)
<i>Children</i>	Number of children ages of 14 or under
<i>Rural</i>	Dummy variable (Rural areas = 1, Urban areas = 0)
<i>PRIM</i>	Dummy variable (Household head with primary education = 1, otherwise = 0)
<i>SEC</i>	Dummy variable (Household head with secondary education = 1, otherwise = 0)
<i>TER</i>	Dummy variable (Household head with tertiary education = 1, otherwise = 0)
<i>PRIMFre e1973</i>	Dummy variable (Household head in the 1973 tuition-free scheme = 1, Otherwise = 0)
<i>YP</i>	Dummy variable (Young parenthood = 1, otherwise = 0)
<i>Disable</i>	Dummy variable (Household head is disabled = 1, otherwise = 0)
<i>u_i, e_i, v_i</i>	Error terms

5.5 Empirical Results

Education and Income: Results for the Monetary Model

The first set of results is reported for the monetary model that examined the relationship between education and income for poverty reduction. The results are reported in Table 5.2. Three instrumental variables in schooling equation (5.4) are all statistically significant. This implies that young parenthood (*YP*) and being disabled (*Disable*) have negative effects on acquiring further education, while the free primary education scheme tends to encourage more children to attain school. Under the Two-stage Least Square (2SLS) approach, it shows that an additional year of schooling of the head of the household (*School*) increased total income of the household income by around 3.5

⁷⁴ Total household income can reflect the household's standard of living characteristics, for example the ability to purchase expensive durable household goods. However, it may suffer from the weakness that there may be larger (or smaller) numbers of income earners in each household, and the same income may need to be spread out over a larger (or smaller) number of occupants. It is therefore important to adjust for household size (Narsey, 2006).

percent. It is worth noting that in the literature, there are several estimations of the monetary returns to education for different countries. However, they mainly refer to the wage and not the household income. For example, Trostel, Walker and Woolley (2002) estimated the returns to education for 28 countries and found a large variation in the estimated rates of such returns. The highest estimated rate of return to education of females (19.2 percent in the case of Philippines) is 10 times higher than the lowest estimate (1.9 percent in the Netherlands), while the highest estimate for males (17.4 percent in Northern Ireland) is 8 times greater than the lowest estimate (2.3 percent in Norway). The estimated rate of returns to education presented in Table 5.2 are comparable with those for Czechoslovakia (4.5 percent), East Germany (4.4 percent) in Trostel et al.'s (2002) results, though the instrumental variables were different (i.e. father's, mother's and spouse's education as IV estimates for education).

Table 5.2 Monetary Impact of Education on Poverty Reduction

Dependent Variable: Log of Total Household Annual Income (<i>lnTHAI</i>)				
Variable	IV Estimates		Reduced Form OLS	
	2SLS	t-statistics	OLS	t-statistics
<i>School</i>	0.0349**	1.31		
<i>Age</i>	0.0332***	7.25	0.0318	0.93
<i>Age2</i>	-0.0003***	-3.44	-0.0019***	-5.54
<i>Female</i>	-0.2250***	-4.97	-1.3091***	-5.87
<i>Ethnicity</i>	-0.0994*	-1.64	-2.1570***	-13.83
<i>Children</i>	0.0043	0.73	-0.1122***	-2.79
<i>Rural</i>	-0.3928***	-11.5	-1.0433***	-6.87
<i>PRIMFree1973</i>			0.2971*	1.08
<i>YP</i>			-6.0476***	-2.58
<i>Disable</i>			-1.7802***	-3.91
<i>Constant</i>	8.15***	0.44	16.55***	19.84
<i>R-Square</i>	0.1941		0.1727	
<i>F-Statistic</i>	132.96***		98.13***	
<i>Observation</i>	4977		4977	

Notes: ***, **, * significance at the one, five and ten percent, respectively.

In contrast, the quantile regression approach suggests much more interesting results than the linear regression technique based on the relationship between the covariates and the conditional mean of the dependent variable (i.e. the log of total household annual income, *lnTHAI*). The estimations of the effects of explanatory variables in equations (5.2) and (5.3) are presented in Table 5.3 and 5.4 below. The overall empirical results support the hypothesis that education plays an important role in poverty reduction.

Table 5.3 Results for Total Education (i.e. Years of Schooling) Quantile Regression

Variable	10 th Quantile	25 th Quantile	50 th Quantile	75 th Quantile	90 th Quantile
<i>School</i>	0.0335*** (0.0034)	0.0352*** (0.0023)	0.0357*** (0.0027)	0.0350*** (0.002)	0.0340*** (0.0029)
<i>Age</i>	0.0482*** (0.0087)	0.0358*** (0.0064)	0.0342*** (0.0051)	0.0331*** (0.0064)	0.0237*** (0.0082)
<i>Age2</i>	-0.0004*** (0.0001)	-0.0003*** (0.0001)	-0.0003*** (0.0001)	-0.0002*** (0.0001)	-0.0001* (0.0001)
<i>Female</i>	-0.3282*** (0.0620)	-0.2714*** (0.0443)	-0.2059*** (0.0408)	-0.1122*** (0.0358)	-0.1809*** (0.0459)
<i>Ethnicity</i>	-0.1174*** (0.0344)	-0.0982*** (0.0247)	-0.1349*** (0.0306)	-0.1140*** (0.0301)	-0.0994*** (0.0373)
<i>Children</i>	0.0099 (0.0111)	0.0130* (0.0066)	-0.0044 (0.0073)	-0.0007 (0.0075)	-0.0081 (0.0097)
<i>Rural</i>	-0.3977*** (0.0357)	-0.3809*** (0.0236)	-0.3610*** (0.0298)	-0.3933*** (0.027)	-0.3796*** (0.0362)
<i>Constant</i>	7.0843*** (0.2068)	7.6520*** (0.1469)	8.1185*** (0.1320)	8.5635*** (0.1578)	9.1505*** (0.1814)

Notes: ***, **, * significance at the one, five and ten percent, respectively. Standard errors are in parentheses.

Table 5.4 Results for Disaggregated Education Level Quantile Regression

Variable	10 th Quantile	25 th Quantile	50 th Quantile	75 th Quantile	90 th Quantile
<i>PRIM</i>	0.1597* (0.0866)	0.0349 (0.0584)	-0.0484 (0.0575)	-0.0296 (0.0558)	-0.0438 (0.0784)
<i>SEC</i>	0.2497*** (0.0861)	0.1359*** (0.0566)	0.0481 (0.0524)	0.0577 (0.0511)	0.0501 (0.071)
<i>TER</i>	0.4879*** (0.08)	0.4161*** (0.0549)	0.3983*** (0.0549)	0.4704*** (0.0494)	0.4454*** (0.0731)
<i>Age</i>	0.0504*** (0.0091)	0.0424*** (0.0071)	0.0417*** (0.0048)	0.0455*** (0.0058)	0.0372*** (0.0091)
<i>Age2</i>	-0.0005*** (0.001)	-0.0004*** (0.0001)	-0.0003*** (0.0001)	-0.0004*** (0.0001)	-0.0002** (0.0001)
<i>Female</i>	-0.3044*** (0.0727)	-0.2674*** (0.0433)	-0.2209*** (0.0361)	-0.1469*** (0.0405)	-0.2198*** (0.0501)
<i>Ethnicity</i>	-0.1262*** (0.0375)	-0.1080*** (0.0258)	-0.1572*** (0.0279)	-0.1008*** (0.0254)	-0.0742** (0.0352)
<i>Children</i>	0.0101 (0.0102)	0.0092 (0.0064)	-0.0027 (0.0068)	0.0026 (0.0054)	0.0065 (0.0088)
<i>Rural</i>	-0.3841*** (0.0334)	-0.3375*** (0.0250)	-0.3247*** (0.0262)	-0.3259*** (0.0287)	-0.3575*** (0.0352)
<i>Constant</i>	7.1178*** (0.2215)	7.6620*** (0.1819)	8.1634*** (0.1299)	8.3907*** (0.1495)	8.9405*** (0.2158)

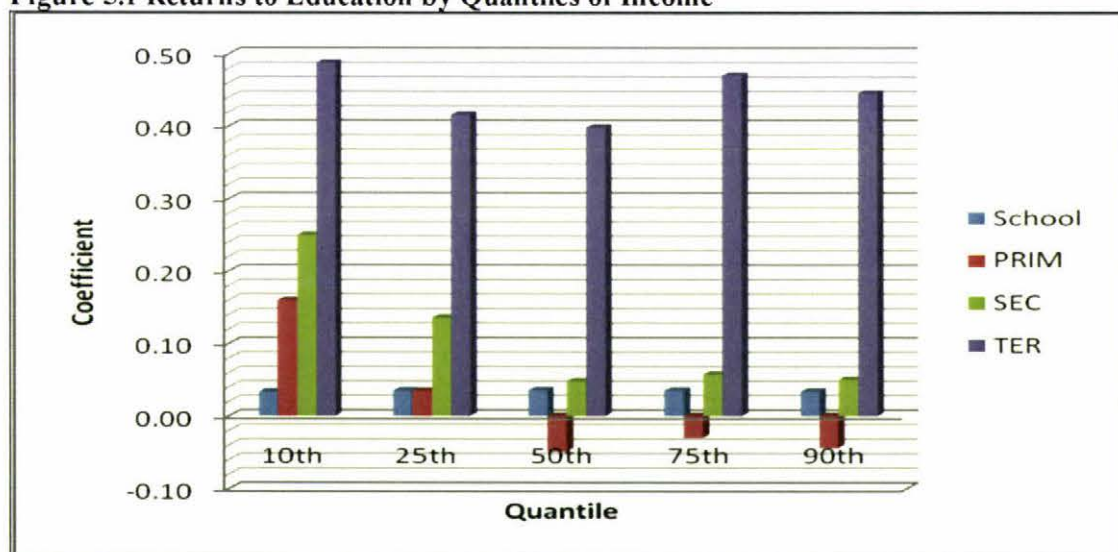
Notes: ***, **, * significance at the one, five and ten percent, respectively. Standard errors are in parentheses.

As seen in Table 5.3, the coefficient for years of schooling (*School*) is statistically significant and positive for all income quantiles, which indicates that an extra year in schooling increases the household income from 3.35 percent in the lowest quantile to

3.4 percent in the upper tail of the income group. This implies that people from the lowest quantile to the highest quantile all benefit from the additional skills obtained through formal education. In addition, the findings from the estimations of equation (5.3) reveal an interesting observation that the poorest people benefit more from obtaining formal education. For instance, there is a 15.97 percent increase in income if people from the lowest quantile have completed primary education, 24.97 percent increase in income if secondary education is completed, and 48.79 percent increase in income if tertiary education is obtained (see Table 5.3 and 5.4).

Figure 5.1 shows that returns to tertiary education on earnings are significantly higher than the returns to secondary and primary education for all quantiles. The returns to primary and secondary education have less impact on earnings and become insignificant as the income quantile level increases. In particular, the returns to primary education became statistically insignificant and negative from 25th quantile onward. This suggests that primary education is the initial stage for lifting poorest people out of poverty but it can not sustainably prevent people with primary education falling into poverty when the unseen events occur in the future. Higher years of schooling (School) are important to lift people out of poverty and to prevent falling into poverty.

Figure 5.1 Returns to Education by Quantiles of Income



For all quantile groups, the coefficient of gender (*Female*) is negative and significant. This means that households whose head is a women are more likely to have less income. However, such a disadvantage slightly decreases as quantile of the income

distribution increases. The result suggests that the disadvantage of female heads with respect to male heads belonging to the same income quantile is less severe when comparing households from the upper tail of income distribution. The coefficient of household head's age (*Age*) is significant and positive with household poverty reduction for all quantiles. The results of both coefficients (i.e. *Female* and *Age*) are consistent with the hypothesis presented in chapter 4 that the age and gender of the head of the household are important determinants of poverty (Table 5.3 and 5.4).

The estimated coefficient of *Ethnicity* is negative and significant for all quantiles (Table 5.3 and 5.4), which implies that household heads being Indo-Fijian are more likely to have less income than the Fijian household heads, though the coefficient of *Ethnicity* decreases as the income quantile increases. The coefficient of the number of children less than 15 years old is insignificant, probably due to the fact that children normally do not contribute to total income of the households. The variable *Children* has a positive sign especially for the lower quantiles, it can be said that with more children there is a higher need for disposable income. This in turn motivates parents to increase their labour supply. On the other hand, children can be potential helpers not only for the family business but also for the domestic duties which may reduce the level of poverty through parent's larger participation in the work force.

As discussed in chapter 4 that households in the rural areas are more likely to be associated with the incidence of poverty than urban households, this is also found here where the households living in the rural areas tend to have less income than in the urban areas. The households in the lowest income quantile have a higher level of disadvantage than those in the upper tail of the income distribution. According to Narsey (2008), he notes that the poorest group in Fiji is the rural Indo-Fijian households, this is consistent with the findings reported above (i.e. *Ethnicity*).

Education, Health and Housing: Results for the Non-Monetary Model

The results for the education-health nexus are presented in Tables 5.5 and 5.6. As expected, education has a positive and significant influence on the tendency of people to engage in health prevention activities (i.e. buying a life and accident insurance policy or medical and therapeutic appliances) and decision-makings over households living arrangement (i.e. living tenure with better sanitation facilities, such as safe water supply

and flush toilet). The variable *School* provides a contribution of 3.9 percent in increasing the likelihood of household's health prevention activities (Table 5.5), and 0.65 percent in increasing the likelihood of better housing conditions (Table 5.6). Moreover, Table 5.6 indicates that households whose heads with tertiary education (12.07 percent) have greater possibility to live in a tenure with a safer water supply and flush toilet, compared to these whose heads with secondary education (5.08 percent) and primary education (3.69 percent). Nevertheless, the results for education-health nexus in the case of Fiji support the view by Friedman (2002) that knowledge of the functioning of the human body and of certain environmental risks and external shocks make people aware of the relevance of acquiring regular prevention habits.

Table 5.5 Logit Model of Education-Health Nexus: Health Prevention
Dependent Variable: Health Prevention (HlthPVT)

	Coefficient	Marginal Effect
<i>School</i>	0.0303***	0.0039
<i>lnTHAI</i>	1.0138***	0.1314
<i>Age</i>	0.0083***	0.0011
<i>Female</i>	0.1023*	0.0129
<i>Ethnicity</i>	0.8752***	0.1145
<i>Rural</i>	-0.7711***	-0.1038
<i>Constant</i>	-8.5168***	
<i>No. of observation</i>	4977	
<i>LR $\chi^2_{(6)}$</i>	688.38	
<i>Log likelihood</i>	-2120.5911	
<i>McFadden R^2</i>	0.1396	
<i>Correctly predicted (%)</i>	80.89	
<i>H-L $\chi^2_{(8)}$</i>	24.68	

Notes: ***, **, * significance at the one, five, and five percent, respectively. The large and significant value of the Hosmer-Lameshow (H-L) test statistics implies a lack of fit for the data (Hosmer and Lameshow, 1989).

Although the impact of income on the probability of engaging in health prevention activities is also significant as shown in Table 5.5 and 5.6 (i.e. the possibility of obtaining life-accident insurance policy or buying medical and therapeutic appliances or choosing to live in a better living environment is statistically related to the higher household income), it should not belittle the separate effects of education levels (Table 5.6). The reason for this is that higher education level enlarges the possibilities of an individual to get a formal job, which facilitates his/her affiliation to the health prevention mechanism (i.e. obtaining life-accidence insurance policy or buying medical and therapeutic appliances) in the case of unseen circumstance that could provoke a risk/his or her income livelihood. Education also makes an individual aware of the

importance of staying healthy and accessing to better sanitation in order to cope better with health risks. Nevertheless, even after controlling for income, the level of education (i.e. *PRIM*, *SEC*, *TER*) plays an important role in modifying the behaviour and the decisions of people with respect to their health. As labour is the main asset of poor household, any factor that favourably affects the quality of such an asset (i.e. direct investment in health, indirect investment in health through educational investment) is relevant in reducing poverty. Moreover, as claimed by Todaro and Smith (2006), health is not only an end itself but also a means to reach other goals.

Table 5.6 Logit Model of Education-Health Nexus: Sanitation

Dependent Variable: Access to Sanitation				
	Equation (5.7)		Equation (5.8)	
	Coefficient	Marginal Effect	Coefficient	Marginal Effect
<i>PRIM</i>			0.4903***	0.0369
<i>SEC</i>			0.6581***	0.0508
<i>TER</i>			1.4017***	0.1207
<i>School</i>	0.0760***	0.0065		
<i>lnTHAI</i>	0.7597***	0.0652	0.7571***	0.0649
<i>Age</i>	0.0103***	0.0009	0.0123***	0.0011
<i>Female</i>	0.2660**	0.0211	0.2513*	0.0200
<i>Ethnicity</i>	1.2645***	0.1123	1.2476***	0.1106
<i>Rural</i>	-3.0337***	-0.3387	-2.9828***	-0.3310
<i>Constant</i>	-5.4733***		-5.5896***	
<i>No. of observation</i>	4977		4977	
<i>LR $\chi^2_{(6)}$</i>	1818.4***		1831.73***	
<i>Log likelihood</i>	-1692.8993		-1686.2328	
<i>McFadden R^2</i>	0.3494		0.352	
<i>Correctly predicted (%)</i>	83.58%		83.54%	
<i>H-L $\chi^2_{(8)}$</i>	13.08		6.13	

Notes: ***, **, * significance at the one, five, and five percent, respectively. The large and significant value of the Hosmer-Lemeshow (H-L) test statistics implies a lack of fit for the data (Hosmer and Lemeshow, 1989).

Other explanatory variables in Tables 5.5 and 5.6 are all statistically significant and positive with the likelihood of engaging in health prevention mechanism and better sanitation. Households head by females are more likely in acquiring for life-accident insurance or medical and therapeutic appliances than the male household heads. The coefficient of *Female* shows a contribution of 1.3 percent (Table 5.5) and around 2 percent (Table 5.6) in increasing the likelihood of being engaged in health prevention mechanism and better sanitation.

The age of the household head is also an important determinant of health prevention and sanitation, though its marginal effect is less than 0.1 percent for all the estimated coefficients. The coefficient of *Age* suggests that household heads who belong to a higher age group (either for responsibility or obligation) tend to develop higher prevention habits than young household heads (who face less risk of acquiring illnesses).

The coefficients of *Ethnicity* are positive and significant in both Tables 5.5 and 5.6 that suggest that Indo-Fijian households tend to have higher possibility of engaging in health prevention activities and more likely to access to better sanitation. Also, the results indicate that there is an advantage for urban households in the possibility of engaging in health prevention activities and better sanitation. The possible explanation may be due to the fact that major healthcare and better housing facilities are mainly located in the two major islands and cities/towns. For the rural households, the tentative explanation is that rural households tend to have less access to infrastructure and social services such as education, well-equipped housing facilities and health prevention programmes compared to the urban households.

5.6 Conclusion

The chapter examines empirically the effects of education on poverty reduction by examining the hypotheses that returns to education are not limited to monetary impact on wages and income, but also there are relevant non-monetary returns resulting from the influence of education on the health behaviours of individuals. The empirical results suggest that the resources invested in education bring future returns to individuals, not only reflected in monetary earnings, but also in higher levels of satisfied basic needs. The results reflect that certain crucial decisions related to poverty conditions are positively influenced by education, particularly, education affects health, mortality, fertility, housing conditions and recreation.

The quantile regression technique is used to analyse the monetary educational effects, and the logit regression method highlights the non-monetary returns to education. The logit regression results of education-health nexus show that education has a positive and

significant influence on the tendency of the head of household to engage in health prevention mechanism and acquire for good housing conditions. In other words, the well-educated household heads are more likely: 1) to acquire for a life-accident insurance policy or medical and therapeutic products for themselves or their family members or both; and 2) to choose to live in the tenure which the metered water supply and flush toilet are installed. These direct effects may be due to the fact that education makes them aware of the importance of family health.

The quantile regression method applied to understand the lowest or highest tails in the distributional function of the dependent variable (i.e. household income), show the effects of education on the income of households vary between the lowest and the upper tails of the income groups. In general, people benefit from the additional skills obtained through formal education throughout all income quantiles. In particular, poorest people (i.e. in the lowest income quantile group) benefit more from obtaining formal education compared to the others in the higher income quantile group. The findings suggest that primary education is the initial stage for lifting poorest people out of poverty, but it cannot not sustainability prevent people with primary education falling into poverty when there are unseen events that occurred in the future, as the returns of primary education became statistically insignificant and negative from 25th quantile onward. On the other hand, the returns of tertiary education are significant and positive for all income quantiles.

Overall, the empirical results suggest that, in order for the poor to break the cycle of poverty, the policy makers and government should identify and remove barriers against students from the low-income families to pursue a higher learning and profession education. In other words, secondary, tertiary and/or professional levels of education and training should be provided to all, particularly, those in the poor households. It is also important to ensure access to a nationally and internationally recognised qualifications system to encourage a higher level of participation in the post-school education in Fiji. Special assistance both in education and health should be given to the rural households, as they have less access to infrastructure, social services and better housing.

Chapter 6

Inequalities in Fiji's Household Income Distribution 2002-03: Empirical Analysis

6.1 Introduction

Inequality has broadly been defined as the quality of being unequal or as the disparity of distribution or opportunity. In the economic context, inequality is studied as part of analysis covering poverty and welfare that measures the disparity between a percentage of population and the percentage of resources, i.e. income, consumption or some other welfare indicator or attribute of a population (Sen, 1973; Atkinson, 1970, 1983).

The issues of the distribution of income and wealth and the related phenomena of inequality and poverty have drawn great attention of economists and other social scientist, ranging from the issues of inter-factoral distribution of a nation's output and income to the issues of distribution of individuals or households (Chatterjee and Srivastav, 1992). Studies by Gini in 1912, Lorenz in 1905, Pigou in 1912 and Dalton in 1920 (cited in Chatterjee and Srivastav, 1992) are some of the earlier work that examined issues of inequality and measurements of inequality. Two main dimensions in the light of investigating inequality are technical and policy dimensions. The technical dimension of analysing inequality is considered as a subject of scientific enquiry and concerned with the choice of an appropriate inequality measure in the states of distribution, while policy dimension relates to the question of social justice inherent in the given distributional states.

It has been realised that measuring changes in inequality helps determine the effectiveness of social and economic policies aimed at reducing inequality, and generates the data necessary to use inequality as an important explanatory variable when designing these intervention policies (Chatterjee and Srivastav, 1992). It is this aspect, the poverty reduction and welfare improving impacts of reducing income inequality that are subject to empirical examination in this chapter. The empirical

analysis in this chapter involves examining the inequalities in the distribution of household incomes per Adult Equivalent (AE) in Fiji in using the Household Income and Expenditure Survey (HIES) 2002-03.

The statistical techniques applied to investigate the degree of inequality in household income involve the Gini coefficient, the Nelson Ratio, the concentration index as well as the Atkinson index. The rest of the chapter is organised as follows: section 6.2 provides a discussion on the theoretical aspects of measuring income inequality, and the associated model specifications. Section 6.3 provides a discussion on the methodological approach to the decomposition by income components, as well as the associated model specifications, while section 6.4 discusses data issues and assumptions made in the present study. Section 6.5 presents the empirical results and discussions, while the final section presents the conclusion of the study.

6.2 Theoretical Aspects of Measurement of Income Inequality

There are many ways of measuring income inequality, all of which have some intuitive or mathematical appeal.⁷⁵ In general, as suggested by the literature, a satisfactory inequality measure must meet the five key principles. That is, the *Pigou-Dalton Transfer Principle*, *Decomposability*, *Mean or Scale Independence*, *Population-Size Independence*, and *Anonymity*. The principle of *Anonymity* (also referred to as *Symmetry*) requires that the inequality measure to be independent of any characteristics of individuals other than their income or the welfare indicator whose distribution is being measured (Cowell, 1985).

The second axiom, the *Population-Size Independence*, requires the inequality indices to be invariant to replications of the population, for example, merging two identical distributions should not alter inequality. In other words, an equi-proportionate change in the number of people or households in each group should have the index unchanged (Dalton, 1920).

⁷⁵See Cowell (1995) for a detailed summary of a total of 12 measures of inequality.

The third axiom refers to the principle of the *Mean or Scale Independence*, which requires the inequality measures to be invariant to uniform proportional changes (Anand, 1983). That is, if each individual's income changes (i.e. when changing the annual income to monthly or weekly income or currency unit changes) by the same proportion then inequality should not change.

The principle of *Decomposability* requires the overall inequality to be related consistently to constituent parts of the distribution, i.e. "an inequality measure is said to be additively decomposable if the values of the within-group and the between-group inequality measures add up to that of the over-all measure" (Chatterjee and Srivastav, 1992, p. 7).

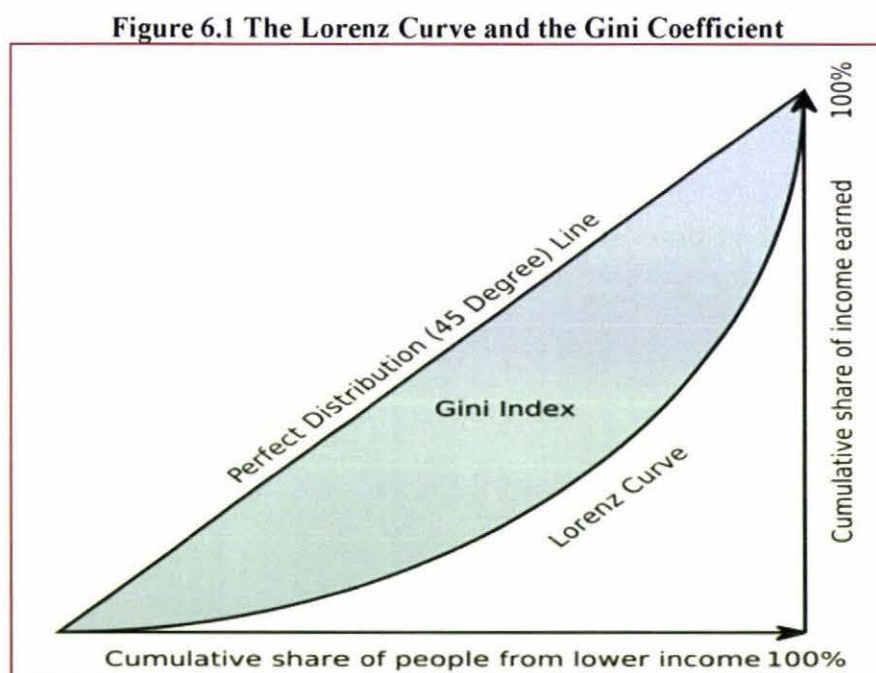
The final axiom that an inequality measure needs to meet is the *Pigou-Dalton Transfer Principle* (also referred to the *Pigou-Dalton* condition), which is initially proposed by Dalton (1920) following the earlier work by Pigou (1912). This principle requires the inequality measure to rise (or at least not fall) in response to a mean-preserving spread: an income transfer from a poorer individual (or group) to a richer individual (or group) should register as a rise (or at least not as a fall) in inequality and an income transfer from a richer to a poorer person (or group) should register as a fall (or at least not as an increase) in inequality.

Chatterjee and Srivastav (1992) suggest that, in a given distribution of income, the degree of inequality can be viewed and estimated by positive and normative measures. On the one hand, the positive measure of income inequality refers to measuring inequality without any reference to any notion of social welfare. Rather, a positive measure provides statistical information on what proportion of the population has what proportion of the income. Hence, the Gini coefficient or index is perhaps one of the most used positive measures of inequality (Jenkins, 1991; Chatterjee and Srivastav, 1992; Crowell, 1995). On the other hand, the normative measure starts from a formally derived social welfare function with implications for welfare gains and losses resulting from changes to the degree of inequality. The Atkinson index is the one of the normative measures that captures greater equality in the distribution of income as higher social welfare and vice versa (Atkinson, 1970).

In line with Chatterjee and Srivastav (1992), the positive measure consists (i.e. the measurement of the Gini coefficient along with the Nelson ratio) will be first discussed in this section followed by the discussion on the normative measure of inequality (i.e. the Atkinson index).

6.2.1 Positive Measures: The Gini Coefficient and the Nelson Ratio

The most familiar graphical tool for examining the distribution of income or consumption is the Lorenz curve, which is a plot of a cumulative percentage of the population from the poorest to the richest along the horizontal axis against the cumulative percentage of income received by the bottom x percent of the population up the vertical axis. As shown in the hypothetical Lorenz curve below, a diagonal line represents the perfect distribution line, and the greater the separation between the diagonal line and the Lorenz curve, the greater the inequality.



The Gini coefficient is closely associated with the Lorenz curve. It is the area between the curve and the 45-degree line as a fraction of 0.5, which is the total area under the 45-degree line. The Lorenz curve is unaffected by multiplying everyone's allocation by a positive number, and so it tells nothing about the mean of the distribution. Apart from this, all the information in the distribution is contained in the Lorenz curve, provided the

mean is known, it is possible to recover the density or distribution function from the Lorenz curve (Crowell, 1995; Campano and Salvatore, 2006).

Mathematically, the Gini coefficient is equal to the twice the area enclosed between the Lorenz curve and the perfect distribution line (Campano and Salvatore, 2006). For example, when there is perfect equality, the Lorenz curve is the perfect distribution line, and the value of the Gini coefficient is zero. However, when one member of the population holds all of the income, the value of the Gini coefficient is one.

The Gini coefficient (based on the Lorenz curve) is regarded as the most useful device for measuring income inequality. The reason for this is that, the Gini coefficient of inequality is not only independent of the mean and the population size, but also decomposable if the partitions are non-overlapping (i.e. the sub-groups of the population do not overlap in the vector of incomes) (Crowell, 1995). Secondly, the Gini coefficient is able to indicate what proportion of the population has what proportion of the income (Jenkins, 1991; Chatterjee and Srivastav, 1992; Crowell, 1995). Thirdly, it satisfies the *Pigou-Dalton Transfer Principle* that “any income transfer from a richer to less rich group that leaves their relative ranking unchanged must reduced the value of the index” (Chatterjee and Srivastav, 1992, p. 5).

There are several other definitions of the Gini coefficient in the literature that are used for different purposes. The formulation used in this chapter is following Chatterjee and Srivastav (1992, p. 4), which is expressed as:

$$G = \sum_{i=1}^n (CP_i * CY_{i+1} - CP_{i+1} * CY_i) \quad (6.1)$$

Where G is the Gini coefficient;

CP_i is the cumulative population share;

CY_i is the cumulative income share corresponding to the i th class interval; and

i is $1, \dots, n$, households.

The Gini coefficients are estimated by numerical integration under a piecewise linear approximation to the Lorenz curve. Many argue that such method may cause the measurement of inequality underestimated. However, Gastwirth (1972) demonstrates that if the number of fractile groups used in the construction of the Lorenz curve is large

enough, then the downward bias in the inequality estimates is small. Thus, to get more accurate results the current study adopts an appropriately smooth approximation to the underling distribution function and then calculates by using a quadratic function across pairs of intervals.

Several authors such as Kakwani and Podder (1973, 1976), Kakwani (1980) and Nelson (1984) suggest a series of alternative methods based on the Lorenz diagram to capture the degree of inequality in a given distribution. Amongst these alternative methods, Nelson (1984) suggests a much simpler method for estimating the income inequality, which involves measuring the distance between the tails of a given distribution. For instance, Nelson calculates the fifth (P5) and the ninety-fifth (P95) income centiles along the Lorenz curve, and uses the ratio P95/P5 to express the distance between the two extremes of the distribution. This ratio, then, is considered as the measure of inequality and later referred as the Nelson ratio (Chatterjee and Srivastav, 1992). However, Chatterjee and Srivastav (1992) argue that the downside of this method is that it only concentrates on the extreme values and ignores the distribution in the intermediate ranges. Nevertheless, the Nelson ratio is being used in conjunction with the more satisfactory Gini coefficient as a measure of inequality in this study.

6.2.2 Normative Measures: The Atkinson Index

While the positive measures of inequality are useful in indicating the nature of a given distributional arrangement, it is the social welfare implications of these arrangements that are perhaps more interesting and useful from a policy point of view. The Atkinson Index is one of the few inequality measures that explicitly incorporates normative judgments about social welfare (Atkinson 1970). For a given total income, the welfare function underlying the Atkinson measure captures greater equality in the distribution of income as higher social welfare. The formulation of the Atkinson index of inequality can be expressed as follows:

$$A = 1 - \frac{Y_{EDE}}{\mu} \quad (6.2)$$

Where A is the Atkinson's inequality index;

Y_{EDE} is the notion of the equally distributed equivalent income; and

μ is the mean income of a given distribution.

Given the index is mean-independent, and that each individual has the same utility function (the anonymity assumption), the Atkinson index can also be expressed as the following (Chatterjee and Srivastav, 1992):

$$A_\epsilon = 1 - \left[\sum_{i=1}^n (y_i / \mu)^{1-\epsilon} * f_i \right]^{\frac{1}{1-\epsilon}}, \text{ for } \epsilon = 1 \quad (6.3)$$

Where A_ϵ is the Atkinson's inequality index;

y_i is the income of the i th group;

μ is the mean income of a given distribution;

f_i is the proportion of the population in the group; and

ϵ reflects the strength of society's preference for equality that can take values between zero to infinity.

The equation (6.3) indicates that when ϵ equals to zero, society is indifferent about inequality in a given distribution, and when the value of ϵ is very large towards infinity (∞), society is concerned only with the position of the lowest income group. However, the choice of the actual value for ϵ , as noted by Chatterjee and Srivastav (1992), is rather arbitrary as it reflects a subjective judgement relating to society's attitude to inequality. Atkinson (1970) chooses values between 1 and 2.5 in his own study, while Stern (1977) suggests values between 1.5 and 2.5 on the basis of his survey of the literature on the elasticity of marginal utility of income. In the analysis of income inequality in New Zealand in 1983-84, Chatterjee and Srivastav (1992) estimates the Atkinson index with values of the inequality aversion parameter, ϵ , between 0 and 3. They claimed that "this is sufficiently wide range of values to enable us to consider the implications of various distributional states" (ibid, 1992, p. 7). Therefore, the present study chooses the value of ϵ between 0 and 3.

6.3 Theoretical Aspects of Decomposition of the Inequality Measures

While one indicates the distributional inequalities in a given population, it would be helpful to have an inequality measure which is decomposable into components representing inequalities within the subgroups as well as between them. Therefore, this section presents the theoretical aspects of decomposition within and between population groups followed by discussion on the decomposition by source of household incomes.

6.3.1 Decomposition Within and Between Population Groups

An inequality measure is said additively decomposable if the values of the within-group and the between-group component is estimated on the assumption that each person within a group receives the mean income of the groups, while the within-group component is the weighted sum of the values of the inequality measures for each group. The weights, in turn, are the particular group's share of the relevant totals, such as the total income or population (Campano and Salvatore, 2006). The present study examines inequalities in the distribution of household incomes for: 1) the total households in the 2002-03 Household Income and Expenditure Survey (HIES); 2) within and between the urban households and rural households and by ethnicity; and 3) within six different components of the total income. The estimation procedures are discussed below.

The population is assumed to be composed of two subgroups 1 and 2, there are n individuals in the whole population, and then we have:

$$n_1 y_1 = \sum_{i=1}^{n_1} y_{1i} \quad (6.4)$$

and

$$n_2 y_2 = \sum_{j=1}^{n_2} y_{2j} \quad (6.5)$$

with

$$n = n_1 + n_2 \quad (6.6)$$

and

$$ny = n_1 y_1 + n_2 y_2 \quad (6.7)$$

Where n_1 is the number of individuals in the subgroup 1;
 y_1 is the mean income of the subgroup 1;
 n_2 is the number of individuals in the subgroup 2;
 y_2 is the mean income of the subgroup 2;
 y is the overall mean income of the population; and
 $i = 1, 2, \dots, n_1$; and $j = 1, 2, \dots, n_2$.

When it turns to the question of decomposability of the Gini coefficient, the literature states that the sum of the between-group and the within-group components is equal to

the overall Gini coefficient only under special circumstances.⁷⁶ In other words, the Gini coefficient is said to be decomposable if the partitions are non-overlapping, that is the sub-groups of the population do not overlap in the vector of incomes (Cowell, 1995). Chatterjee and Srivastav (1992) establish the relationship between the overall Gini coefficient and the coefficients for the two subgroups. The equation takes the following form:

$$G(y) \geq \left(\frac{n_1 y_1}{ny}\right) * G(y_1) + \left(\frac{n_2 y_2}{ny}\right) * G(y_2) \quad (6.8)$$

Where $G(y)$ is the overall Gini coefficient;

$G(y_1)$ is the Gini coefficient of the subgroup 1;

$G(y_2)$ is the Gini coefficient of the subgroup 2;

n_1 is the number of individuals in the subgroup 1;

y_1 is the mean income of the subgroup 1;

n_2 is the number of individuals in the subgroup 2;

y_2 is the mean income of the subgroup 2; and

y is the overall mean income of the population;

6.3.2 Decomposition by Source of Household Incomes

In the literature, there are several methods to examine how changes in particular income sources will affect overall inequality. One widely used method to achieve that goal is to decompose the Gini index by components of income (i.e. concentration ratio), which yields significant policy implications (Pyatt, Chen and Fei, 1980; Kakwani, 1986; Chatterjee and Srivastav, 1992; Podder, 1993; Jedrzejczak, 2008). In the case of Taiwan for the period 1964 to 1972, Pyatt et al., (1980) with the aid of concentration ratios demonstrate that the ranking of families by agricultural income has declined in importance as a determinant of ranking by total income, while wages grow in importance as an explanation of total family income.

Both Kakwani (1986) and Podder (1993) disaggregate the Gini coefficients by source of income in examining the effects of growth in specific components on the overall inequality in Australia. While Chatterjee and Srivastav (1992) estimate the contributions of the different components of income to the overall inequality in New Zealand,

⁷⁶ For further details, reference may be made to Anand (1983), Kakwani (1980, 1986), Podder (1992), and Cowell (1985, 1995).

Jedrzejczk (2008) identifies the contribution of each income share to the overall inequality in the case of Poland.

The formulation of decomposition of the Gini coefficient by source of income components, in the literature noted above, suggests the following form⁷⁷:

$$G(y) = \sum_{k=1}^K \frac{\mu_k}{\mu} * C_k = \sum_{k=1}^K \frac{\text{cov}[y_k, F(y)]}{\text{cov}[y_k, F(y_k)]} * \frac{2\text{cov}[y_k, F(y)]}{\mu_k} * \frac{\mu_k}{\mu} \quad (6.9)$$

Where $G(y)$ is the overall Gini coefficient;

μ is the mean of the total income;

μ_k is the mean of the k th income component;

C_k is the concentration ratio of the k th component of income;

y is the total income made up of the components y_k ;

$F(y)$ is the cumulative distribution function;

$\text{cov}[y_k, F(y)]$ is the covariance of income component k with the cumulative distribution of income;

$\text{cov}[y_k, F(y_k)]$ is the covariance of the total income with the cumulative distribution of income; and

k equals 1, 2, ..., K.

Inspired by the Shorrocks' work (1989), Podder (1993) proposes four possible interpretations of the contribution of the k th income factor. The first possible interpretation is that the percentage of inequality due to source k income alone. Second, the reduction in inequality would be occurred if this source of income was eliminated. Third, the percentage of inequality that would be observed if this was the only source of income differences and all other incomes were allocated evenly. Fourth, the reduction in inequality that would follow from eliminating differences in source k incomes.

If examining the meaning of the concentration ratio closely, as pointed out by Podder (1993), none of these four possible interpretations stays valid. He explains that, if the k th component of income is a constant for all incomes, then its concentration ratio will be zero that leads to a conclusion that this income component does not make any contribution to total inequality. However, "we know that an addition of a constant to all incomes decreases total inequality" (ibid, 1993, p. 53). Therefore, the equation (6.9) can

⁷⁷ See Rao (1967), Kakwani (1980), Podder and Tran-Nam (1991), for mathematical demonstrations.

be interpreted by transforming into the following form as noted by Podder and Tran-Nam (1991):

$$\sum_{k=1}^K \frac{\mu_k}{\mu} [C_k - G(y)] = 0 \quad (6.10)$$

The sign of $[C_k - G(y)]$ in equation (6.10) shows that the k th component can have a negative or positive effect on total inequality. In other words, the sign indicates in the presence of the k th income component that increases or decreases total inequality (Podder and Tran-Nam, 1991; Chatterjee and Srivastav, 1992). This is further explained as follows. If the k th component is proportional to total income, the component does not have any effect on total inequality. On the other hand, when the component rises more than proportionately with total income then the concentration index of the coefficient will be higher than the Gini coefficient of total income. Therefore, the sign of $[C_k - G(y)]$ will be positive and consequently, the k th income component increases total inequality. Similarly, for a negative effect the k th component needs to be less than proportionately with total income. In the present study, equation (6.10) is used to estimate the disaggregation of the overall inequality index by income components.

6.4 The Data and Assumptions

The methods mentioned in the previous sections are applied to examine inequalities in the distribution of household incomes in Fiji in 2002-03. The calculation is based on continuous data from the Household Income and Expenditure Survey (HIES), conducted by the Fiji Islands Bureau of Statistics (FIBOS) in 2006.

The HIES 2002-03 contains detailed statistics on a total of 5,245 households' income, which is divided into 35 components. Total household income is defined as the sum of the positive amounts of all income components such as casual income, permanent income, income from agriculture, business income, interest income, income from net rents and dividends and so on. The present study selects the following six income components out of the 35 items listed in the HIES 2002-03, they are:

- 1) Income from wages and salaries, which includes salary and wages, salary and other compensation paid to shareholder employees and earnings-related accident compensation.
- 2) Agricultural income, which includes income from agricultural employments and economic activities.
- 3) Business income, which includes income and capital gains from own business.
- 4) Investment income, which includes earnings from interests, dividends, royalty, and rent from land.
- 5) Causal income and wages.
- 6) Other incomes, which includes gratuities, pensions, welfare from the government and other organisations.

Several assumptions have made in the present study to make dataset more amenable to statistical manipulation for estimating the intended inequality indices (see Table 6.1). First, a total of 5,245 households in the HIES 2002-03 are classified as Fijian households, Indo-Fijian households and Others (which include other Pacific islanders, Europeans and Chinese households), and then classified as Rural and Urban households. Second, the total household income is estimated as the total household income per Adult Equivalent (AE) per week.⁷⁸ As shown in Table 6.1, the mean weekly Adult Equivalent (AE) income of the reporting population in Fiji in 2002-03, is about F\$87.99. The mean income per AE per week estimated for urban households is F\$105.38, while rural households have average F\$64.47 per AE per week. On average, households classified as Others have the highest weekly income per AE (F\$150.3) followed by Indo-Fijians (F\$87.53) and Fijians (F\$81.69).

Table 6.1 Summary Data Statistics for HIES 2002-03 in Fiji

Household	Number of HH	Mean HH		Total Income
		Income pAEpw	Share of HH	
Fijian	2472	81.69	0.47	201,949.86
Indo-Fijian	2505	87.53	0.48	219,257.09
Others	268	150.3	0.05	40,280.98
Rural	2230	64.47	0.43	143,776.20
Urban	3015	105.38	0.57	317,711.74
Total	5245	87.99	1.00	461,487.94

Source: Estimation based on the 2002-03 HIES survey.

Note: HH stands for household, and pAEpw is per Adult Equivalent per week.

Finally, the cumulative proportions of the respective population groups and their corresponding cumulative shares in the total (group-specific) incomes have then been worked out for estimating the inequality indices for the groups. The next section

⁷⁸ The study calculates 'Adult Equivalents' for each household by treating children (age of 14 and under) as half an adult.

presents the results of the magnitude of inequalities in the distribution of household income as noted above.

6.5 Empirical Results

The empirical results reported for the degree of income inequality in Fiji are organised as follows: section 6.5.1 reports the within-group inequalities, while section 6.5.2 presents the estimation results of the Gini coefficient between population groups. Section 6.5.3 provides results for decomposition by income components, and the empirical results for normative measure of inequality (i.e. the Atkinson index) will be discussed in section 6.5.4.

6.5.1 The Within-Group Inequalities

The estimated coefficients reported for the positive measures are presented in Table 6.2. The disparities within the groups are captured in the values and the ranking of the Gini indices of inequality. By ethnicity, the index for Others, at 0.507, followed by relatively lower index of 0.439 for Indo-Fijian households, while the inequality index for the Fijian households is the lowest at 0.413. By regional areas, urban households (0.432) have relatively higher inequality index than rural households (0.406). The index of inequality for the overall sample population is estimated at 0.438.

As shown in Table 6.2 below, the Nelson ratio for the total households at 27.11 is significantly higher than that for urban households (24.94) and rural households (21.56). The household income share of the top 5 percent of the reporting urban households (23.19 percent) is greater than their counterparts in both the rural (20.7 percent) and total populations (23.05 percent). Moreover, the shares of the top 5 percent of income earners in all three groups are over 4 times the shares of the bottom 20 percent. For both the urban and rural households, the top 5 percent earn proportionately more than the bottom 40 percent. While the bottom 20 percent, in all three groups, receives less than 6 percent of the total income of the group, the top 20 percent receives over 37 percent.

Table 6.2 Household Income Inequalities and Income Distribution in Fiji, 2002-03

	Gini Index	Quintile Shares							Nelson Ratio= (P95/P5)
		Lowest 20% Q1	Q2	Q3	Q4	Highest 20% Q5	Highest 5% P95	Lowest 5% P5	
Fijian	0.413	5.78 (11665)	10.1 (20399)	14.68 (29646)	21.52 (43456)	47.92 (96782)	20.3 (41034)	0.89 (1793)	22.83
Indo-Fijian	0.439	5.61 (12301)	9.58 (21005)	13.88 (30431)	20.45 (44828)	50.48 (110691)	23.7 (52054)	0.88 (1919)	26.98
Others	0.507	4.38 (1764)	8 (3223)	11.81 (4758)	18.04 (7267)	57.77 (23269)	29.4 (11834)	0.53 (214)	55.43
Urban	0.432	5.82 (18492)	9.82 (31187)	13.95 (44335)	20.63 (65557)	49.77 (158139)	23.19 (73678)	0.93 (2970)	24.94
Rural	0.406	6.09 (8762)	10.3 (14844)	14.85 (21357)	21.45 (30837)	47.28 (67976)	20.7 (29789)	0.96 (1392)	21.56
Total	0.438	5.51	9.59	14	20.69	50.21	23.05	0.85	27.11

Source: Estimation based on the 2002-03 HIES survey.

Notes: Figures in parenthesis are household incomes per Adult Equivalent per week in each specific quintile.

In terms of income inequality by ethnicity, households classified as Others have the highest Nelson ratio at 55.43 followed by Indo-Fijians (26.98) and Fijians (22.83). It is not surprising as the estimated coefficients in Table 6.2 show that, the household income share of the lowest 5 percent of the reporting Others only receive F\$214 per AE per week, compared to F\$11,834 per AE per week for the top 5 percent of income earners. There is no exception for the Fijian and Indo-Fijian households: the household income share of the top 5 percent of Fijian households receive almost 23 times more weekly income per AE than those in the lowest 5 percent group, while the top 5 percent of Indo-Fijian households have twenty-seven (27) folds income per AE per week than those in the lowest 5 percent group.

All distributions discussed above point to the degree of overall inequality captured in the summary measure, the Gini coefficients. The next section discusses the results of the estimation of the Gini index between population groups.

6.5.2 The Between-Group Inequalities

As mentioned earlier that, a perfect decomposition of the Gini index requires that the sum of the within-group and the between-group components of the inequality indices be equal to the overall index. It is unlikely to meet this requirement as this is only possible if the distributions within the subgroups are identical. Hence, in general, the results of decomposing the Gini coefficient are imperfect, and they provide only the lower bounds of the index (Chatterjee and Srivastav, 1992).

Table 6.3 presents the estimates for the Gini index decomposed for the sample populations in terms of their ethnicity background (i.e. Fijian, Indo-Fijian and Others) and living areas (i.e. urban and rural sectors). The overall Gini index has a value of 0.438, while the indices for the reporting urban and rural household groups are 0.431 and 0.405, respectively. The relative contribution of each of these groups to the overall index has been worked out with the relationship proposed in equation (6.8). The urban household group has contributed 0.297, and the rural group 0.126 out of the overall index value of 0.438, thus leaving a very small share of 0.015 as unexplained.

Table 6.3 Decomposition of Inequality Index between Ethnic and Regional Groups

	Number of Households	Gini Coefficient	Contribution to Total Inequality	Percentage Share of Total Inequality
By ethnicity				
Fijian	2472	0.413	0.181	41
Indo-Fijian	2505	0.439	0.209	48
Others	268	0.507	0.044	10
Total	5245	0.438	0.434	99
Unexplained			0.004	1
By regional				
Urban	3015	0.431	0.297	68
Rural	2230	0.405	0.126	29
Total	5245	0.438	0.423	97
Unexplained			0.015	3

Source: Estimation based on the 2002-03 HIES survey.

Expressed in percentage terms, the urban household group's contribution to the total inequality index is 68 percent, while the rural household group contributes 29 percent to the total inequality index. Together both groups explain 97 percent of the overall inequality leaving unexplained 3 percent of the total inequality share. Indo-Fijian households contribute 48 percent to the total inequality index followed by Fijian

households (41 percent) and Others (10 percent). Together these ethnic groups explain 99 percent of the overall inequality leaving unexplained 1 percent of the total.

6.5.3 Decomposition by Source of Household Income

Table 6.4 below presents the empirical results of decomposition by source of household income. The first row presents the mean weekly household income per AE of each household income source. The second row shows the percentage share of each income source. Wages and salary has by far the highest percentage share (57.39 percent), followed by other income (11.81 percent), casual income (10.39 percent), business income (7.53 percent), agricultural income (6.82 percent), and investment income (6.06 percent).

Table 6.4 Household Income Inequality by Factor Components, HIES 2002-03

	Wages & Salary	Agricultural Income	Business Income	Investment Income	Casual Income	Other Income	TFC
Mean HH_inpAEpw	50.50	6.00	6.63	5.33	9.14	10.39	87.99
% Share of each factor	57.39	6.82	7.53	6.06	10.39	11.81	100
Quintile Share							
Q1	1.94	0	0	0	0	0	1.11
Q2	5.22	0	0	0	0	0.09	2.99
Q3	10.81	0	0	0	0	2.74	6.52
Q4	21.69	7.01	9.44	0.78	14.14	12.06	16.57
Q5	60.35	92.99	90.56	99.22	85.86	85.11	72.81
P95	28.09	49.64	47.75	75.57	41.15	51.43	38.10
Ck	0.685	0.855	0.965	0.938	0.814	0.837	0.438
uk/u[Ck-Gy]	0.142	0.028	0.040	0.030	0.039	0.047	0.3264
Ranking in terms of contribution	1(+)	6(+)	3(+)	5(+)	4(+)	2(+)	

Source: Estimation based on the 2002-03 HIES survey.

Notes: TFC is for total factor income, and Ck is the concentration index.

The next five rows give the quintile shares of each household income source, when the household incomes are arranged in terms of the total household income. The eighth row presents the share of the top 5 percent of the household incomes (i.e. P95) in each factor income. The ninth row gives the concentration indices (Ck) corresponding to each income source as well as the overall Gini index. The tenth row, of Table 6.4, gives the values of $uk/u[Ck-Gy]$ for each income component as a measure of its contribution to the overall inequality. The rank-order of these contributions is given in the final row with a positive or negative sign next to the rank-order to indicate whether the presence of the particular income component enhances or reduces the overall inequality.

The concentration indices corresponding to the income components reveal a number of interesting features. For example, the concentration indices of all income components are all higher than the Gini index of total household income. The concentration index of business income, at 0.965, is being the highest, followed by the investment income (0.938), agricultural income (0.855), other income (0.837), casual income (0.814), and wages and salary (0.685). The concentration indices imply that all these income types are more unevenly distributed in favour of the higher income-earning households than income as a whole. This is also reflected in the quintile shares which show that the top 20 percent of income-earning households receive over 90 percent of total business income, 99 percent of total investment income, 92 percent of agricultural income, 85 percent of total casual and other income, and 60 percent of total wages and salary.

Hence, the findings imply that significant proportions of the total incomes are in favour of the high-income households in both rural and urban sectors. In terms of their ranking, wages and salary has the most inequality enhancing effect, followed by other income, business income, casual income, investment income, and agricultural income. It suggests that basically those earning wages and salary face higher income inequality.

6.5.4 The Atkinson Index

The estimated results reported for the normative measure (i.e. the Atkinson indices) of inequality are presented in Table 6.5. The Atkinson indices are estimated for six different values of the distributional parameter ϵ , which reflects the strength of society's preference for equality. The estimated value of the parameter ϵ is greater than zero it implies that there is a social preference for equality (or an aversion to inequality). As the parameter rises, society attaches more weight to income transfers at the lower end of the distribution and less weight to transfers at the top as noted by Atkinson (1983) and Chatterjee and Srivastav (1992).

As shown in Table 6.5, when ϵ equals to zero, the concept of the equally distributed equivalent income (Y_{EDE}) is simply the mean income of the distribution, and the Atkinson index is almost zero. When ϵ equals 0.99 (as show as the value one in Table 6.5), the Y_{EDE} is about F\$63.77 per AE per week. This implies that if incomes were

equally distributed it would only have required F\$63.77 per person per week to achieve the same level of social welfare as the exiting distribution with a mean income of F\$87.99 per AE per week. The Atkinson's inequality index (when ϵ equals 0.99) is estimated around 0.275, which indicates the loss to social welfare caused by this unequal distribution of the given income. In other words, the same level of social welfare could be reached with only 72.5 percent (i.e. $1-0.275$) of the existing total income in Fiji in 2002-03. On the other side of the token, the potential gain from redistribution is 27.5 percent of the existing income distribution.

As the values of ϵ rises, the corresponding values of the inequality index are also rising, thus indicating larger losses caused by inequalities in the distribution of income. For instance, when the value of ϵ equals to 3, the potential gain from redistribution of the existing income is 54.9 percent for the urban household group, 52.3 percent for the rural household group, and 57.5 percent for the total households in the HIES 2002-03 (Table 6.5).

Table 6.5 Equally Distributed Equivalent Household Weekly Income and the Atkinson Indices of Inequality, 2002-03

		Values of Epsilon (ϵ), the Atkinson Indices and corresponding Y_{EDE}					
	Mean Household Weekly Income per AE	$\epsilon = 0$	$\epsilon = 1$	$\epsilon = 1.5$	$\epsilon = 2$	$\epsilon = 2.5$	$\epsilon = 3$
Urban	105.38	0.0 (150.38)	0.266 (77.39)	0.357 (67.73)	0.431 (60.00)	0.495 (53.22)	0.549 (47.51)
Rural	64.47	0.0 (64.47)	0.239 (49.06)	0.33 (43.22)	0.405 (38.37)	0.472 (34.05)	0.523 (30.39)
Total	87.99	0.0 (87.99)	0.275 (63.77)	0.372 (55.26)	0.45 (48.4)	0.518 (42.39)	0.575 (37.4)

Source: Estimation based on the 2002-03 HIES survey.

Notes: Figures in parenthesis correspond the concept of the equally distributed equivalent income (i.e. Y_{EDE}) and are expressed in F\$ per AE per week. The estimates for $\epsilon = 1$ have been alternated to $\epsilon = 0.99$ so that it enables to use equation (6.3) above for all the estimates.

Furthermore, both rural and urban households would significantly benefit from income redistribution. However, it is particularly beneficial for the urban household group as their inequality indices are relatively higher than those for the rural household group at each value of ϵ . One implication of this region-bias inherent in the distributional

arrangements is that policy initiatives aimed at achieving greater income equality would succeed better by prioritising the urban population.

6.6 Conclusion

This chapter has examined, in positive and normative terms, the nature of Fiji's household income distribution in 2002-03. The empirical results clearly establish that Fiji still has a long way to go in reducing the income gaps between the very rich and very poor of both rural and urban households. The implication of the empirical findings also suggests that Fiji is unlikely to achieve its MDG goal of halving the poverty by 2015 due to the large income differentiates and inequality in the urban-rural areas.

The urban households, in particular, endure greater inequalities, in both positive and normative terms. The distribution of income within the urban households is also more unequal than the rural households. When comparing two major ethnic groups of Fiji, Indo-Fijian households experience greater income inequalities (both in positive and normative terms) than Fijian households. The summary measure, the Gini coefficient for the statistical population as a whole, conceals glaring differences that still exist between the different population groups. The decomposition of the overall index into separate factor income components also indicates the major sources of inequality. In particular, it is seen that wages and salary contribute the most inequality enhancing effect in Fiji in 2002-03.

Given the higher level of rural-urban migration due to expiry of land leases and larger squatter settlements in the urban areas in the post-2003 period the income inequality of this group of people could lead to various socio-economic problems. Hence, as indicated by the findings, any long-term policies aimed at addressing income inequalities should take these factors into account. The findings based on a normative measure of inequality, highlight the importance of how the real income is distributed that demonstrate the weakness of the argument often used by politicians and policy analysts that it is the "size of the cake", rather than how it is distributed that determines the economic welfare of society.

Chapter 7

Conclusion and Policy Implications

7.1 Introduction

This study has empirically investigated the socio-economic determinants for poverty reduction, examined the impact of education and health on poverty reduction, and analysed the household income inequalities in the case of Fiji using Household Income and Expenditure Survey (HIES) 2002-03. In doing so, several hypotheses are tested using this dataset. This analysis has several areas of significance for Fiji. Theoretically, it contributes to an understanding of how the poverty is defined and measured, what the characteristics that are responsible for the incidence of poverty. Practically, on the other hand, the empirical findings obtained in this study draw a roadmap of how poverty can be alleviated and where the future policy can be focused to deal better with poverty in Fiji.

Several econometric techniques and tests are utilised in this study to examine the various socio-economic hypotheses of poverty and income inequality. The empirical results obtained with the underlying number of important issues and implications relating to poverty in the household level setting will be highlighted in this chapter. The rest of the chapter is organised as follows: Section 7.2 presents the findings of the study and its implications. In Section 7.3, attention is focused on the policy recommendations based on the findings of this study, and areas for future research are addressed in the final section.

7.2 Summary of Chapter Findings

The focus of this study is to investigate the socio-economic determinants for poverty reduction and to examine the impact of education and health on poverty reduction and income inequality in the context of Fiji. The discussion in Chapter 1 presents the

background to the research motivation, the objectives and significance of analysing the determinants of poverty.

Chapter 2 explores the definition, measurement and determinants of poverty, and the link between education, health and poverty reduction by reviewing appropriate theoretical and empirical literatures. The review notes that poverty is a multidimensional concept. The key to understanding this concept is the notions of deprivation and well-being. From the physiological aspect of deprivation, people are considered poor if they lack income, food, clothing and shelter. On the other hand, the sociological perspective of deprivation views the existence of poverty as structural barriers. It concerns that such structural barriers prevent the poor from accessing to external assets (e.g. credit, land, infrastructure and common property) and internal assets (e.g. health, nutrition and education).

In line with the literature on poverty, the study investigates the causes of poverty at the two key levels. At the country level, the incidence of poverty is high in countries characterised by poor economic performance, poor health, population size, lack of human resource development, poor governance and inhospitable climatic conditions. At the household level, individual characteristics (e.g. the household head's age, gender, race and educational levels) and households characteristics (e.g. the household composition and size, household assets, and access to basic social services) are found to be associated with the incidence of poverty. Chapter 2 also finds theoretical and empirical linkages between the level of education, health and the incidence of poverty at both the country and household level, though the findings of the country studies are mixed.

Given the deleterious impact of the military coups of 1987, 2000 and 2006, Chapter 3 provides an overview of Fiji's economy by exploring the country's social and economic indicators and provides an evaluation of Fiji's Millennium Development Goals. The review shows that the socio-economic difficulties compounded by the effects of a series of notorious political upheavals, external shocks and lack of economic activities have resulted many people losing their livelihoods and falling into poverty or on the very edge of poverty. Although numerous improvements have been noted in education and

health sector, there are still challenges for Fiji to meet MDGs. In particular, it is unlikely to halve the poverty by 2015.

Chapter 4 examines the household level determinants of poverty in Fiji. A set of various demographic and socio-economic variables is derived from the Household Income and Expenditure Survey (HIES) 2002-03 for 5,245 households. The logistic regression methodology has been selected given its capability to examine the household level determinants of poverty in the probabilistic terms. The empirical results show that the households headed by the females and people with disability are highly likely prone to poverty. This finding is important given that other similar studies on the determinants of poverty at the household level had ignored this effect between the incidence of poverty and disability,

Employment in the sectors such as manufacturing, construction, trade and services, transportation and communication are vital determinants of poverty reduction. The results indicate that trade and service sectors help in increasing the likelihood of meeting the basic needs for both the rural and urban households, the manufacturing sector helps rural households in increasing the possibility of meeting the basic needs, and the transportation and communication sector helps urban households to increase the chance of meeting their basic needs.

The level of education of the head of the household is found to be an important determinant of poverty reduction, which supports the findings of most studies in the literature on the poverty determinants (e.g. Khalid et al., 2005; Meng and Gregory, 2007; Mok et al., 2007; Awan et al., 2008). Overall, variables in Chapter 4 are found to be statistically significant in analysing the determinants of poverty which are necessary to formulate efficient and sound policies for poverty alleviation (i.e. noted in detail in chapter 4 and also in the policy implication section below).

Chapter 5 examines the hypotheses that returns to education are not limited to monetary impact on wages and income, but also there are relevant to non-monetary returns that resulted from the influence of education on the health behaviours of individuals. The quantile regression technique is used to analyse the monetary effects of education, while the logit regression method highlights the non-monetary returns to education. The

results for the education-income nexus model indicate that people from the lowest income quantile to the highest income quantile all benefit from the additional skills obtained through formal education. The poorest people, in particular, benefit most from obtaining formal education.

Returns to tertiary education on earnings are found to be significantly higher than the returns to secondary and primary education. The findings from the estimations of the education-income nexus model also suggest that primary education is the initial stage for lifting poorest people out of poverty but it can not sustainably prevent people with primary education falling into poverty when the unseen event occur in the future.

The results for education-health nexus reveal that education has a positive and significant influence on the tendency of people to engage in health prevention activities (i.e. buying a life and accident insurance policy or medical and therapeutic appliances) and decision-makings over households living arrangement (i.e. living tenure with better sanitation facilities, such as safe water supply and flush toilet). In addition, the results show that the level of education plays an important role in modifying the behaviour and the decision of people with respect to their health. As labour is the main asset of poor household, any factor that favourably affects the quality of such as asset (i.e. direct investment in health, indirect investment in health through educational investment) is relevant in reducing poverty.

Measuring changes in inequality helps determine the effectiveness of social and economic policies aimed at reducing poverty. Chapter 6 examines the nature of Fiji's household income distribution in 2002-03 by applying the statistical techniques such as the Gini coefficient, the Nelson ratio, the concentration index and the Atkinson index. The results suggest that Fiji still has a long way to go in reducing the income gaps between the very rich and very poor of both rural and urban households. The implication of the empirical findings also hints that Fiji is unlikely to achieve its MDG goal of halving the poverty by 2015.

While the Indo-Fijian households experience greater income inequalities than Fijian households, the urban households endure greater inequalities in comparison to rural households. The distribution of income within the urban households is also more

unequal than the rural households. The decomposition of the overall inequality index into separate factor income components indicates the major sources of inequality. In particular, the wages and salary contribute the most inequality enhancing effect followed by other income, business income, casual income, investment income, and agricultural income in Fiji. Overall, the findings obtained in this study highlight a number of key issues to enable the formulation of various policies to support and improve the poverty alleviation programmes. These are presented in detail in the next section.

7.3 Policy Recommendations

The empirical results obtained in this study highlight a number of key ammunitions that can be added in the war of fighting poverty. The section presents policy recommendations of the study centred on critical policy areas such as integration and targeting, promotion of human assets, overcome isolation, promotion of income-job-creation, and income redistribution.

Integration and Targeting

To eliminate poverty in the context of Fiji, it seems that there is no single efficacious policy. Thus, poverty alleviation policies must be integrated into both the provincial and central development policies in order to allow the policy to truly touch and provide for the needs of the poor. This integration is encouraged by the fact that Fiji's socio-economic difficulties along with the incidence of poverty in the rural and urban sectors are varied, and are interrelated with each other. This integration strategy to eliminate poverty also conforms to the ADB approach (2004), which proposed three pillars comprising sustainable economic growth, social development and good governance. In particular, it emphasises that such poverty alleviation strategy would not work well without a strong commitment and the political will of government, both provincial and central. This view is shared by Deolalikar, Brillantes, Gaiha, Pernia and Racelis (2002, p. 12) that "if government do not have the political will or commitment to reduce poverty, poverty reduction will either not occur or will occur very slowly."

Given the crucial role of good governance, targeting seems to be a critical first step in poverty alleviation strategies. This is because it gives the inputs for designing appropriate policy to directly touch the needs of the most vulnerable households. The main purpose of this targeting policy is to provide a safety net to support the households in a large community that are vulnerable to events or shocks leading to poverty. This policy is also intended to avoid misallocation of financial or other resources to give support to the poor. In addition to Fiji's existing safety net programmes, special attention should be paid to those households (as identified in Chapter 4) which are headed by the females and disabled people with low level of education and poor health status, and those live in the rural and squatter settlement with a large number of dependents (elderly and children).

Promotion of Human Assets

When the most underprivileged and vulnerable groups are well taken care of by the targeting programmes, the second crucial step in alleviating poverty should be in the areas of promoting human assets. The need to promote human assets is extremely important in order to facilitate the poor to improve their lives. Because lack of capabilities such as education, skills and health would contribute to limited confidence, and together they reinforce powerlessness, voicelessness and marginalisation in society (Sen, 1985, 1999).

Education and skills are the key factors to improving living standards. As shown by this study, with good education and good skills, the poor are not only able to diversify their livelihoods by obtaining a better-paid job or adopting new technology and other profitable opportunities, but also improve their health and nutrition in their lives. Therefore, it will be necessary to further development of Fiji's health system, formal and non-formal education, as well as the poor's self-improvement and empowerment. In doing so, it is essential to have a strong and innovative support to expand access to and quality in these sectors.

For rural households, access agricultural and new information technologies should be enhanced through skills training and guidance or counselling programmes. For those whose household heads are self-employed and participated in small and medium

business activities should be encouraged by the tax-incentive policy, and supported by educational training in entrepreneurship and small business management.

Women and disables are more deprived in terms of their access to employment and resources. Therefore, women and disabled people in both rural and urban areas should be considered as an important stakeholder in any poverty alleviation programmes through giving them opportunities to improve their livelihoods. There is need for policy that will promote the role of women and disables in development activities, but this role can only be manifested if their access to education, skills and health services is also improved. Fiji's existing monitoring and evaluation systems, as discussed in Chapter 3, should further measure conditions and status of those groups in these locations and to use this information to assist in development programmes aimed at improving the lives of women and disabled people.

Intervention should also be targeted on the educational development of young people. This includes: promoting informal education and validate lessons learned on the job and acquired experience; setting up programmes to grant scholarships to young people with physical handicaps and those from the most vulnerable households; developing vocational training for unskilled young persons.

In the area of health, the main objective is to expand physical and financial accessibility and to ensure quality services, so as to help improve the state of health of the people. The intervention should also seek to promote education for health through the production of appropriate education media, integrated, multisectoral, concerted social mobilisation, and the training of health professionals and community leaders in communications. Healthcare and life insurance should also be made affordable for the poor and vulnerable groups. In the area of housing, priority should be given to the projects in promotion of access to decent housing built with local materials and using solidarity among communities for manpower. Finally, special attention will be paid to water supply and sanitation programmes in rural areas, and squatter settlements.

Overcome Islands Isolation

In complementing with enhancing the quality of human assets, policy on isolation should be strengthened. In terms of geographical isolation, which isolates the people in

remote rural areas from the people in urban areas (geographical constraints such as mountains/hills and islands). These constraints are exacerbated by a lack of accessibility connecting both areas such as a lack of roads and transport devices. The second form of isolation refers to information isolation, which separates the rural households or villagers from practical knowledge (which would allow them to achieve profitable opportunities, low credit opportunities and others). As found in Chapter 4 that, households with telephone connection are less likely subject to poverty than those without. Owning a phone ensures a steady flow of information, which is important for the large share of households involved in informal or semi-informal private entrepreneurial activities (Fafchapms and Minten, 2002). Hence, information provision and communication play an important role in increasing household welfare. The lack of social capital as such would cause social exclusion by isolating households through separation from relatives, friends, social institutions and social activities.

To overcome isolation, local policy should give more attention to both forms, but particularly geographical isolation. Good physical infrastructure such as roads, public buses and ferries should be made available for people to assist them to improve their living standards. The development of this physical infrastructure will increase the income of the farmers by lowering input prices, raising output prices, and enabling farmers to produce more profitable, perishable crops. It may also benefit the landless households by generating opportunities for employment in the rural non-farm sector and raise wage rates by making labour more mobile. Local policy should also address education because this can help overcome isolation stemming from limited knowledge of outside world.

Promotion of Income-Job-Creation

The promotion of income-job-creation activities is extremely vital for substantially lifting the poor out of poverty and breaking the cycle of poverty. In rural areas, income-job-creation activities will be largely based on the opportunities provided by agricultural sector. Intervention in this sector should include: advice on agricultural production and assistance in production marketing; educational seminars on artisanal fishing and marine resources conservation; and support for emergence of cooperatives, especially of women.

Intervention should also take account of specific characteristics of urban areas and the opportunities they offer. This includes: vocational training in weaving, embroidery, hairdressing, masonry, cabinet making, plumbing and other urban trades; the granting of microcredit's to purchase tools for recipients of vocational trainings and to finance promising projects; and support for emergence of cooperatives, especially of women and disables. Moreover, the employment promotion strategy based on job-oriented training needed to be launched and targeted in tourism, manufacturing, construction, trade and services, transportation and communication sectors.

Job-creating social projects, on the other hand, should also be encouraged and welcomed by the government, in which would yield a large number of temporary jobs. On the other hand, it will be useful to establish a job market-monitoring centre to assist job seekers. The data collected from this monitoring centre, in return, would provide useful information on what type of skills are needed for what type of jobs. Hence, the governmental agencies and authorities would use that information to design and update job training programmes for the potential job seekers.

Income redistribution

Policies related to income tax and income redistribution should be reviewed. Because both rural and urban households are statistically significantly there are benefits from income redistribution (as illustrated in Chapter 6). Moreover, it is particularly beneficial for the urban household group as their inequality indices are relatively higher than those for the rural household group. One implication of this region-bias inherent in the distributional arrangements is that policy initiatives aimed at achieving greater income equality would succeed better by prioritising the urban population.

In conclusion, all of the above policies and strategies can have positive impacts for the poor. However, the policies would not provide these impacts if local government does not support them. Government commitment and political will is a prerequisite to implementing the policies. Without this, the policies will be too slow to develop and the poor will be getting poorer.

7.4 Areas for Future Research

This study provides a quantitative approach in researching poverty in Fiji. To capture qualitative aspects of poverty, the participatory research methods with questionnaire as the tools of data collection and analysis should be considered in the future work. The characteristics of the participatory research enable the poor to express their perceptions, feelings, and thoughts about the researched subject. It is beneficial as it provides the whole picture of human poverty for the purpose of creating poverty reduction policies. However, to appreciate all dimensions of human poverty in the researched area, participatory research should be supported by a large amount of economic resources such as time, energy, skills and money. To do participatory research in the area of poverty, future work needs to take account for these economic resources. These resources are extremely necessary when the research will be conducted in the rural and remote areas of the province, as access is difficult.

The combination of both qualitative and quantitative methods is vital because poverty is a multidimensional phenomenon, which has both material and non-material aspects. The use of the combination seems to be able to depict the effect of poverty on human life as a whole. As this study is more concerned with the household level, it would be interesting to analyse how the government's policy is involved in creating poverty or enhancing poverty effects for urban and rural households.

As the people living in the rural areas suffer more from poverty than people in the urban areas, it is, therefore, recommended that future research should identify the exact locations that suffer the most from poverty in the rural areas, and develop a combined qualitative and quantitative methodologies to enable more direct and practical advantages to be obtained. This should also be directed specific urban areas as there is a larger movement of people from rural to urban areas and living in squatter settlements.

In terms of natural resources such as land, forest and sea, there are still many issues and problems dealing with land, illegal logging, endangered marine life, extraction of natural resources and so forth in Fiji. These problems also bring about strong poverty impact on those whose livelihoods depend upon these areas. However, they were not included in this research and, hence, they are important areas for future research.

Follow-up research is required to investigate the implementation of the policy recommendations discussed in section 7.3 above. As this study is unable to analyse and cover all of the stages of Fiji's national plan on poverty reduction, future research is still important to observe how the poor in the selected areas benefit from the policy recommendations.

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