

**ANALYSING DETERMINANTS OF RURAL HOUSEHOLD  
POVERTY AND POLICY OPTIONS IN POST-CONFLICT  
SIERRA LEONE**

**By**

**Sheka Bangura**

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## Acronyms

ACRM	Anti-Corruption Revolutionary Movement
AFRC	Armed Forces Revolutionary Council
ANOVA	Analysis of Variance
APC	All People's Congress
AusAid	Australian Aid
BIA	Benefit Incidence Analysis
BRAC	Bangladesh Rural Advancement Committee
BWIs	Bretton Woods Institutions
CAADP	Comprehensive African Agricultural Development Programme
CAST	Consolidated African Selection Trust
CDHR	Centre for Democracy and Human Rights
CGE	Computable General Equilibrium
CLoGPAS	Comprehensive Local Government Performance Assessment Survey
CRB	Credit Reference Bureau
CSOs	Civil Society Organisations
DACDF	Diamond Area Community Development Fund
DHS	Demographic and Health Survey
DRC	Democratic Republic of Congo
EA	East Asia
EEP	Economic Emergency Programme
FA	Factor Analysis
FAO	Food and Agricultural Organisation
FDI	Foreign Direct Investment
FEI	Food-Energy Intake
FGT	Foster-Greer-Thorbecke
GDP	Gross Domestic Product
GoSL	Government of Sierra Leone
HDI	Human Development Index
HDR	Human Development Report
HYVs	High Yielding Varieties
HPIC	Heavily Indebted Poor Countries
IADP	Integrated Agricultural Development Programme
IDA	International Development Assistance
IFAD	International Fund for Agricultural Development
ILO	International Labour Organisation
IMF	International Monetary Fund
IO	Input-Output
IPRSP	Interim Poverty Reduction Strategy Paper
LDCs	Least Development Countries
MDGs	Millennium Development Goals
MCFA	Multiple Correspondence Factor Analysis
M&E	Monitoring and Evaluation
MNCs	Multinational Corporations
MFI	Microfinance Institutions

MITAF	Microfinance Investment and Technical Assistance Facility
MTEF	Medium Term Expenditure Framework
NDMC	National Diamond Mining Company
NGO	Non Governmental Organisation
NPRC	National Provisional Ruling Council
NRC	National Reformation Council
NSADP	National Sustainable Agricultural Development Programme
NUC	Njala University College
OAU	Organisation of African Unity
ODA	Overseas Development Assistance
OLS	Ordinary Least Squares
PCs	Paramount Chiefs
PRSP	Poverty Reduction Strategy Paper
RB	Rural Banks
ROSCAs	Rotating Savings and Credit Associations
RUF	Revolutionary United Front
SAP	Structural Adjustment Programme
SA-RHVP	Southern Africa Regional Hunger and Vulnerability Programme
SAS	South Asia
SBIE	Standard Benefit Incidence Estimate
SCP	Smallholder Commercialisation Programme
SEM	Structural Equation Modeling
SLIHS	Sierra Leone Integrated Household Survey
SLLC	Sierra Leone Labour Congress
SLPMB	Sierra Leone Produce Marketing Board
SLPP	Sierra Leone People's Party
SLST	Sierra Leone Selection Trust
SMC	School Management Committee
SSA	Sub-Saharan Africa
SSL	Statistics Sierra Leone
SUR	Seemingly Unrelated Regression
UFM	Under-Five Mortality
UKAN	United Kingdom Aid Network
UN	United Nations
UNDP	United Nations Development Programme
UNFPA	United Nations Fund for Population Activities
UNICEF	United Nations Children's Fund
VIF	Variance Inflating Factor
VIP	Ventilated and Improved Latrine
WHO	World Health Organisation

## Abstract

Sierra Leone is among Sub-Saharan African countries that still report appalling rural poverty incidence despite series of national and global development efforts. Its recent past is characterised by a drawn-out civil war amidst an endowment of bountiful natural resources. Government has implemented a plethora of post-conflict reforms but close to seven out of every ten rural inhabitants still live on less than US\$1.25 a day.

The main objective of this research is to analyse determinants of rural household poverty and policy options in Sierra Leone with a view to contributing to ongoing discourse on exploring sustainable solutions to alleviate poverty in Sub-Saharan Africa. The inertia in Sierra Leone's rural poverty reduction has aroused concerns that define the prime questions of this research. Key issues at investigation include questions as to whether there has been adequate understanding of the conditions in which the average rural household lives, and the complex contexts in which they make welfare decisions; and whether national development policies have generally been effective in reducing poverty.

The study mainly utilises Sierra Leone's Integrated Household Surveys of 2003 and 2011 to address research questions and objectives. The descriptive analysis suggests that rural household conditions have not been transformed adequately to engender desired quality of life for rural people, who constitute more than sixty percent of the national population. Moreover, whereas the rural sector holds most of the poor, it benefits less from key public services. Parametrically, single and simultaneous equations are estimated to explore determinants of six poverty dimensions, which are: economic wellbeing; education; health; nutrition; employment; and migration. These dimensions are analysed as multidimensional, composite poverty variables, which are found highly significant in affecting each other, while they are at the same time affected by exogenous predictors, such as demographic, infrastructure, regional, governance, and macro policy related variables. *Education status* and *economic wellbeing* are found to be lead predictors of rural household poverty; followed by *demographic*, *community infrastructure* and *women empowerment*. Policy simulations indicate that rural poverty will significantly reduce in the short-run and long-run if rural education is promoted; income generating activities are stimulated; healthcare is improved; women empowered; and there is effective population management. Evidence reveals welfare substitution effect for the average rural household; that, with meagre resources, it may have to trade-off appropriate healthcare and nutrition to be able to send children to school, and vice versa. Our analytical framework enables us predict financial resources required to eradicate rural poverty.

The following are key recommendations from the research: promote rural education with a focus on girl child; promote income and asset generating activities, and social protection; implement integrated population policy; and ensure effective resource targeting and monitoring of service delivery. Specific recommendations are provided for government, donor agencies, and civil society as key actors in the fight against poverty in Sierra Leone.

## **Chapter One**

### **Introduction**

#### **1.1 General background**

The global south is filled with development ironies. Several countries in this region are mired in endemic poverty amidst abundant natural resources and growing global opportunities. Masses are locked in low-level equilibrium traps despite the range of development paradigms. Nations have gained self-determination with bountiful natural wealth. Yet in many ways this wealth has remained a curse: poverty and conflicts have succeeded opportunities in a vast proportion of them. Nor has the enormous aid disbursed to these nations appeared to have translated into desired expectations. Rather what has remained most prominent in many of them is disillusionment, coupled with heightened sense of frustration and despair among the people. Resolving these ironies has been the preoccupation of many researchers since the end of the Second World War.

The United Nations has passionately expressed concern over international development in view of widening inequalities within and between nations whereas the world has become far richer than ever before. The per capita income of a citizen in the world's richest countries such as Luxemburg, Norway and Qatar is more than one hundred times larger than that of the average citizen in the world's poorest countries such as Sierra Leone, Burundi, DR Congo and Ethiopia. By the dawn of the 21<sup>th</sup> century, Ethiopians had become 35 times poorer than Europeans and citizens of the United States of America, relative to what they were half a century earlier when Ethiopians had an income 16 times less (United Nations 2006, pp.iii-v). Development

divergences have continued to grow to date. Within indigent nations themselves, while records have shown dazzling macroeconomic outlook such as reflected in high GDP growth, the vast majority of their populations remained below poverty lines, and have been accompanied by horrendous rates of illiteracy, malnutrition, and mortality. It is argued that increased national income in the absence of a literate population with good healthcare and stable employment opportunities can only be regarded as growth without development (Dalton 1971; Mosley, Chiripanhura, Grugel & Thirkel-White 2012; Stiglitz 2003; Todaro & Smith 2011).

Effective solutions to these challenges have constantly eluded scholars. Consequently, new thinking in development research has arisen. Emphases have been shifted in theoretical and analytical discourses to comprehend the persistence of development problems more effectively. A great concern in research has been the constant widening of poverty gap at the expense of rural areas, which host more than 70 percent of the world's poor (Acker & Gasperini 2003; Båge 2004; Ravallion 2000; amongst others). In particular, progress in stemming poverty in Sub-Saharan Africa (SSA) has been displeasing. About 50 percent of the region's population is still poor at a daily expenditure benchmark of US\$1.25; Sierra Leone's headcount measures above this average at 54 percent. At the benchmark of US\$2 per day, SSA poverty would shoot up to about 70 percent, and 36 out of the 50 poorest countries in the world are located in this region. The rural areas in the region hold most of the poverty which is not surprising as more than 70 percent of the global poor lives in this sector. In absolute terms, the prevalence of SSA's rural poverty grew from 268 to 306 million people during 2000-2010; those in extreme poverty, estimated at 62 percent, decreasing only by 3 points during the same period (International Fund for Agricultural Development, IFAD, 2010).

Ironically, between 1970 and 2000, the most aid-dependent countries recorded annual

growth rate of -0.2 percent; and in Africa, growth and poverty have worsened despite the fact that over US\$ 1 trillion has been provided in aid since the 1940s (Moyo 2009, pp.46-47).

The state of rural development has aroused widespread concerns that, any continued neglect of this marginalised part of society will risk meeting more untold consequences for the overall society. It has been admonished that, “poverty eradication is the foundation for global peace and security and quality of life for all...we cannot achieve sustainable development without an inclusive pro-poor growth and alleviating the suffering of rural people” (Acker & Gasperini 2003, p.81). Certainly, the implication of rising levels of poverty in one country can be phenomenal not only for that country alone but also for its neighbours, the region, and indeed for the entire community of nations. The effects of poverty transcend both domestic and international borders just as diseases don’t mind frontiers. A poverty-founded HIV-positive prostitute might infect not only indigenes, but also travelling men from the global north to take the disease to wealthy countries (Banerjee & Duflo, pp.5-6).

Poverty has become an effective vector of rebellions, coups, and internationally organised crimes. Its pervasiveness and attendant levels of unemployment present a *ticking bomb* especially for regions prone to narco-trafficking. Essentially, deprivation provides safe haven for criminals while the poor become undemanding conscripts into atrocious gangs of rebels, terrorists, and drugs and human trafficking. The threat of deprivation makes the destitute easily alluring to mayhem. Rebel movements driven by poverty and an urge to control state resources as witnessed across Sub-Saharan Africa can attract masses of youth who may see no future with current political regimes. To the youth, as put in Collier (2007, p.31), it is worth taking a chance as a rebel “despite the high risk of death, because the prospect of death is not so much worse than the prospect of life in poverty.”

Indeed, the benefit of containing poverty is evident. The human cost (loss of lives) due to resource-driven wars across Africa is estimated at about 40 million people since the 1960s (Moyo 2009, p.60). The monetary estimate of “the cost of a typical civil war to [a] country and its neighbours can be put at around \$64 billion” (Collier 2007, p.32). This outlay excludes regional and global-wide costs. The numbers mirror fabulous benefits that a country and the world at large will derive sustainably if poverty is minimised across the globe; and suggests the need to focus greater attention to improving welfare for the rural sector as the largest supplier of global poverty. The theory that poverty alleviation is opposed to efficiency no longer has significant space in discourses: they reinforce each other (Bardhan & Udry 1999; Mosley et al. 2012; Siglitz 2003).

Besides the socioeconomic benefits of containing poverty, its persistence constitutes moral violation of the Universal Declaration of Human Rights (Article 25) that, “Everyone has the right to a standard of living adequate for the health and well-being of himself and of his family, including food, clothing, housing and medical care and necessary social services, and the right to security in the event of unemployment, sickness, disability, widowhood, old age or other lack of livelihood in circumstances beyond his control” (United Nations 2008, p.9).

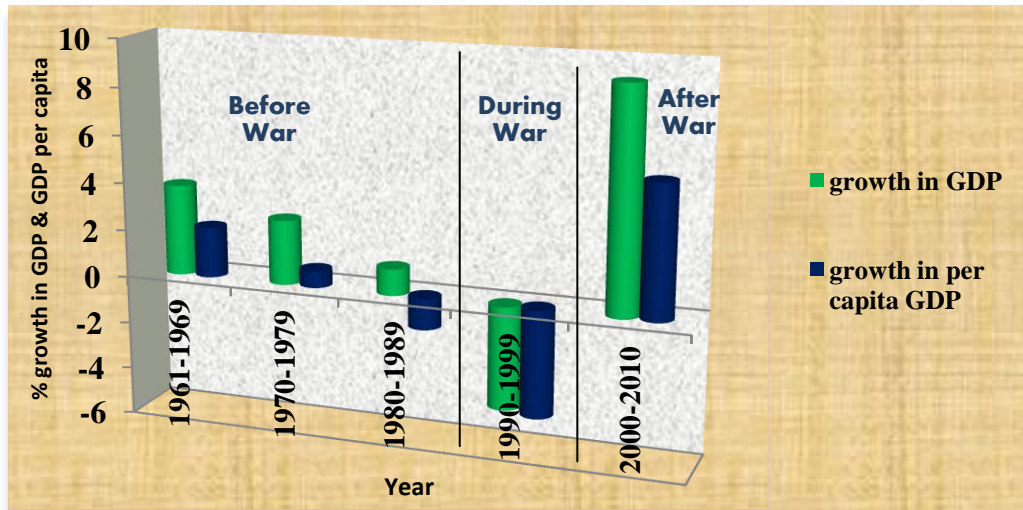
## **1.2 Background to Sierra Leone’s development**

Sierra Leone is located in West Africa, and gained independence from Britain in 1961. It has a land size of 72000 square kilometres, and a current population of about six million. More than 60 percent of the country’s population resides in the rural areas. (See Chapter Three for detailed characteristics.) Sierra Leone is a perfect example of the aforementioned development ironies and challenges. On the one hand, the country has ever been a rich state in natural resources, and had a promising beginning at independence more than many other developing countries at the



time. Since the 1930s, numerous minerals have been discovered and extracted in Sierra Leone including diamonds, iron ore, gold, bauxite, and rutile (titanium). The current petroleum discoveries add to the natural asset of the state. On the other hand, this nation has poignantly remained one of the poorest on earth. Before the outbreak of the civil war in 1991, GDP growth rate had plunged from 3.8 percent during the independence decade of 1960-1969, to 1.1 percent during 1980-1989, the decade preceding the civil war. The war (1991-2001) only worsened what was already a beleaguered economy; growth slipped further down to -4.2 during the war period. The outlook of per capita income growth was bleaker since income growth could not keep pace with population growth (Figure 1.1). The population living in poverty (less than a dollar a day) had risen to more than 80 percent before the civil war. In 30 years before the war, gains made in managing infant and under-five mortality rates and life expectancy could be perceived as marginal. Infant and under-five mortality only declined by 26 and 29 percent during 1960-1990—that is, from 220 and 389 deaths per 1000 births in 1960, to 162 and 276 deaths in 1990, respectively. Life expectancy was up only by 23 percent, from 31 to 39 years in the same period. Literacy was estimated at 7.7 percent in 1961 (Hanlon 2005, p.1), and only increased to 18 percent by 1974 (Bockarie 1995, p.110). Before the war broke out, it had declined to 15 percent by the end of the 1980s (Banya 1993, p.163). Arguably, this level of poverty immensely contributed to the civil war, together with 30 years of continuous authoritative, patrimonial and corrupt leadership (Chan 2012; Dupuy & Binningsbø 2007; Government of Sierra Leone, GoSL, 2005a; Robinson 2008; Hanlon 2005).

Expectations were high after the war for a prosperous Sierra Leone with better quality of life for all, against the backdrop that meaningful development lessons had been learned from the war given the factors underpinning its outbreak and protracted nature, and the attendant human,



**Figure 1.1: S/Leone GDP growth & per capita before, during, & after war, 1961-2010**  
*Source:* Author's construct based on World Bank Development Indicators.

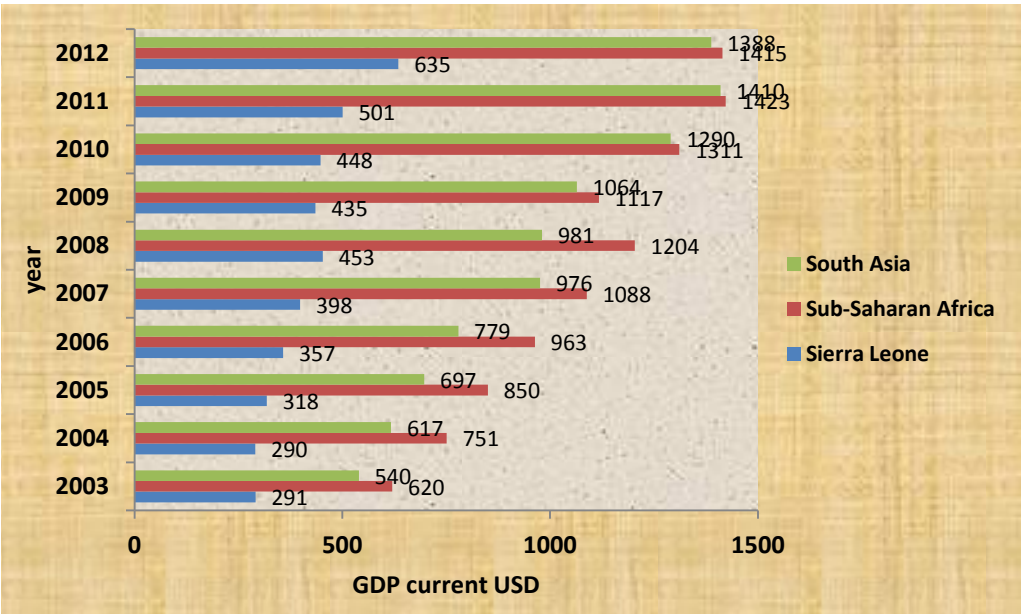
financial and infrastructural costs. Yet while laudable efforts have been made by government with assistance from the international community, the postwar literature on Sierra Leone shows that expectations have not been met. Political and economic commentaries unanimously point to some continuities of previous political missteps, as the country has maintained a degree of continuity along the same lines of unfavourable regional and ethnic cleavages which existed before the outbreak of the civil war (Acemoglu & Robinson 2012; Chan 2012; Dupuy & Binningsbø 2007; Hanlon 2005; Robinson 2008).

As expected for a country emerging from a costly conflict with increased international assistance, Sierra Leone did record unprecedented GDP growth during the period immediately after the war. The economy grew by 18.2 percent in 2001 and 27.5 percent in 2002. The trend remained impressive till 2008 when growth slowed down to 5.32 percent; a downturn that was largely attributed to global economic crises, which saw the Sierra Leone economy move further down to 3.25 percent in 2009. Growth momentarily soared thereafter, recording 15.22 percent in 2012 on account of commencement of new mines operations in the iron ore sector and others.

Generally, the country recorded impressive GDP growth at 6.90 percent during 2003-

2012, which is attributable to the massive postwar reforms undertaken by government. The reform effort has earned the country favourable global rating, currently reported as one among the top reformists and fastest growing economies worldwide.<sup>1</sup> It has ascended the ladder remarkably on World Bank’s Ease of Doing Business Index in terms of improving climate for conducting business. During 2012-2013, it moved further up by eight points from 148<sup>th</sup> position out of 185 countries on the index.

Notwithstanding the generally impressive growth performance and reform efforts, Sierra Leone’s per capita GDP has remained far below the average of SSA and that of populous South Asia (SAS) (Figure 1.2). In 2012, its per capita GDP estimated at US\$ 635 compared to US\$1,415 for SSA, and US\$ 1,388 for SAS. By this account, and given the middle income threshold of US\$1,000 per capita for Africa, Sierra Leone is low-income by 36 percent.<sup>2</sup>



**Figure 1.2: Per capita GDP/Sierra Leone, SSA, SAS, 2003-2012**  
*Source:* Author’s construct based on World Bank Development Indicators.

<sup>1</sup> <http://www.doingbusiness.org/data/exploreeconomies/sierra-leone/> (visited 10<sup>th</sup> August, 2013).

<sup>2</sup> Sierra Leone is however among the slated next middle income countries expected by 2025 if present trends continue and political stability prevails: <http://atlantablackstar.com/2012/11/18/with-impressive-growth-half-of-subsaharan-africa-is-middle-income/> (visited 10<sup>th</sup> August, 2013).

In addition to a lower-than middle income status is the pervasiveness of poverty, especially in the rural areas. Based on the Foster-Greer-Thorbecke estimator, rural poverty headcount ratio estimates at 68 percent compared to 54 and 35 percent at national and urban level, respectively (see Chapter Seven). Explicitly, the country's poverty remains a rural phenomenon, and is consistent with the regional and global poverty account. Infant and under-five mortality rates are among the highest in the world at 128 and 217 deaths per 1000 births (United Nations Children's Fund, UNICEF, & Statistics Sierra Leone, SSL, 2011, p.i), although these figures reflect an improvement from the 2005 estimates of 170 and 286 deaths, respectively (UNICEF & SSL 2005). Illiteracy remains rife particularly for females, which estimates at 56.5 percent, compared to 30.4 percent for males (GoSL 2013a, p.58). Rural illiteracy is more worrying: the share of uneducated rural females is 69 percent, compared to 60 percent for uneducated males (see analysis in Chapter Seven, Section 7.3.1). Nationally, life expectancy estimates at 47 years.<sup>3</sup> Another dimension is the challenge posed by the high rate of youth unemployment which was estimated in 2009 at 70 percent (GoSL 2009a, p.98).

These indices have all been recorded amidst relatively high ODA per capita (Figure 1.3). High mortality and illiteracy have particularly weighed Sierra Leone down on the UN Human Development Index where it currently ranks the 11<sup>th</sup> position from the bottom (United Nations Development Programme, UNDP, 2013), a position which nonetheless represents encouraging signs of development recovery since 2009 (see Figure 1.4).

Further questions: At independence in the 1960s, Sierra Leone was among African countries with a promising beginning than a number of countries excelling today in East-Asia. In 1965, for instance, the GDP per capita of Sierra Leone (US\$151) exceeded that of Indonesia (US\$55), Thailand (US\$138), China (US\$97), and South Korea (US\$106).<sup>4</sup> Sierra Leone

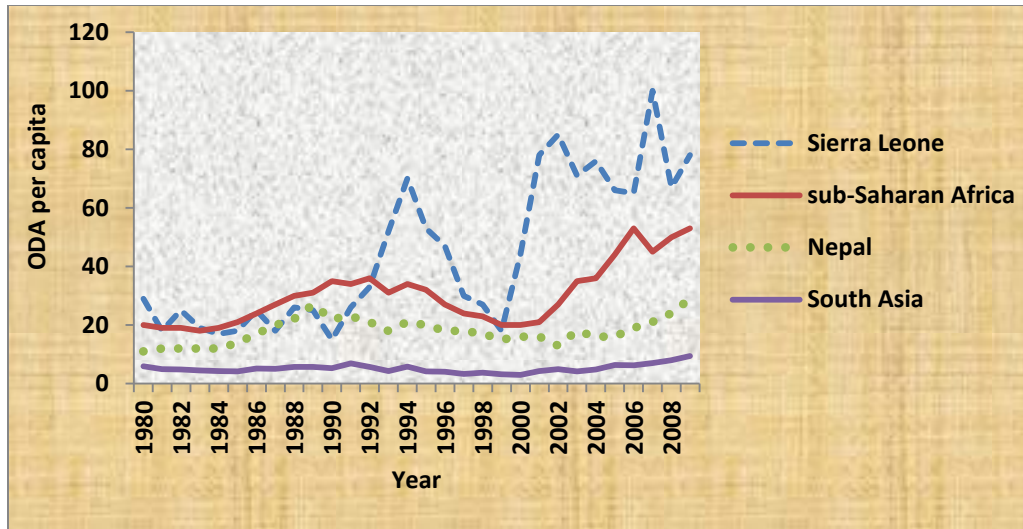
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<sup>3</sup> World Bank Development Indicators.

<sup>4</sup> Bangura (2012a, p.4); and World Bank Development Indicators.

maintained positive growth for most of the 1960s, hovering around 3.8 percent during that decade, and higher than the growth rate of Indonesia and China at 3.7 and 3.0 percent, respectively. But while Sierra Leone retrogressed starting from the 1970s, with per capita GDP slipping constantly from 3.8 percent during 1961-1969, to 2.7, 1.1 and -4.2 percent in the decades that followed until the end of the civil war, these Asian economies emerged and maintained growth at far more impressive levels. Most notable has been the spectacular growth of China, sustainably growing from 3.7 percent per annum during 1961-1969, to 7.4, 9.8, 10.0 and 10.2 percent during the following decades. Indonesia and Thailand both reduced poverty incidence from 60 percent in 1965, to 8 and 13 percent in 2010, respectively. China reduced its incidence from 30.7 percent in 1978, to 1.6 percent in 2007. Sierra Leone's rate has remained at more than 50 percent. Answers as to why the latter has eventually lagged behind shall be sought as the research unfolds.

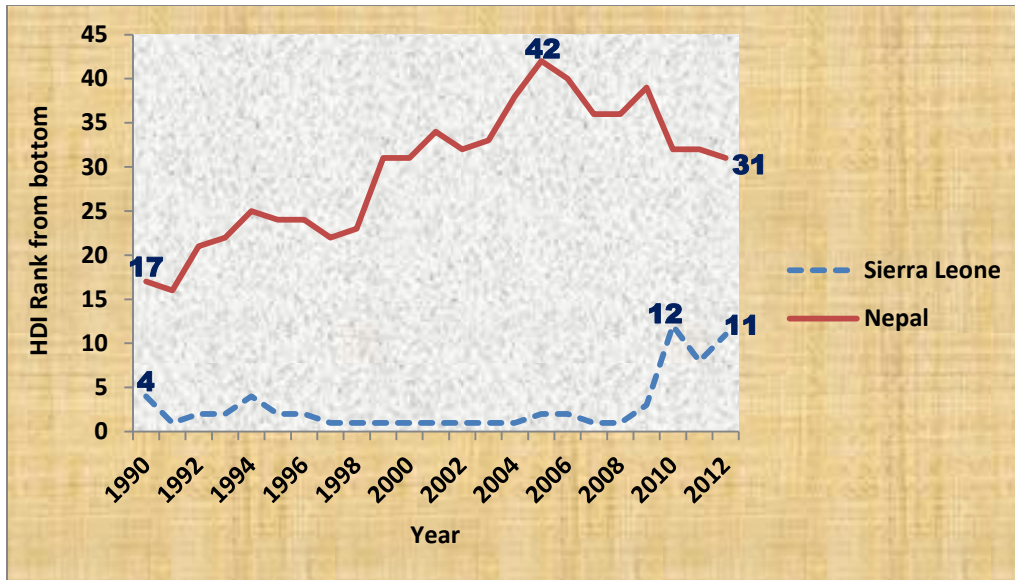
From another perspective, Sierra Leone and Nepal are both poor countries by UN standards and have been highly aid dependent (their ODA per capita are compared relative to regional averages in Figure 1.3). Both countries experienced civil wars for the same duration (1991-2001, and 1996-2006, respectively) and shared similar development outlook in mortality rates and life expectancy in the early 1960s. A key difference between the two is that Sierra Leone has had more natural resources than Nepal, and the former has also received more aid per capita than the latter (Figure 1.3). But Nepal has progressed faster than Sierra Leone on a number of development indices since the 1960s. Nepal's infant and under-five mortality rates distinguishably improved by 78 and 83 percent from 198 and 304 deaths per 1000 births, and life expectancy by 78 percent from 38 years during 1960-2009. The estimates for Sierra Leone improved but by considerably lower percentage points at 47, 54 and 52 percent from 220 deaths, 389 deaths, and 31 years, respectively.



**Figure 1.3: Per capita ODA/Sierra Leone, Nepal, & regional averages, 1980-2010**

*Source:* Author's construct based on World Bank Development Indicators.

Since 1990, the UN Human Development Reports (HDRs) have shown Sierra Leone as least development performer forty-eight percent of the time (in 23 years) for an average sample of 172 countries. As Figure 1.4 illustrates, Nepal's HDR ranking has generally assumed an impressive trend from the bottom. Starting at 17 points from bottom in 1990, it moved up by 14 points on the scale by 2012, with a marked descent after 2005, however. Sierra Leone moved up but two-fold less than Nepal's effort from its starting position, 4<sup>th</sup> from the bottom, although it has signalled a preparedness to earn more notches on the index since 2009 (Figure 1.4). Another postwar country of exemplary performance in HDI related measures that Sierra Leone could learn from is Rwanda, which reduced its under-five mortality rate by 82 percent in 18 years from its genocide in 1994 (see Chapter Four, Section 4.3.6).



**Figure 1.4: Human development ranking from bottom/Nepal, Sierra Leone, 1990-2012**  
*Source: Author's construct based on UN Human Development Reports 1990-2012.*

By way of limitation, this research focuses mainly on analysing the internal determinants of rural poverty and policy options for alleviating the scourge in Sierra Leone (see research questions and objectives below). However, besides the development paradox depicted above that apparently mainly draws on domestic factors, discussing the ironies and factors of Sierra Leone's development cannot end without reflecting on global economic models guiding the country's development policies. It is self-fulfilling prophecy that being an aid-dependent LDC squares with the adoption of policies prescribed by the Bretton Woods Institutions (BWIs), which have dominated the general policy landscape of Sierra Leone. This global policy influence started especially from the late 1970s to early 1980s with the introduction of the structural adjustment programmes (SAPs). Currently, the country has turned to the poverty reduction strategy papers (PRSPs), which are the current vogue of the BWIs. The SAPs were noted for their poverty exacerbating effects and attendant social instabilities across the Third World. The failure of SAPs ushered in the PRSPs, backed by the UN millennium development goals (MDGs) and the aid effectiveness agenda at the dawn of the twenty-first century, drawing great optimism from

LDCs. Yet countries like Sierra Leone have continued to remain pervasively struck by the scourge of poverty, disease, and illiteracy despite the elegance of policy. Most of the leading causes of deaths in Sierra Leone are preventable diseases including malaria, tuberculosis, low birth weight, birth trauma, diarrheal diseases, malnutrition and HIV/AIDS (World Health Organisation, WHO, 2011). It is argued that the cost of eliminating permanent poverty can be reduced by at least 60 percent if appropriate policies are applied (Otsuka, Estudillo & Sawada 2009, p.6). Thus, this begs the question as to whether past and present policies have been the correct ones. As well as SAPs, the PRSPs and other topical donor-driven paradigms have encountered their own critics and cynics, who perceive these latest models as *old wine in new bottle* in light of the rising numbers of poor persons in regions like Sub-Saharan Africa (Cling, Razafindrakoto & Roubaud 2002; Mckinley 2004; amongst others). We will therefore argue that assessing the effectiveness of national policies of countries such as Sierra Leone will constitute an assessment of the effectiveness of policies driven by donor agencies like the IMF and the World Bank.

The ironies of Sierra Leone's socioeconomic development constitute the overriding motivation of this research with a focus on rural welfare. The debate is ongoing as to why the persistent puzzle about Sierra Leone's development, a country potentially rich on the one hand, but deeply enmeshed in practical poverty on the other. Certainly, this remains an empirical question and there is a need to have recourse to theory. We shall start exploring theoretical inputs into the search for remedies by clarifying the various definitions of poverty as follows.

### **1.3 Definitions of poverty**

Poverty is a broad development concept, and is largely a rural phenomenon in the developing world. It goes beyond its traditional, simplistic interpretation of inadequate income, food and



social services such as education and healthcare. Essentially, the material conceptualisation of the term is insufficient. Moreover, the conventional definitions are not adequately instructive of the structural contexts underpinning the backdrop of individuals' failure to acquire even their basic material needs. From an income perspective, a person is deemed poor if his "access to economic resources is insufficient...[to] acquire enough commodities to meet basic material needs adequately" (Lipton 1997, p.127). From a basic needs approach a person is perceived poor if he could not acquire minimum basic needs such as food, clothing, shelter, water and sanitation that are necessary to prevent ill health, undernourishment and the like (Shaffer 2008). "From a human rights perspective, poverty can be described as the denial of a person's rights to a range of basic capabilities—such as the capability to be adequately nourished, to live in good health, and to take part in decision-making processes and in the social and cultural life of the community...a person living in poverty is one for whom a number of human rights remain unfulfilled—such as the rights to food, health, political participation and so on." <sup>5</sup> This is corroborated by the International Bill of Rights definition, interpreting poverty "as a human condition characterised by sustained or chronic deprivation of the resources, capabilities, choices, security and power necessary for the enjoyment of an adequate standard of living and other civil, cultural, economic, political and social rights" (United Nations Economic & Social Council, 2001). These definitions herald the multidimensional nature of poverty as endorsed by 118 Heads of State and Government in Copenhagen 1995 (United Nations 1995). Furthermore, poverty is perceived from the viewpoint that "what is a necessity to one person is not uniformly a necessity to others" (Bradshaw 2006, p.4), and "needs may be relative to what is possible and are based on social definition and past experience" (Sen 1999; cited in Bradshaw 2006, p.4).

Considerable thoughts have been shifted to looking at *poverty* from the context of

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<sup>5</sup> <http://www.ohchr.org/Documents/Publications/PovertyStrategiesen.pdf> (visited November 20, 2013).

*inequality* and *vulnerability*. Valentine (1968) argues that “the essence of ‘poverty’ is ‘inequality’.” That is, albeit it cannot necessarily be equated to poverty, extreme inequality can be a manifestation of an impoverished society running risks of social unrests and vicious circles of poverty (Acemoglu & Robinson 2012; Ravallion 1997; Shaffer 2008). Regarding vulnerability, albeit it cannot necessarily imply poverty, the two have strong causal links (Chaudhuri 2000; Oni & Yusuf 2008; Skoufias 2002; World Bank 2001). Oni & Yusuf differentiate poverty from vulnerability in light of the perception of the former as “a measure of a household’s actual wellbeing,” whereas the latter is an “analysis of the household’s potential wellbeing.” Vulnerability, according to Chaudhuri, is “an ex ante risk today that a household will, if currently poor, remain poor, or if currently non-poor will fall below the poverty line in the next period.” Skoufias says it is “the degree to which the growth rate of household consumption varies with the growth rate of household income; ” or “the likelihood of being adversely affected by shock that usually causes consumption levels, or other factors that affect wellbeing, to drop,” according to the World Bank.

Hence, poverty is a combination of different variables, and modes and contexts of deprivation. It could therefore be defined as (a) a dire welfare situation manifested in low living standards; and (b) the exposure of households to a range of livelihood threatening uncertainties, and their limitations to respond to such uncertainties.

Having ascertained what poverty is, it is crucial to thoroughly investigate why it prevails, so that sustainable solutions can be provided. There are two main theoretical strands in explaining why there is poverty and the reason for its pervasiveness as summarised in the next section.

## 1.4 Why poverty and its pervasiveness?

There is intense debate in the literature about the causes and persistence of poverty. The arguments are broadly divided between two strands. We have those who posit that poverty should be blamed on the victims themselves. These are the far right, neoclassical driven thoughts, who believe the poor do not do much to save themselves; instead they depend on scrounging, and goading others, seeking handouts provided by the welfare system which underwrites their situation. They argue that all individuals maximise their objectives based on the choices and investment they make, and each individual should hold himself responsible for the returns earned from the choices and investment made. These arguments (detailed in the next chapter) fall under *blame-the-victim theory*, and *culture of poverty theory* to an extent (Aliber 2003; Blank 2003; Booth, Leach & Tierney 1999; Bradshaw 2006; Iliffe 1987; Islam 2005; among others).

The other school provides political economy arguments for the persistence of poverty, blaming poverty on the state and weak institutions; elite capture, inappropriate policies and capitalist hegemony. This is believed to have provided the space and conditions for widespread poverty and the widening of gap between the rich and the poor, and between rural and urban areas. These commentaries are leftist, and Marxian in orientation; they are state interventionist thoughts that fall under various *structural theories of poverty*, such as poverty as injustice, neocolonial dependence theory, the false-paradigm theory, state effectiveness thesis, resource-curse hypotheses, and so on (Acemoglu & Robinson 2012; Ghani & Lockhart 2008; Peet & Harwick 2009; Richardson & London 2007; Sobhan 2006; Todaro & Smith 2011; among others).

## **1.5 Statement of the research problem**

Poverty has continued to remain pervasive in Sierra Leone despite the apparent reform efforts by government, and the continued flourish of the mining industry and the relatively high official development assistance from the international community. Most poverty ridden are the masses living in the rural areas. Answers as to why poverty remains endemic have been elusive. The country's post-conflict development strategies were largely formulated against the background that rural poverty was a root cause of the conflict, and this led to the implementation of a series of development programmes including decentralisation to address rural welfare. The sustained pervasiveness of poverty in spite of these strides has focused questions on various issues, such as:

- whether there has been adequate understanding of the conditions in which the average rural household lives, and the complex contexts in which they make welfare decisions;
- whether national development policies and public service delivery systems have been effective, including the effectiveness of prioritising, targeting and monitoring of policies;
- whether government programmes have been adequately informed by the available data on country poverty landscape, and the extent to which in-depth analytic works on poverty have been undertaken; and
- generally, whether the political economy has been right to ensure pro-poor delivery of services.

Against the background of the country's civil war, which was largely poverty-driven, and the concerns we have just highlighted that ensued the end of the war, this research is highly decisive in view of its focus on analysing rural poverty to (a) explore its lead determinants, (b) assess the effectiveness of welfare policies in the context of the complex decision making situation that the average rural household encounters, and (b) to weigh alternative policy options and scenarios

towards sustainable reduction of rural poverty and enhancing national socioeconomic development. The central questions and objectives of the research are presented in the next sections.

## **1.6 Empirical questions**

1. What are the key conditions and characteristics underpinning rural poverty in Sierra Leone and to what extent have these changed overtime?
2. Have poverty programmes been effective in improving the welfare of rural households?
3. Which are the most significant factors explaining rural poverty?
4. How would different policy options and scenarios affect rural household welfare?
5. Which among identified rural poverty instruments and policies to prioritise going forward?

## **1.7 Objectives of the study**

The general objective of the study is to empirically analyse factors affecting rural household poverty and policy options in Sierra Leone with a view to guiding national development policymaking, focusing specifically on the follow tasks.

1. To analyse the key conditions and characteristics underpinning rural poverty and how these circumstances have changed since 2003.
2. To analyse the extent to which development programmes have been effective in reducing rural poverty since 2003.
3. To determine the most significant factors in explaining rural poverty.
4. To analyse different policy scenarios and options for sustainable rural poverty reduction.

5. To advise priority policy areas and framework for guiding decision-making and promoting sustainable rural poverty reduction and national socioeconomic development.

## **1.8 Significance and value-added of the research**

The value and significance of this research particularly rest on the methodology employed. We have undertaken a comprehensive analysis of the poverty situation in Sierra Leone, a rigour that is rare to come by in the literature of the country. The broad analytical techniques employed are motivated by the fact that to determine the right policies for poverty alleviation will require analytical thoroughness in informing those policies, mindful of the multidimensionality of human deprivation. To yield this value, we have broadly employed parametric and nonparametric analyses:

### Nonparametric analysis

- This research argues that a key measure of effectiveness of public policies for poverty alleviation is ascertaining whether structural changes in the household have accompanied the policies implemented. Policies must effect change in rigid, age-old household structures in order to initiate the desired change in income poverty and the drive to prosperity. Therefore, we have descriptively analysed the contexts and structures underlying households' welfare, specifically focusing on:
  - analysing how much have the household composition and size, and family systems changed overtime;
  - analysing how much the socioeconomic situation of the household has changed focusing on rural occupational structure and sources of income;

- analysing changes in the landscape of rural education, health, housing/ environment, and nutrition;
  - analysing the extent to which opportunities for engaging in off-farm employment have been created;
  - analysing household coping and survival methods in times of crises; and
  - analysing the effectiveness of local governance and service delivery to the communities.
- Nonparametric analysis of effectiveness of targeting public resources is also undertaken to determine differential shares of public policy benefit to the poor compared to the nonpoor and the extent to which resource allocation formulas have been poverty sensitive across districts and regions.

#### Parametric analysis

- Parametrically, three level econometric estimations have rigorously been undertaken to provide in-depth understanding of poverty and programming of poverty policies. Aided by factor analysis, the first level conducts OLS regression estimation of six household welfare dimensions: economic welling; education; health; nutrition; employment; and migration. Level two, also aided by factor analysis, pursues a comprehensive simultaneous equation analysis of these six dimensions to reveal the complex context in which households make welfare decisions, and the trade-offs involved in making these decisions. Significant trade-offs are discovered in the system analysis suggesting that for households to survive with meagre resources, they may have to pull children out of school to be able to afford a health bill; or may have to substitute traditional medicine for formal care to be able to send children to school as the case may be. To be well informed

about such contexts is crucial to the effectiveness of policies, but all previous empirical works reviewed on Sierra Leone lack this analytic rigour, a gap this study has attempted to fill.

- Also unique to this research for Sierra Leone is the third level system regression we conduct to enable us to parametrically predict poverty headcount and poverty gap resources based on key policy choice variables. Uncommon even in the general literature, we are able to provide with this framework alternative poverty predictions that we compare with predictions based on the traditional Foster-Greer-Thorbecke poverty estimator obtained under the nonparametric analysis. We parametrically predict not only the *total financial resources* required for eradicating poverty, but also the *amount of investment* needed in specific sectors in this direction. Thus, we have provided complementary budgetary instrument to guide fiscal decisions. We have additionally uniquely been able to determine which amongst competing policies can the government focus on based on system analysis and simulations.

The research undertakes this triangulatory analytical approach in line with the popular notion that what gets measured gets done; but while it is so, most importantly it gets done most efficiently if gets measured properly. In essence, the research indeed suggests that policies should be measured properly to yield desired effects. But we have discovered that effective policy measurement is a continuum: not just getting the right policies through robust analytics is the solution (Mosley et al. 2012, p.3), but also ensuring proper targeting of earmarked poverty resources and following up on service delivery. We discover that effective resource targeting and monitoring are chief preconditions for effective rural poverty reduction.

The study acknowledges efforts by other poverty researchers on Sierra Leone. However,



they have been limited to sector specific analysis, and analysis of single variables such as income, healthcare demand and education enrolment. Political science scholars have carried out narrative accounts of the poverty situation viewed from the country's governance and institutional contexts. As value-addition, this research has rigorously examined poverty through the application of a system analytical approach allowing for the interaction of socioeconomic, structural, cultural, geographic and political variables, measured to reflect the multidimensional nature of poverty. It is additionally crucial that this research prioritises an examination of rural deprivations which contribute to national and international poverty the most, and whose protracted neglect had been a major cause of the Sierra Leone civil war, with immense socioeconomic costs.

The analytical framework adopted in this research is not only value-adding to the Sierra Leone literature; it fills considerable gap in the wider development literature across the globe.

## **1.9 Organisation of the study**

This study has been organised around ten chapters. The next chapter presents various perspectives of poverty. It discusses general development theories and specific theories of causes of poverty. The institutional contexts bordering poverty are discussed in that chapter, with a focus on managing natural resources within the framework of the resource-curse discourse. It ends with a review of perspectives on the African rural household and poverty, surveying thoughts on what the African rural household is, and the challenges it faces in maximising welfare in normal as well as in hard times. Chapter Three presents the history and political economy of Sierra Leone since independence. This is discussed in the context of the theories reviewed in Chapter Two to situate the country's development experiences in the general theories in order to identify development gaps and inform analysis in subsequent chapters. It

specifically focuses on Sierra Leone's progress from independence till the end of the civil war (1961-2001), and the immediate post-conflict period (2001-2004). Chapter Four reviews contemporary antipoverty policies in LDCs. It begins with examination of general perspectives on poverty reduction strategy papers driven by Bretton Woods Institutions, and then zeros in on Sierra Leone's current development policy, highlighting milestones achieved since 2003, challenges encountered, and strategies going forward. It also examines antipoverty strategies of other countries for lessons. Chapter Five presents perspectives on measurement and modelling of poverty, and reviews previous empirical studies of determinants of poverty across the globe. This provides a sound framework background for Chapter Six, which elaborates the empirical research design and methodologies of our study. Chapter Seven undertakes descriptive and nonparametric analysis of rural poverty situation in Sierra Leone. It determines how many the poor currently are, where they are located, what resources are needed to lift them out of poverty, and how much they have benefited from public services relative to the non-poor. Eight conducts econometric analysis of determinants of poverty, estimating series of regression equations and carrying out postestimation policy simulations and analysis to determine alternative paths and options for addressing rural poverty. It predicts poverty headcount ratios and resources needed to lift every one out of poverty. Chapter Nine pools together and discusses empirical results obtained in Seven and Eight. Ten concludes the research, summarising major findings and providing policy direction.

## **Chapter Two**

### **Perspectives of Poverty**

This chapter reviews general theoretical perspectives of poverty. The first section presents relevant development theories of determinants of welfare at global and macro level. It emphasises theories underlying the operations of the Bretton Woods Institutions that have heavily influenced development policies of LDCs with direct impact on rural wellbeing. The second section reviews theories of causes of poverty. This is undertaken particularly against the standpoint that any community intervention should be responding to certain causes of poverty that it seeks to address but oftentimes the theoretical foundations to guide such interventions are inadequate (Blank 2003; Bradshaw 2006). The third section reviews institutional issues and resource-curse arguments in the context of African poverty. This is crucial, given the centrality of mineral resources in the development discourse of Africa and their implication for conflict and persistent poverty. It is particularly crucial to this research because Sierra Leone is a lead subject in this debate at the global scene. The fourth section examines poverty in the context of the African rural household. It aims to explore perspectives to enhance understanding of what this household is, and highlight arguments about its survival and coping strategy during hard times and in the absence of effective pro-poor policies. The final section concludes the chapter.

#### **2.1 General development theories**

The overriding goal of development is poverty reduction, with a great focus on rural welfare in LDCs. Since the 1950s, the perception of income as the central goal of development has undergone a radical shift. For too long, the definition of development remained narrow with

attempt at equating development with increases in income. Many developing countries recorded remarkable increases in economic growth in the 1950s and '60s, yet a great number of people remained trapped in poverty. This called for a serious rethink of what constituted development, and overtime, development came to be effectively perceived as a process aimed at not only growing an economy, but growing it with optimal diminution of poverty, inequality and unemployment (Todaro & Smith 2011, p.15). The arguments as to which factors are most essential to improving a nation's growth and welfare, and the policy trajectory to follow are broadly divided between proponents of market mechanism, who see price as the most effective resource allocator, and the proponents of state interventionism, who perceive the central government as the most effective allocator. The first strand is neoclassical, and rightist in orientation, while the second follows Keynesian philosophy, with a leftist touch. Both strands of thinking have direct and indirect impact on rural poverty in LDCs.

The market versus the state arguments over welfare determination can be dated as far back as the 18<sup>th</sup> and 19<sup>th</sup> centuries with the advent of economists such as Adam Smith, John. S. Mill and David Ricardo. The neoclassical (market-based) orthodoxy perceived individual self-interest in the running of the economy as the fundamental driving force to achieve desired economic change and to reduce poverty. It believed in the laissez faire economic system that market should be left to the dictates of the forces of demand and supply with price serving as "director" of the allocation of scarce resources through which economic efficiency and poverty reduction were guaranteed. Secondly, they argued that full employment can always be ensured in the economy through the interplay of market forces, so that any unemployment witnessed was voluntary. Implicit in this thinking is the assumption that there was no poverty; everyone maximised (Bradshaw 2006), or at least resources were redistributed to reduce inequality and

forestall potential poverty.

The neoclassical paradigm was founded on Adam Smith and others' thoughts using logic to argue for the advancement of individual self-interest as an imperative for growth and development. This "was part of a larger intellectual system of political economy contained within the...broader liberal philosophy of the British and European Enlightenments" (Peet & Harwick 2009, p.29). It was purportedly committed to revolutionising the status quo (class-system) towards the creation of a society (class-less) for the best good of all. But, it is argued, the emerging thought was not class-neutral; rather a class-committed ideology whose political interest in the arrangement of society was to support the industrial bourgeoisie in an intellectually waged war against the nobles and feudalism in Western Europe; they legitimised selfish and competitive profit-making as natural and pursued in the best interest of society, yet, the role of selfishness and price as resource distributor had only produced gains and profit for the capitalist (industrial bourgeoisie) at levels far in excess of wages for the working class that constituted the poor (ibid).

The Great Depression of the 1930s caused a serious damage to the neoclassical thinking, when the west suffered enormous economic setbacks: the market could no longer optimise economic outcome, nor capable of keeping workers employed; aggregate demand plunged; businesses collapsed; poverty struck. The depth of the depression gave rise to Keynesianism and Keynesian economics which placed the state at the fore of economic management. State controlled fiscal and monetary instruments were advised by Keynes and immensely contributed to the recovery of collapsed economies.

Keynesian thesis became the basis for many growth and poverty reduction models after the Second World War. Social democratic philosophies came to be grounded on Keynesian

interpretations of welfare determination which heavily favoured the working class. A theoretical outgrowth from Keynesianism was the growth-based linear-stage development models which emphasised capital accumulation (through the mobilisation of domestic and foreign savings) as *the* key determinant of economic growth and development. This was a compelling conceptual ground for the proponents of foreign aid to poor countries, especially owing to the successful transformation of war-torn Europe with the Marshall Plan funded by US resources. Rostow, Harrod and Domar were leading protagonists of this model. Rostow's linear-stages of development posited that all societies were to go through five-basic stages in their development process: the traditional society; the precondition for take-off into self-sustaining growth; the take-off; the drive to maturity; and the age of high mass employment (Rostow 1960). With the necessary level of savings (through domestic and international sources, including foreign direct investment), it was believed a society can transform from one stage into another through growth enhancement. Harrod and Domar had formally demonstrated the economic mechanism through which increased investment (capital formation) could lead to more growth (Domar 1947; Harrod 1948). However, the general applicability of these models was hugely limited by their implicit assumption of perfect institutions: good governance, rule of law, property rights and a well educated and knowledgeable society, all of which were immensely lacking in poor countries, especially in Africa. Another shortcoming reported of these models was their indifference to the susceptibility of capital to the law of diminishing returns which limited its dependability in sustaining growth. [See Dowling & Valenzuela (2010); Peet & Hartwick (2009); Todaro & Smith (2011); among others.]

The Solow model came to modify Harrod-Domar model, by introducing labour and technology into the determination of economic growth; it explicitly acknowledged the thralldom

of capital and labour to the law of diminishing returns (Solow 1956). This model argued that the basis for sustained economic growth was technological progress, which, viewed from a neoclassical sense, was determined exogenously than through internal economic forces, and it was not subject to diminishing returns as capital and labour. Romer deviated from Solow's model, although in reinforcing it, that technological progress was indeed the most important factor of economic progress but should be determined endogenously through the interplay of internal economic forces given the quest of firms and markets to discover new ideas through research and development. The endogenous perspective saw internal (within system) ideas as the source of sustained economic growth. Both proponents emphasised the need for a shift from resource- to knowledge-based approach to economic growth and development. Romer argues: "Higher living standards result from steadily improving knowledge of how to produce more and better goods and services with ever smaller amounts of physical resources. No amount of savings and investment, no policy of macroeconomic fine-tuning, and no set of tax and spending incentives can generate sustained economic growth unless they are accompanied by the countless large and small discoveries that are required to create more value from a fixed set of natural resources" (Romer 1993, p.345). The technological models also presuppose the availability of high quality public institutions and the need for prioritising education in the transformation of societies, as emphasised in Dalton's *community change and development* (Dalton 1971; pp. 96-104).

Building on the arguments of capital accumulation, technological advancement and knowledge-based society within neoclassical free-market fundamentalism are the structural change models which agitated for the transformation of economies from a traditional, subsistence agrarian society into a more developed, modern, and high income earning industrial

society (Chenery 1979; Lewis 1954). Lewis two-sector surplus labour theory noted that most traditional, rural societies had excess agricultural surplus labour with low returns to factor input, and the excess labour can be transferred to the industrial sector with higher value-added propensity and income generating potential necessary for economic growth that will benefit all including rural population through trickle-down effect—justifying rural-urban migration. While supported by Chenery and others that countries that had progressed followed these structural patterns, the practicality of this theory for most developing countries came under question too, on its implicit assumption of fast growing capital accumulation in the urban sector with full employment, and absolute reinvestment of excess capital (profit) into the local economy. These assumptions were impractical in most poor countries because unemployment had always persisted in urban areas; there had been capital flight and high proclivity of capitalists towards labour-saving technologies; low employability of majority of rural migrants due to limited education; hardly did surplus labour exist in most cases; and the trickle-down effect hypothesised through growth prioritisation hardly came by.

These models were strongly counter-argued in Myrdal's *circular and cumulative causation* in light of the impoverishing effects that structural change processes could cause. That is, there were both backwash and spread effects due to pulling resources from rural and remote communities towards the industrial sectors. This made other sectors such as agriculture deteriorate more and more, mirroring the international trade arrangements where rich countries were made richer and poor countries poorer (Myrdal 1963, p.151).

A Keynesian-based, state-interventionist structural change model was that of the Latin America school, that became the basis for import-substitution industry (ISI) strategies across the Third World. During the 1940s, '50s, and '60s, several Latin American economies were badly



affected by high inflationary rates and worsened terms of trade with the adoption of market-based policies. These hardships put to question theories such as the Ricardian comparative advantage advising LDCs to focus on production and export of primary commodities to developed countries, while the latter focus on production and export of manufactured goods to the former. But the value of manufactured imports was several times higher than export value of primary products from poor countries. These primary products unfortunately constituted most of the livelihood of the rural people.

Structuralist Raul Prebisch and others also charged against the conventional wisdom, that there were both demand and supply bottlenecks that had disadvantaged poor countries in trading with rich countries (Peet & Hartwick 2009). These bottlenecks were not captured in the trade arrangement, thereby creating a centre-periphery dichotomy, leading to the agitation for ISIs for Asia, Africa and Latin America rather than continuing with the Ricardian division of labour. However, ISIs could not prove effective in many LDCs, especially in Africa, because of the highly costly capital investment requirement of this strategy. In Africa, industries were not self-sustaining and required continuous state subsidies. In a number of cases in Africa, investments were ambitious relative to local capacity, unlike success stories in Asia where a gradual approach to ISI was followed and the overall governance of the schemes was much better [see Acemoglu & Robinson (2012); Mengistu (2009); Rooney (1988); among others].

Also worthy of discourse within the state-led structural change models is the Japanese-originated developmental state model that informed the successes of a number of East-Asian economies. The popularity of the developmental state derives from the successful intervention of the state in directing markets in Japan. The economic miracle of postwar Japan and the East Asian newly industrialised countries—Singapore, Taiwan, and South Korea—since the 1970s

was hugely attributed to active industrial, trade, and technology policies introduced by the state (Wan 2008). These countries, and others such as Indonesia, Thailand, and Malaysia, grew with dramatic reduction in inequality and rural poverty. The key factors underpinning the thrust and success of the developmental state in these countries were strong state leadership, accountability, rule of law, highly educated and incentivised public sector; an effective cooperative framework between the public and corporate sector—and successes were recorded with little mineral resources in some cases.

The international-dependence revolution theories were a more direct attack on free-market policies. These were Marxian in orientation, including the neocolonial dependence theory, and false-paradigm theory. They perceived Third World poverty as a conscious configuration of the developed world working with local economic agents. Their theses demonised the global economic system as a capitalist capture whereby the rich countries got richer and the poor poorer in the international market (Stiglitz 2003; Todaro & Smith 2011; among others). To underwrite the status quo, a few elite groups were arguably deployed with attractive incentives at the local and national level in poor countries, to act in the interest of industrial capitalists in developed countries (Todaro & Smith 2011, pp. 122-124). The false-paradigm thesis posited that Third World poverty was due to “faulty and inappropriate advice provided by well-meaning but often uninformed, biased, and ethnocentric international ‘expert’ advisers from developed-country assistance agencies and multilateral donor organisations...[coming] with complex...misleading models of development that often lead to inappropriate or incorrect policies” (ibid). An implication of this attack is for developing countries to break from the *stranglehold of international predators* by embarking on independent economic policies. But this will be far from inevitable. All nations seek to advance, and cannot

afford to miss out on taking advantage of the current age of globalisation and technology that has necessitated countries the world over to carry out socioeconomic and political transactions ever more closely. An era that provides better opportunities for technological progress for catching-up nations, and where technology is mostly initiated and coordinated from the north.

State driven Keynesian policies came under intense counterattack from the neoclassicals, following the global economic crises of the late 1960s to early 1970s, which, in a neoliberal sense, were a failure of Keynesianism. However, parts of these crises were largely blamed on oil shocks of the early 1970s. Johnson (1971) argues that development economists that advised state-centred models had erred: state-directed industrialisation and national self-sufficiency policies with economic planning as instrument had failed; they were counterproductive in developing countries, more so in Africa; they encouraged corruption, favoured import substitution with attendant balance of payment problems, and generally supported misguided state intervention into the market in a futile attempt at achieving social justice.<sup>6</sup> These criticisms led to the emergence of the Washington Consensus with a set of free-market based policies (the structural adjustment programme) that any borrowing country from the IMF and the World Bank thereon must follow as a sine qua none. These prescriptions became the vogue in many LDCs during the 1980s and most of the 1990s. Yet the vast majority in the developing world could not make a difference in welfare; poverty was heightened and inequality widened, leaving nations socially precarious.

By the turn of the twenty-first century, however, the Washington Consensus and the SAPs were revisited. The Augmented Washington Consensus emerged with explicit emphasis on poverty reduction and good governance. The poverty reduction strategy papers and the Millennium Development Goals became central in the new development thinking and are the

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<sup>6</sup> This is elaborated in Peet and Hartwick (2009).

current blueprint guiding policies in aid-dependent LDCs. New global partnerships between donors and recipient countries were formulated to improve aid effectiveness. As lead issues discussed in Chapter Four, these latest development paradigms have not however gone without critiques. Some researchers have perceived them as a mere construction of another craze, or as old wine in new bottle and skin (Cling et al. 2002; among others). Having examined some macro perspectives of development, we shall turn next to examining specific theories of causes of poverty.

## **2.2 Theories of causes of poverty**

The Social Darwinian theory tries to explain poverty from the standpoint of the behaviour and attitude of the poor themselves—*blame-the-victim poverty theory*. That people are poor because they have not worked hard; they are not frugal; they have no self-motivation to work, and are characterised by high level of ‘ineducability’ and illiteracy (Islam 2005, p.2). Low intelligence quotient is ascribed to the poor, possessing low mental capacity and biologically destined to occupy the status they find themselves. This view is reinforced in Bradshaw (2006), where poverty is attributed to lack of genetic qualities such as intelligence that are not so easily reversed. Reportedly, poverty as a function of individual deficiencies is an old paradigm along the religious doctrine that God begets wealth, and the blind, crippled or deformed people were believed to be punished by God for their sins or that of their parents (ibid). Blame-the-individual arguments are rights’ positioned perspectives moving in a neoclassical direction, that all individuals maximise their objectives based on the choices and investment they make, and each individual should hold himself responsible for the returns earned from the choices and investment made. The right condemns aid giving on the premise that it rewards laziness, discourages hard work, and hence only exacerbates the problem.

A related (though differentiated) theory to blame-the-victim version is the *culture of poverty*, suggesting that poverty results from a set of unproductive beliefs, values and skills that are socially generated but individually held, and are transmitted from one generation to the other (Blank 2010; Bradshaw 2006; Islam 2005; among others). It is advanced that, “Once the culture of poverty has come into existence it tends to perpetuate itself. By the time slum children are six or seven they have usually absorbed the basic attitudes and values of their subculture. Thereafter they are psychologically unready to take full advantage of changing conditions or improving opportunities that may develop in their lifetime” (Ryan 1976, p.120).

Various criticisms have been levied at blame-the-victim theory of poverty. It may have been asked in Sachs (1995, pp.7-8): Were the HIV/AIDS, impoverished Malawians dying in the Blantyre Hospital really maximising their objective subject to not capable of affording the cost of one dollar-a-day for the antiretroviral drug provided by the Indian drug producer, Cipla? Doesn't aid matter there? Certainly, for those in low-level equilibrium traps or below the *micawber*<sup>7</sup> threshold, their livelihood conditions are so grim that there is no incentive for these individuals to save money; for even if they did they will not break out of poverty because the marginal rate of return to their savings is negligible (Carter & Barrett 2008, pp.23-24). These individuals are chronically and structurally trapped in poverty that breaking free of deprivation chains can only be achieved through sustained social protection. Predictable and well coordinated aid can be decisive in this direction. Unfortunately, the vast majority of those in need of social protection in LDCs live in remote rural areas that are difficult to access owing to dire infrastructural conditions *inter alia*.

The criticisms surrounding *blame-the-victim theory* and *culture of poverty* are widely expressed in the *structural theories of poverty*. Structural theories explain the circumstances

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<sup>7</sup> *Micawber* is the notion of being poor but optimistic of breaking free of poverty.

underpinning the conditions under which the poor live, especially those in rural areas. Conditions, such as unemployment, underemployment, low income, poor education, and poor health, are argued to be manifestations of unfavourable geography and weak political structures and processes that affect the effective implementation of pro-poor policies (Acemoglu & Robinson 2012; Carter & Barrett 2008; Mosley et al. 2012; Sobhan 2006; among others). The focus of the structural theorists is not on the individual traits, behaviour, or whatever the personal characteristics are, as sources of poverty, but on the economic, political, and social systems which cause people to have limited opportunities and resources to achieve better income and wellbeing. A proportion of these theories are Marxian, such as the neocolonial dependence theory, and the false-paradigm and dualistic development discussed earlier. It is argued that the multinational corporations (MNCs) in the Third World benefit only those companies and their home customers, while impoverishing domestic producers by cheaply acquiring their lands and compelling them to produce commercial crops for foreign industries; indigenes are stripped of their lands and driven into sweatshops labour (Blank 2003, p.451).<sup>8</sup> It is the macro context and globalisation that cause low domestic incomes, inequality, and poverty; poverty is exported by developed countries through placing poorly paid jobs in less-developed nations so as to assure themselves cheap import (ibid; Islam 2005, p.4).

The structurally poor lack the minimum basic assets to live a decent, stable and predictable livelihood. They have limited access to land, and limited access to labour to till the little they have (especially for the disabled). There is limited market to sell labour for those who possess it. They are denied of education, healthcare, and improved nutrition; and generally lack any ability to access basic human services in a timely manner.

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<sup>8</sup> On 22<sup>nd</sup> February 2012, the British Broadcasting Corporation (BBC) aired out land grab concerns for African countries including Sierra Leone—see BBC News, 22<sup>nd</sup> February, 2012. *Analysis: land grab or development opportunity*; <http://www.bbc.co.uk/news/world-africa-17099348>.

Geographic differentials have been crucial determinants of structural poverty. The unequal intrinsic characteristics between nations and settlements have limited their convergence ability towards each other's level of development. Some are located in intrinsically disadvantaged areas, such as populations sandwiched between the tropics of cancer and carpricorn characterised by hot climate and devastating tropical diseases. This leads to multiple equilibria within and between societies, such that there are some impoverished segments that will eventually break free of poverty traps but others will remain perpetually trapped (Acemoglu & Johnson 2012; Carter & Barrett 2008; among others). The geography thesis suggests that regional cooperation and good governance are key resources for landlocked nations bereft of seaports, as well as for areas with less socioeconomic opportunities within countries.

There are more compelling arguments within structural theories that sustained state failure mostly accounts for dismal income growth, inequality, and poverty. In the absence of effective treatment of historical impediments that consistently disadvantaged certain populations, no well-intentioned plans will be apt to curb endemic poverty, and policymakers and the state are to blame for these impediments (Richardson & London 2007). It is argued in Sobhan (2006, p.326) that the inequitable claim to economic and political resources within society appropriately defines the origins of poverty in light of the existence of unjust nature of a social order that cements inequalities, poor growth and endemic poverty. According to Ghani & Lockhart (2008, p.19), poverty is merely a state's failure to provide the most basic means of survival for its people, and they place question marks on the real sovereignty of such states.

In their book *Why Nations Fail* Acemoglu and Robinson present extensive historical account of persistent poverty in polities, which also centres on conscious political efforts to serve an elite few with state resources at the expense of majority. Their exposition is framed within an

*extractive political and economic institutions thesis* built on Schumpeter's *creative destruction theory*. Creative destruction is a necessary evil for sustainable development. It is a phenomenon whereby through economic and political pluralism ideas and innovations are encouraged to bring about technological progress as happened during the 17<sup>th</sup> century British Industrial Revolution that has developed Britain to date, as well as other polities on the globe that consequently industrialised, such as France and others in Western Europe, and white settlements of the United States, Canada and Australia, and Japan in Asia. The basis for the success of these countries is that, overtime, their political elites completely battled out the fear of creative destruction. They encouraged productive ideas including those generated by commoners, and hence there was massive innovation and technological progress through the creation and security of property rights that incentivised masses including the underclass to participate in the economy. This led to massive growth of the middle class and the emergence of democracies and parliaments with different interests that engendered permanent restraints on economic and political elite and rulers against unfair monopoly. Ultimately, the realisation was sustained growth and prosperity for all, and reduced inequality and poverty.

On the other side of the spectrum, the global south, fear of creative destruction has led to perpetual inequality and poverty, and on a more phenomenal scale in Africa. Ironically, the parents of Industrial Revolution—Britain, followed later by France and others—have been major players in inculcating *fear of creative destruction* and *disincentive to industrialisation* in postcolonial regimes that assumed power to further impoverish their own people. To systematically extract resources from their dominions, the colonialists established and entrenched extractive political and economic institutions in Africa (Britain and France most notable), as it happened in Latin America under Spain. In Africa, precolonial kingdoms and



kings (re-christened later as paramount chiefs by colonialists) were tricked with treaties that provided foundation for the sustained extraction of resources to come. It happened both where the culture of expropriation of the poor was not a tradition, and where it was commonplace in precolonial times. Indirect rule was instituted to encourage paramount chiefs (PCs) to participate in the extractive process across African countries such as Sierra Leone, Ghana, Nigeria, Kenya, and Botswana, to mention but a few. The PCs were well rewarded in this process, which can be defined as *the monopolisation and concentration of economic machinery, political power, and decisions over state resources in the hands of a few powerful in society (the colonialists at the time)*. Chiefs were not only accorded some independence in administration of local tax collection and lands in shared interest with colonialists, and granting their children special educational privileges, but the colonialists also established ruling houses in the protectorate excluding lineages of the masses. They introduced *perpetual paramount chieftaincy*, the PCs now ruling for life without any secret ballot or democracy, making local power (and hence economic power) hereditary and concentrated in a few families. Yet the opposite was the reason why Britain and other current day developed nations came to develop: democracy, pluralism, and level playing fields, which brought them creative destruction, industrialisation and prosperity. Unfortunately, and to the extent that these practices (economic and political extraction and patrimonialism) were already engraved on the ancestry of anti-imperialists, postcolonial regimes had only come to perpetuate and make worse the extraction of their own, with the exception of a few regimes such as Botswana in Africa, as discussed further in the next section. [See Acemoglu & Robinson (2012).]

The institutionalist arguments suggest the need to comprehend poverty within a country's political context, that, the main essence of poverty is sustained dysfunctional state institutions.

This puts *righting the political economy* of a country at the apex of poverty alleviation. In Todaro and Smith (2011, p.7), political economy is defined as “the social and institutional processes through which certain groups of economic and political elites influence the allocation of scarce productive resources now and in the future, either for their own benefit exclusively or for that of the larger population as well.” This relates to the reasoning in Mosley et al. (2012, p.3) that the expected fruits of appropriate policies can be harnessed only if the existing political arrangements of society countenance them. Structural poverty, in the institutional context, is therefore a function of a set of entrenched, unpatriotic economic and political practices driven at the top of government. These vices will not lead to optimal market outcome and economic growth and poverty reduction. They egregiously deprive economic opportunities for the masses that are not politically connected. But this will breed fluid contexts risking social anarchy, political upheaval, further retardation of already repressed economies, and hence further impoverishment: the vicious circle. And while it certainly can be counterproductive, sometimes it is only calamities, instability, and infighting amongst elite that arguably will bring about critical junctures with attendant spin-offs and increased chances of improving the welfare of the poor (Acemoglu & Robinson 2012; Mosley et al. 2012).

Therefore, it can be inferred from above that, segments of the poor are conditioned to remain poor by factors outside their control. The poor are not necessarily lazy. They sometimes work even harder and longer hours but remain poor because of structural factors beyond their control that have seen their children condemned to miserable future (Siglitz 2003, p.83). Plausibly, this may mostly have explained the inertia experienced in reducing poverty in rural Sierra Leone, and in SSA in general (see Chapters One, Four & Seven).

Structural factors are central to providing answers to the self-destructive behaviour

exhibited by individuals who feel marginalised and see no chances of reversal of the status quo in their interests, and this necessitates implementation of comprehensive antipoverty programmes. But such programmes also run their own risk of sustaining poverty if not chosen and managed well. Affirmative action such as allocating certain amount of jobs to certain castes or group as practised in India because of their disadvantaged position in society has potential risks of becoming counterproductive. It may not provide much incentive for such persons to self-advance themselves through education (Bardhan & Urdy 1999, pp.147-148). Also, development assistance in the form of food aid to post-conflict regions can be perverse. It may discourage local crop production, and nurture a culture of sustained dependence on foreign aid, and make what should be a short-term intervention to have long-term consequences. And displacing local markets for domestically manufactured bed nets through importation of huge quantities with external assistance could discourage local entrepreneurship and impoverish those involved in the local business. [See Blank (2003); Easterly (2006); Moyo (2009).]

By and large, the average argument points to institutional factors as the main drivers of poverty in the global south. An illustration of this is the high growth of scholarly interest in the economics of institutions and the state with regard to the perceived chief role of *weak political* and *bureaucratic systems* in driving poverty. In resource-rich countries like Sierra Leone, the role of weak institutions in perpetuating poverty has been extensively discussed in the resource-curse literature. In the next section, we will review African poverty in the light of weak institutions and resource-curse.

### **2.3 Weak institutions, resource-curse and persistent poverty in Africa**

Traditionally, the tendency has been to ascribe Africa's persistent poverty (as elsewhere) to lack of income, and weak capacity to spur processes leading to achieving desired income such as low

savings, finance, education, appropriate farming technology, better land arrangement, and so on. While these are important factors in explaining poverty, they only constitute symptoms of the underlying problems, which are weak political institutions. Africa was at critical crossroads at the time of imperialism and anti-imperialist movements, which if managed well by postcolonial regimes should have seen Africa at far higher development heights than witnessed today. Instead, the same fear of creative destruction, hence *extractive political and economic institutions*, continued to take precedence in postcolonial Africa (Acemoglu & Robinson 2012; among others).

Egypt was promising in the 19<sup>th</sup> century under Mohamed Ali, poised towards the creation of inclusive and modern economic practices, before the annexation of the country by Britain, who reversed the situation to extractive processes (ibid, pp.397-398). Unfortunately, post-colonial and -monarchical regimes more than sustained the extractive institutions, further cementing state and crony hegemony in the operations of the economy, limiting political and economic space for the masses. The 2011 Arab Spring uprising against the state is a testimony of blocked opportunities and poverty in Egypt.

Despite successful efforts at ending white occupation and economic extraction and dominance in Zimbabwe, ironically President Mugabe has more than maintained the extractive legacies of colonialism since 1980, emasculating any political opposition, and entrenching government grip on the economy, dishing out rewards to cronies to ensure his continued rule. By 2009, the unemployment rate of Zimbabwe had recorded 94 percent (ibid, pp.368-372).

Why ignorance should not be mistaken as lead cause of poverty, although education is a lead panacea for its eradication? For Ghana, it is argued in Acemoglu and Robinson (2012), and Rooney (2008), that, it is not because Nkrumah was uninformed of the right economic policies to

develop his country after independence in 1957 that the country was not doing well; nor because his advisers did not know the right options to offer—some of his advisers were leading world economists, such as Arthur Lewis. Rather economic prosperity was simply sacrificed because Nkrumah needed to embark on chains of unrealistic development projects to buy political support and perpetuate him in power.

And why in all, geography, culture, intellectual deficiency and ignorance are necessary explanatory variables for poverty but not sufficient as politics and institutions in Africa? In early times, up to the 15<sup>th</sup> and 16<sup>th</sup> century, two groups of people, the Lele and Bushong in present day Democratic Republic of Congo, were located near each other northeast of Kinshasa, and only separated by a river running north from Angola. They shared the same culture and language, and had equal knowledge of better means of production and prosperity. But the Bushong people were far more prosperous than the Lele. Historically and contingently, the Bushong people, governed within the Kuba Kingdom, happened to have been beneficiaries of far more organised political and economic institutions that encouraged hard work, secured property rights, and dispensed justice through jury system *inter alia*, whereas the Lele were governed by disorganised system on the other bank of the river, pursuing only subsistence production, and buying guns from Europeans to hunt for slaves (Acemoglu and Robinson 2012, pp.59; 133-136).

This is also true for why present day Botswana is much referenced at international level as the best example of good governance and prosperity in Africa. Even though they were subject to indirect rule during British extractive colonial reign, the kings and chiefs of Bechuanaland (now Botswana) including the Khama lineage were able to outmanoeuvre imperialism through applied efforts. They maintained plural rule and just social order inherited from their forefathers; protected property rights of their subjects; and interacted with colonial masters such that their

precolonial values were not eroded. These actions are believed to have mainly accounted for Botswana's distinguished postcolonial prosperity in Africa.

Sierra Leone is among countries that unluckily witnessed systematic diminution of development opportunities for fear of creative destruction under both colonial and postcolonial administration. We shall examine these facts in detail in Chapter Three.

The above background is fundamental to understanding the resource-curse arguments we now turn to. Natural resources are expected to be managed efficiently and equitably. The rents are to be invested in productive sectors such as education and rural transformation towards sustainable poverty reduction and general development. However, in many resource-rich states this natural advantage has remained a curse, and African countries like Sierra Leone are at the fore of these arguments for the ironical development they have seen in the middle of abundant natural resources and external aid.

With especial regard to the African continent, the resource-curse hypothesis posits that countries with significant natural wealth reap limited rewards and have experienced underdevelopment, corruption, political instability and, in some cases, violent conflicts. The curse is an evocation of the *paradox of plenty* or *resource abundance* (associated with its traditional description *the Dutch Disease*) in which dependence on the extraction of and trade in high-value natural resources has contributed to economic and state decline and aided rebel group mobilisation (Koning 2002). It is an association between resource endowment and negative socioeconomic and political outcomes; a puzzle in economic development due to the negative correlation between economic growth and large natural resources in a pool of countries; a puzzle in that, "some of the fastest growing economies over the last few decades are countries with little natural wealth (such as Hong Kong, Singapore, Korea & Taiwan), whereas some of the poorest

economic performers (like Angola, Sierra Leone & the Democratic Republic of Congo) are countries with enormous resources” (Boschini et al. 2003, p.2). The curse explains how the ease of accessing natural resources and foreign aid in governance trapped settings diminish the incentive to work hard; to plan better for prosperity; and to industrialise (Carter & Barrett 2008; Collier 2007; Moyo 2009). In these environments, investment in education, technology and economic diversification is low; and accountability to the people is diminished because the share of taxation which would pull them to hold the state accountable is meagre in the state budget, as most of the revenue is either aid, oil, diamonds or other natural assets that are not supplied by the people, so the state may not feel so compelled to account (Collier 2007; Moyo 2009).

A fundamental risk of political and economic mismanagement for countries endowed with natural resources is that, once conflict is begun around natural resources the chances of protracting are great on account of both local and international interests, thereby worsening the destruction of a country’s socioeconomic fabric and deepening poverty—the vicious circle. Since such conflicts are not necessarily politically driven, but are induced by poverty and utter urge for resource control, it will be difficult to see prosperity even with new victors in power as their focus would be on economic and political extraction (also fearing creative destruction), thereby subjecting society to perpetual ticking bombs—it goes on and on, the cancer of institutional extraction and decay.

The *geological* perspective explains the nature of resource endowments vis-à-vis the nexus between lootable resource wealth,<sup>9</sup> poor governance, underdevelopment, and conflict. It captures failing states where there are large deposits of alluvial minerals that are mined

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<sup>9</sup> Lootable resources are those which have high value-to-weight ratios, and can easily be appropriated and transported by unskilled workers (Monachie 2008). An associated concept with *lotability* of resources is *appropriability*, describing the degree of fluidity of governance trapped nations with natural resources which are easy to smuggle. Appropriability is defined as the degree of likelihood that natural resources lead to rent seeking, corruption or conflicts, which in turn harm economic development (Boschini et al. 2003; Chan 2012).

artisanally and it remains virtually impossible to monitor or regulate their extraction. Resources which are very valuable and can be easily stored, transported, smuggled and sold are for obvious reasons more attractive to anyone interested in short-term illegitimate gains (Boschini et al. 2003). Ipso factor, resources like diamonds and precious metals are reportedly problematic than agricultural and other natural products, especially diamonds for their extreme value and degree of evasiveness, measured in terms of extreme worth per unit and the ease with which one can smuggle them (Boschini et al. 2003; p.4).

The degree of diamond appropriability or lootability is said to be lower with kimberlitic than alluvial diamond extraction. Kimberlitic production requires costly mining technology whereas extraction costs could be near to zero for alluvial diamonds. Kimberlitic mining demands high investment and good property rights regime to attract investment, thus they are not prone to rush and illicit operations like alluvial. Alluvial is extremely problematic in the absence of good institutions as experienced with the conflicts in Sierra Leone, Angola, and Democratic Republic of Congo where surface mining is widespread. The kimberlitic nature of Botswana's endowment (and South Africa to an extent) is argued to have helped control illicit mining in those countries and they were able to experience fabulous economic growth from their diamonds ipso factor (Boschini et al. 2003; Robinson 2008).

However, from the institutions thesis, the bottom line for positive impact of any natural resources is having good state institutions, which this research heavily subscribes to. Progress is generally about firm accountability systems of government. A significant proportion of South African diamond deposits is alluvial but South Africa has managed their resources generally efficiently. For oil resources, Ecuador and Norway are reported to have discovered oil at about the same time, in 1967 and 1969, respectively, and oil constitutes a great proportion of the GDP



of both countries, but differentials in institutional efficacy accounted for Norway registering an average growth rate several points higher than that of Ecuador over the years (Boschini et al. 2003). And see what has been happening in Nigeria with regard to the Niger Delta oil related human calamity relative to stable and prosperous other oil rich nations. Indeed, the temptation to generalise the resource curse hypothesis has been constrained by the institutional wisdom. Countries with weak governance systems experience conflicts and poor growth amidst resource abundance, the converse holding true for those with strong institutions. This dichotomy has been established empirically through regression analysis (ibid).

To quantitatively illustrate the precedence of the institutions thinking over others, Table 2.1 presents a comparison of growth performance in ten resource rich economies including Sierra Leone during 1975-1998 (Boschini et al. 2003, p.3). Resource rich countries with high quality institutions grew better than those with low quality institutions. Institutional quality was measured using the Property Rights Index based on data from Keefer and Knack (2002), scoring countries on a scale of zero to one with higher scores implying better institutional quality. Botswana registered the highest growth rate at about 5 percent during the period, with an institutional quality index of 0.706, whereas Sierra Leone registered the second lowest growth rate at -2.05 with institutional quality index of 0.406. Congo, Democratic Republic was the least performer.

The review in this section further corroborates the claim that extractive political and institutional practices are mainly responsible for persistent poverty, and this could justify any efforts at changing the existing political order. Unfortunately, however, what we have seen as

**Table 2.1: Relative growth performance in ten resource-rich economies**

	<b>Growth 1975-1998</b>	<b>Main Resource</b>	<b>Institutional quality</b>
Botswana	4.99	Diamonds	0.706
Chile	3.71	Copper	0.668
Norway	2.82	Crude Petrol	0.966
Australia	1.97	Minerals	0.932
Canada	1.73	Minerals	0.974
<i>Sample Average</i>	<i>1.53</i>	-	<i>0.638</i>
Ecuador	-0.79	Crude Petrol	0.592
Niger	-1.45	Minerals	0.52
Zambia	-1.94	Copper	0.434
Sierra Leone	-2.05	Diamonds	0.406
Congo, DR.	-5.39	Ores & Metals	0.232

**Source:** Adopted with modification from Boschini et al. (2003, p.3).

political alternatives in Africa are anecdotal revolutionaries, who purportedly emerge to rescue the poor from structural decay but are often no better than corrupt incumbencies. The widespread African conflicts in the 1990s, up to the Arab Spring uprisings of 2011 and beyond, have been struggles for control of state resources rather than a pursuit of people's welfare on the part of rebel movements. The rebel leader in Sierra Leone could only finally agree to a peace pact when he was accorded the position of chairman of the board overseeing the administration of the strategic mineral resources of the country. The rebellion of Kabila against Mobuto Sese Seko in DR Congo is another case in point. Kabila had arranged US\$500 million worth of deals with international businesses that will fund his rebel movement in anticipation of returns in the form of resource concessions once Kabila became a victor (Collier 2009, p.21). He did become a victor, but the latest World Bank poverty estimate for DR Congo indicates that, about 88 percent of the country's population still lives under US\$ 1.25 per day. And the situation in Libya appears worse at the demise of Ghadafi, while one cannot predict that of Egypt at the downfall of Mubarak.

The above reviews certainly call for critical questions about the survival of the ordinary household in the village. How can the poor African rural household survive and cope with the development landscape reviewed above? What do they do in hard and crisis times? Where do they derive alternative means to run the household? What sorts of socioeconomic management models do they adopt in the face of limited state response? We are turning next to perspectives in response to these questions.

#### **2.4 The African rural household and poverty**

In the absence of effective state interventions and functional institutions, the needed transformation of the African rural household will be difficult to come by. This research argues that a key measure of effectiveness of public policies for poverty alleviation is ascertaining whether structural changes in the household have accompanied the policies implemented. Policies must effect change in rigid age-old household structures in order to initiate desired changes in income poverty and the drive to prosperity. These structures will remain misaligned with desired development in the absence of effective state response; and consequently, livelihoods will continue to be dependent on primitive modes of production, with increased urge for migration even without economic rationality; and households would adopt survival strategies that may reinforce poverty traps.

The discourse is widening on the correlation between structural contexts of the African household and the unceasing penetration of poverty on the continent.<sup>10</sup> Application of development models will not be successful without understanding rural household structures and settings that they should be aimed at transforming for sustainable poverty reduction. We shall

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<sup>10</sup> This concern had informed the staging of international conference in Nairobi, August 2012 to provide anthropological explanation for the underperformance of Africa on the UN MDGS: <http://www.africaportal.org/events/conference-africa-anthropology-and-millennium-development-goals> (visited 14th September, 2012).

look, first, at what the African rural household is, before proceeding to reviewing its survival and coping strategies in hard times.

#### **2.4.1 Definition and basic structure of the African rural household**

In modern times, the temptation is to define a household as a social unit of members drawn strictly on genealogical basis. But in reality, especially in LDCs, the definition still depends on contexts, space and time (Aliber 2003; Dorjahn 1977; Posel et al. 2006; Safilios-Rothschild 1985; United Nations 1959; Zack-Williams 2007). In underdeveloped settings, *genealogical kinship* is replaced with *social kinship* and the latter is defined based on economic relations where a household is regarded as a production unit with the common practice of adopting non-relatives as long as they supply labour and become active in the household production process (Swindell, 1985, p.38).

Demographers differentiate two types of households: private households, and institutional households (Dorjahn 1977, p.106). A private household is referred to as “an individual unit which may be made up of a single person or a group of persons....The group of persons may or may not be related and may be bound together only in respect of the fulfilment of particular individual needs which are met more practically or economically through the group membership” (United Nations 1959, p.69; cited in Dorjahn 1977, p.06). Institutional households comprise “persons living in boarding houses, hotels, school dormitories, hospitals, military camps and so on” (ibid). Institutional members are however mostly captured in the private household model that is often used in census and surveys. The key challenge is defining the circumstantially designated *natural and man-made disaster households* whom surveys may not properly capture, yet are crucial to poverty studies. This category may draw membership from individuals emerging as legacies of wars and family disintegrations such as children and women dwelling in urban streets, a proportion of whom may have migrated from rural areas (Zack-

Williams 2007).

In the nutshell, households could be of two broad typologies: (i) regular households, which are sub-divided into single-person, and multi-person households (Dorjahn 1977, p.107); and (ii) irregular households, which could be single- or multi-person households but can be difficult to trace for surveys like street children; prostitutes; etc. Rural settings are dominated by the regular multiple-person typology of extended family membership, comprising the head, spouse, children or step children, sisters, brothers, parents of head and spouse, non-relatives, and so on (ibid). In West Africa, Dorjahn confirmed this household dominance for Liberia and Sierra Leone with more than 60 percent of cases based on surveys conducted in these countries in 1970 and 1972, respectively, which, based on latest surveys (see Chapter Seven), still prevails for Sierra Leone. The nature of the African rural household can be linked to the role of labour as the most crucial commodity to the rural poor. It is the only thing the household has freely to sell for survival (Mosley et al. 2012, p.11), while equally on the demand side, it is the most strategic variable input for farmers with limited or no mechanical capability and finance for cultivation. Therefore, the pivotal role of labour in the rural household as a production unit makes marriage and the function of women a major subject of analysis in understanding rural household systems and poverty. For the purpose of generating the required amount of manpower in a labour-intensive agrarian society, women are perceived as commodities—*the producers of producers*; placing the seniors in the household at a particularly advantageous position to exert control and leadership in the unit; superintending over marriage arrangements given their historical knowledge of customs and traditions, thereby making age a critical factor in explaining welfare [see Acemoglu & Robinson (2012); Swindell (1985)]. These contexts paint polygyny as an instrumental economic strategy in rural areas; machinery for the production of producers; yet, it spells out growing global dissatisfaction about early marriage and its implication for poverty exacerbation (United Nations Fund for Population Activities, UNFPA, 2012).

## 2.4.2 Survival and coping strategies in hard times

We will discuss *migration* as one of the survival strategies for the typical rural household in least developed countries. The other instruments we will discuss are *kinship* and the role of *religious affiliation* as circumstantial poverty mitigating measures. We will also discuss *adaptive agricultural practices* as another coping instrument. While coping strategies cannot be a sustainable means of reducing poverty and transforming the lives of people, their appreciation is crucial to the search for sustainable poverty solutions (Banerjee & Duflo 2011; Booth et al. 1999; Islam 2005; Stiglitz 2003).

### Migration and poverty

Migration has been at the fore of analyses in a sizeable development literature. This study regards migration as a survival strategy in regard to the movement of poorly educated and unskilled rural settlers from their farms and other rural activities to the urban centres for greener pasture. It is also the movement of people within the rural areas from one sector to another—such as from agriculture to mining—for better livelihood. Young people form a great proportion of emigrants from and within the rural areas. In many cases, they have been compelled to migrate out of harsh conditions they are subjected to in their communities, such as forced labour by elders and chiefs [for the case of Sierra Leone on the chiefs and emigration of young people, see Peeters, Cunningham, Acharya & Adams (2009) and Richards (1999); for Mozambique, South Africa, Zimbabwe and other countries on related subject, see Acemoglu & Robinson (2012) and Stichter (1985); among others]. This would make migration more of a coping strategy than an undertaking that is based purely on economic rationality for those involved. In former apartheid South Africa, white tricks and legislations had enforced residence area segregation, and this had seen black people live in infertile land settlements. Overtime, this compelled blacks to migrate to and sell their labour in other sectors cheaply for survival. Many provided cheap labour

in the mining sector, where demand for black mine-workers had become high.

Speaking of rural migration in Africa, it is important to review its implication for urbanisation and urban informal business as a coping strategy, and urban poverty. The region's urban expansion "is not associated with industrialisation, as it was in the now developed world" (Todaro & Smith 2011, p.313). Rising urban populations is a phenomenon of rural-urban movement due to poverty. Theoretically, urban agglomerations are expected to provide opportunities for rural migrants due to scale economies, positive externalities, and better wage employment (Blank 2003; Jenssen 1998). But since the employability—in terms of skills and education—of rural migrants is generally low in many parts of Africa, it will be difficult for them to optimally harness these theoretical urban opportunities.<sup>11</sup>

On the positive side, migrants with low employability can find a place in urban informal employment, and this could potentially cushion poverty if supported by the state. Urban opportunities may exist through networks between formal/large scale businesses and informal/small scale businesses, in terms of sharing of skills and investment information, apprenticeship, and facilitation of business operations. This can bring about and strengthen backward and forward linkages that make it possible for small-scale operators, the poor, and those in the rural areas to effectively participate in the supply/value chain [see related viewpoints in Hall (2002); Harvie & Lea (2002); and Mengistu (2009)]. In Sub-Saharan Africa, supporting policies in this direction is crucial because of the large share of the informal sector in the economy. For instance, the informal sector accounts for 60 percent of the total employment in Guinea, Malawi, and Chad (Todaro & Smith 2011); and it accounts for 80 percent of total

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<sup>11</sup> In Sub-Saharan Africa, illiteracy is particularly phenomenal in West Africa. Based on World Bank Development Indicators, the countries in West Africa with illiteracy rate around 60 percent or more include Sierra Leone, Niger, Mali, Liberia, Guinea, Burkina Faso, and Benin (see <http://data.worldbank.org/indicator/SE.ADT.LITR.ZS>, visited 20th April, 2012). Rural areas will account for most of the illiterate population in the sub-region since their access to public services is generally low owing to geographic bottlenecks among other factors. In Asian rural communities, where literacy is relatively high, rural-urban migrants are better rewarded than those in Sub-Saharan Africa (Binglong, Juan, Wenli & others 2009; Dowling & Valenzuela 2010; Otsuka et al. 2009).

employment in Sierra Leone (Sierra Leone Labour Congress, SLLC, 2011). Policies aimed at boosting livelihoods in this sector will positively impact not only on the welfare of the sector participants, but can eventually bring about a transformation of the sector into formal business operations, and this will increase tax revenue for the state.

The challenge: A thriving urban informal sector can allow “excess labour to escape from extreme rural poverty and underemployment...[but this may take place] under living and working conditions and for incomes that are often not much better” (Todaro & Smith 2011, p.329). Some may not be lucky to participate in urban business grids that could yield higher income, and thus may resort to self-employment activities that payoff less than the farms they abandon. The common activities undertaken by many migrants and urban low-income households in general, include carpentry, tailoring, petty trading, drug peddling, newspaper vending, hairdressing, manual-stone quarrying, and serving as office or personal messengers. Some are compelled to live in dismal housing conditions in light of widely spread slums and shanty towns in cities of the developing world. Others are compelled to indulge in urban criminal activities, move into prostitution, and are exposed to risks of human trafficking. These realities form part of the arguments questioning the validity of the Lewis two-sector theory, which implicitly necessitates rural-urban migration.

#### Kinship, religious affiliation and poverty

Kinship remains a vital source of social protection for a lot of poor people in the absence of effective state response to their plights (Booth et al. 1999; Iliffe 1987; Stiglitz 2003). In the African context, Iliffe projects poverty as “not having many kinsmen, being alone and powerless...[thus] the role of kinship as a system of social security is clear” (Iliffe 1987, p.57). The last hope of survival for the poor and helpless with no unemployment, health, and retirement insurance is safety net “provided by family and community, which is why it is so important, in



the process of development, to do what one can to protect these bonds” (Stiglitz 2003; pp.83-84). Poverty is thought to have its main roots in slavery and incapacitation; that, those that are incapacitated and are in destitution such as the blind, the dumb, the critically sick like the leprosy-stricken, often appeal to the assistance of religious institutions which are generally committed to caring for the poor (Iliffe 1987, p.57).

### Agricultural practices and poverty

There has been long standing debate about the behaviour of peasant farmers, especially pertaining to risk taking and adoption of new technologies. With their objective of maintaining minimum food supply to prevent hunger, farmers try to adapt to unpredictable agricultural environments with traditional farming techniques such as multiple cropping. They sometimes insure against perceived risk of introducing improved technology by not applying it if they thought it won't yield expected outcome (Dalton 1971; among others). This, in a neoclassical sense, leads to inefficient production or suboptimal outcomes. But scholars have defended farmers that they might be inefficient and poor, but not irrational under the unpredictable farming circumstances they face; they maximise output subject to the unique constraints they face including environmental risks (Banerjee & Duflo 2011; Duflo 2003; Schultz 1964). They are poor but could be more skilful and thoughtful in striving for survival; because their incomes are so low or possess little or no assets their economic existence is not regarded, and this is a fundamental factor playing out against efforts at fighting global poverty (Banerjee & Duflo, p.viii). “The poor certainly have bad lives but there is nothing special about them; they just do the best they can under the difficult circumstances life has placed them in; their fields are as productive as they can be, they just cannot be very productive. Rejecting (or accepting) the hypothesis of ‘poor but efficient’, meant rejecting (or accepting) all the postulates of neoclassical economics” (Duflo 2003, p.1). This zeros in on the role of the state in inducing the

necessary efficiency maximising behaviour of the peasants. Dalton argues: “A legitimate role for any central government wanting to accelerate local development is for it to bear some portion of the financial risk of economic and technological innovation” (Dalton 1971, p.104).

Indeed, desperate farm families could but inadvertently employ agricultural methods as coping mechanism that may damage the environment, especially in crisis times and as populations grow above household means. The risks of coping include deforestation; over-fishing; more slash and burn; intensification of greenhouse gas emissions; and so on (Food & Agricultural Organisation, FAO 2010; Olsen 2009).

## **2.5 Summary of chapter**

The above reviews have revealed the multifaceted nature of poverty, and the range of perspectives on its causes, effects, and remedies. Carrying out poverty research on a least developed country like Sierra Leone will require an immense review of both internal and global perspectives related to the development of such countries. Global perspectives should be reviewed in light of such countries’ high dependence on assistance from the international community. Generally, theoretical factors of poverty range from socioeconomic, cultural, to geographic, political, and international variables, which are interrelated and are expected to significantly affect rural livelihoods in LDCs.

Much of the development history and thinking affecting our lives has been neoclassical, whose models are still ubiquitous in LDCs. Yet poverty has remained persistent especially in Sub-Saharan Africa. Undeniably, these models have yielded great benefits in formally closed economies such as China and India, and even in East Asian economies characterised by strong state intervention. However, they were only successful in these economies because they were applied there sequentially, and at the pace of development in those countries than in SSA and

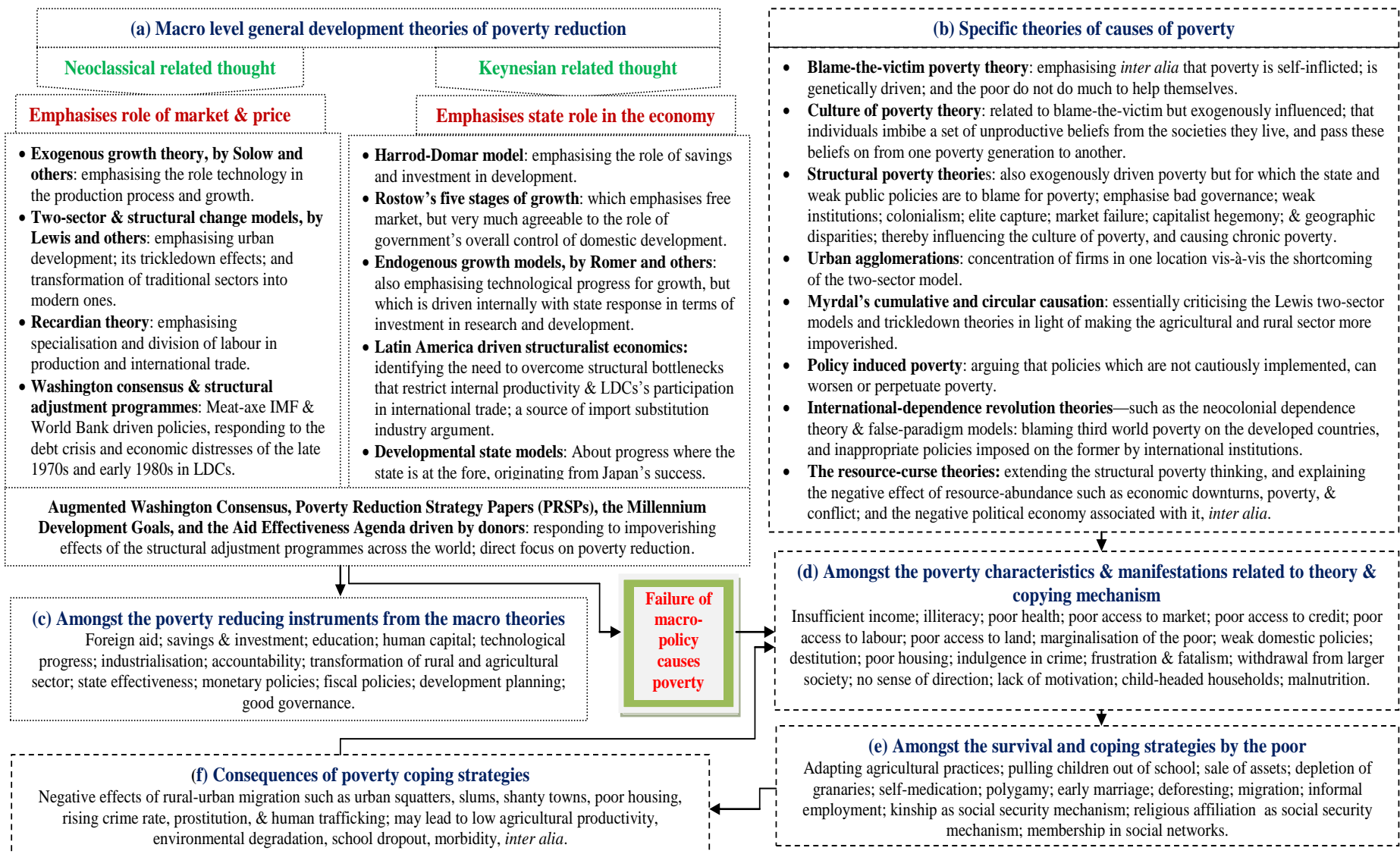
elsewhere, where they have largely been imposed by Bretton Woods Institutions rather without a fetter (see Chapter Four for extended arguments). On the whole, however, reasons for regional development differential could largely be attributed to existence of significant differential in soundness of domestic political institutions, explaining why Asia does generally better even with market-based economic system than Africa.

As to which one to choose between the *market* and the *state*, we will generally advance that, neither an untrammelled market instruments will yield the desired poverty outcome solely, nor an absolute state interventionism or autarkic policies will have the only solution. We would rather subscribe to the position that the desired solution is a melange of options, drawing from the strengths of all schools, including the neoclassical, Keynesian, structuralists, and institutionalists. Markets do work, but their introduction requires sequencing, pacing, and strong state institutions. The financial crises that have rocked economies in recent times, starting from the Asian Financial Crisis of 1997, to the 2008 subprime mortgage crisis in the US, and spillover effects in Europe and the world at large, suggest the need for a permanent active role of the state in the market, as much as markets are important. The role of the state is all the more crucial to protecting low-income households and the poor whose situation is often worsened during such crises.

Overall, structural poverty is the key to focus on from the standpoint of dynamic and long-term reduction of deprivations, which requires huge investment in education, diversification of the economy, creation of assets, and instituting effective social protection mechanism. More importantly, there is a need to *invest in the investment process* requiring effective programming and targeting of scarce public resources, and improving public governance and accountability, placing state effectiveness at the fore for poverty reduction. Due to structural factors beyond their control, and limited state responsiveness, the poor have taken recourse to copying

mechanism that can be poverty reinforcing, but which any successful antipoverty strategy should build on.

Figure 2.1 summarises the theories we have reviewed in this chapter. The figure shows the interlinkages between these theories and the implication they have for poverty, and poverty alleviation. The general and macro level theories are depicted in Panel (a), and are broadly divided into neoclassical and Keynesian related theories. These theories suggest in Panel (c) that poverty can be reduced through acquisition of financial and physical capital, including external aid to close savings and investment gaps; through investment in human capital and technological progress; through structural transformation of the traditional, rural, agrarian economies; and through recognising the synergistic effects of the market and the state in the development process. Theories of causes of poverty are depicted in Panel (b), ranging from blame-the-victim assertions, to structural poverty theories, theories arguing that poverty is driven by international capitalist capture and inappropriate foreign policies, weak institutions and resource-curse hypotheses. The causes of poverty in Panel (b), combined with any failure of development policies prescribed by international institutions in Panel (a), are expected to lead to the characteristics and manifestations of poverty depicted in Panel (d), such as reduced household incomes; increased illiteracy; and increased morbidity and mortality. In the absence of effective state response to heightened levels of deprivations, Panel (e) shows that, the people would devise strategies to cope and survive such as adapting agricultural activities, pulling children out of school, migrating, and depleting the environment through deforestation. But these could only reinforce poverty elements in Panel (d) through their consequences suggested in Panel (f).



**Figure 2.1: Summary of development and poverty theories reviewed**

The discourse presented in this chapter will be extended to the next two chapters, which shall examine a more evidence-based understanding of poverty. Chapter Three will examine the history and political economy of Sierra Leone in the context of the theories we have just discussed. Chapter Four will review perspectives on effectiveness of current policies of the Bretton Woods Institutions to LDCs, bringing out Sierra Leone's experience in implementing these policies since the end of its civil war, and experiences in the fight against poverty in other countries.

## **Chapter Three**

### **History and Political Economy of Sierra Leone since Independence**

The aim of this chapter is to present Sierra Leone in the context of the general poverty perspectives reviewed in the previous chapter. It examines the country's socioeconomic and political experiences since independence with a view to highlighting past development challenges and lessons to inform the analysis ahead. We divide the country's postcolonial history into three main development cycles: the period from independence until the outbreak of the civil war (1961-1990); the civil war period (1991-2001); and the postwar period (2001 to date). This chapter examines development episodes during the first two cycles, and the postwar recovery phase spanning from 2001 to 2004. The next chapter will review progress from postwar recovery to date.

#### **3.1 Setting the context: Sierra Leone at independence**

Sierra Leone gained independence from Britain in April 1961 without violence and became a Republic in 1971. It is located on the west coast of Africa, bordered by Guinea to the north and northeast, Liberia to the south and southeast, and the Atlantic Ocean to the west (Figure 3.1). It is divided into four regions—the north, south, east and west—and has fourteen administrative districts as shown in the figure. It has about 16 ethnic groups. The largest of these groups are (i) the Temne, which constitute about 30 percent of the national population and mainly located in the northern and western regions; and (ii) the Mende, which constitute another 30 percent of the population and mainly located in the southern and eastern regions.



**Figure 3.1: Regional and district map of Sierra Leone**  
*Source:* author's construct.

The country was already rich in minerals at independence, extracting gold, diamonds, bauxite, rutile, iron ore, chromite, platinum, and so on. Lately, petroleum finds have added to the list of the key natural assets of the state. Sierra Leone is broadly divided into two seasons of approximately equal duration: *dry season*, running from November to April; and *raining season*, running from April/May to October. An annual rainfall of 3,150 mm makes the country one of the wettest places along the West African coast. Its marine potential is enormous, and this can be estimated in light of having more than 500km coastline, which endows the country with bountiful tourism opportunities. Indeed, Sierra Leone is home to some of the best beaches in Africa that largely have remained in pristine condition to date. Of the total national land area of 72000 square kilometres, two-thirds has been suitable for cultivation, including 1.0 million hectares of highly fertile low-lands. The country is also endowed with huge renewable energy resources including biomass, solar and hydropower supply. However, whether these development potentials have been adequately exploited and benefited the populace, especially those in the rural areas is another question, which we will reserve for the analyses ahead.



Educationally, although literacy was at very low ebb at 7.7 percent at independence, Sierra Leone is historically among African countries with the brightest postcolonial genesis, with relatively solid educational opportunities. The first tertiary education institution in West Africa, the Fourah Bay College, was founded in Sierra Leone in 1827 based on British Educational System. The college played pivotal role in training public administrators across English-speaking West Africa in the first half of the 20<sup>th</sup> century, which was later affiliated with the Durham University in England and became the first University College in the sub-region. And Sierra Leone had the first schools for boys and girls in West Africa based on Western Education, which were founded in 1845 and 1849, respectively.

Potentially, after Sierra Leone's independence in 1961, it was expected that there will be an acceleration of economic growth and dramatic improvement of welfare of the people. These expectations were captured in the rhetoric of protagonists of decolonisation across Africa. "It's the British presence that has brought war, oppression, poverty, disease and perpetual mass illiteracy upon colonial peoples. It is the British presence that bleeds them white by brutal exploitation in order to feed the British lion with red meat." That was late Kwame Nkrumah of Ghana in Rooney (1988, p.36) on the "necessity" and "justification" to decolonise Africa. Similar sentiments were expressed over the development of Sierra Leone and the British rule. Hanlon has stated that Sierra Leone was extremely poor and had a literacy rate of only 7.7 percent at the time of independence, and "the colonial authorities had exploited the main mineral resources and left behind a declining economy...diamond production was falling as the best reserves had been worked out" (Hanlon 2005, p.1). Ghana's independence in 1957 was a catalyst in the mass anti-imperialist movements that swept Africa, with Nkrumah's rhetoric voyaging as far as Asia to inspire independent movements headed by Lee Kwan Yee of Singapore among

others (Rooney 1988).

Indeed, self-determination was expected to improve the welfare of the lot in Africa. But has there been an improved quality of life for African citizens since then? The ensuing sections shall review the case of Sierra Leone in response to these questions, examining relevant history from independence till the outbreak and end of the civil war in the context of the political economy and other theories reviewed in Chapter Two.

### **3.2 Sierra Leone's political framework and military coups before the war, 1961-1990**

Sir Milton Margai became the country's first prime minister at independence in 1961. The country inherited a democratic political arrangement based on parliamentary system of government and has been a member of the British Commonwealth of Nations since then. The first post-independence election was held in May 1962, re-electing Milton Margai as prime minister under the Sierra Leone People's Party (SLPP). The main opposition party, the All People's Congress (APC), was headed by Siaka Probyn Stevens. Leading the country to independence, the SLPP pulled most of its support from the southern and eastern regions of the country. The stronghold of the APC party, formed in 1962, was the north and west.

The years just after independence were prosperous with money from mineral resources used for development (McKenna 2011). The results of the economic boom included the establishment of a new college, the Njala University College (NUC) in 1964. The NUC was mainly designated for rural and agricultural development. Before the death of Sir Milton in 1964, national income had grown from 1.8 percent in 1961, to 6.7 percent. However, healthcare indicators had not shown improvement: infant and under five mortality rates slightly increased from 220 and 389 deaths per 1000 live births in 1960, to 221 and 392 deaths in 1964,

respectively.<sup>12</sup> At the demise of Sir Milton, his brother, Sir Albert Margai, was appointed as prime minister by parliament.

Unlike his late brother, Sir Albert's administration flouted the principles of democracy upon which the country's political system was based; he resorted to authoritarian actions in response to protests, including the enactment of several laws against the opposition APC party and an attempt to establish a one-party state.<sup>13</sup> He was opposed to the colonial legacy of according the country's paramount chiefs (governing mainly the rural areas) executive powers, thereby threatening the existence of the ruling houses across the country. In 1967, riots broke out in Freetown against Sir Albert's policies. He was accused of corruption and pursuing a policy of affirmative action in favour of his own Mende ethnic group (Pham 2005). The APC party, led by Siaka Stevens, won the general elections of 17 March 1967, and Stevens, sworn in on March 21, became the new prime minister. During Albert's rule (1965-1967), growth in gross domestic product (GDP) plunged from an average of 4.0 percent in 1961-1964, to 3.0 percent. Infant and under-five mortality rates only slightly dropped by 7 and 12 deaths from the level they were before independence.

It was Stevens' accession to power that actually began to illuminate more conspicuously the regional and ethnic cleavages on which the politics of Sierra Leone came to be known. Within hours of his premiership, Stevens was ousted in a bloodless military coup led by the commander of the army, Brigadier General David Lansana, an ethnic Mende and a close ally of Sir Albert who had appointed Lansana.<sup>14</sup> Stevens was immediately placed under house arrest, but this engendered another swift intervention of a group of senior military officers who seized

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<sup>12</sup> World Bank Development Indicators: <http://data.worldbank.org/data-catalog/world-development-indicators> (visited 6<sup>th</sup> February, 2012).

<sup>13</sup> [http://en.wikipedia.org/wiki/Sierra\\_Leone](http://en.wikipedia.org/wiki/Sierra_Leone) (visited 10<sup>th</sup> February, 2012).

<sup>14</sup> [http://en.wikipedia.org/wiki/Sierra\\_Leone](http://en.wikipedia.org/wiki/Sierra_Leone) (visited 10<sup>th</sup> February, 2012).

control of government on March 23 of the same election year. Brigadier Lansana was arrested and the constitution was suspended. The new junta constituted itself into the National Reformation Council (NRC). A year later, in April 1968, another group of senior military officers, the Anti-Corruption Revolutionary Movement (ACRM) overthrew the NRC. The ACRM restored constitutional order and handed power back to Stevens as democratically elected prime minister.

By accounts of many scholars, events surrounding the 1967 elections brought Sierra Leone into befitting the “resource-curse” and “greed-grievance” hypothesis surrounding abundance of natural resources in less-developed countries. Stevens assumed power again in 1968 with a great deal of promises and ambition, and trust from the people as he campaigned on lefts’ platform. But to the dismay of the nation, Stevens also employed authoritarian model of governance. He resorted to using violence and intimidation to silence opposition SLPP party. He manipulated the military. First, he retained the popular Brigadier John Bangura heading the Sierra Leone Armed Forces, who led the ACRM coup that restored him to power. The politics that ensued was characterised by an uneasy calm and the military had become embittered with the shifting political climate. As the only evident threat to the prime minister, Brigadier Bangura was arrested in January 1970 on charges to overthrow Stevens’ government, and he was convicted and executed in March 1970. In March 1971, the government survived yet another military coup attempt. A month later, a republican constitution was adopted and Stevens was installed as the first president of Sierra Leone. Violence and intimidation from Stevens’ rule and militia caused the opposition SLPP to boycott the 1973 general elections, and thus the APC party won 84 out of 85 elected seats this time (Rotberg 2003; Sesay 2007). Between 1974 and 1975, there were two alleged plots to overthrow President Stevens, and those charged were executed,

including the first coup plotter, Brigadier David Lansana. In March 1976, Stevens was elected without opposition for a second five-year term as president.

Public resentment and despair reached a record high, and students were brought into opposition against Stevens' rule. In 1977, student demonstrations against the government disrupted Sierra Leone's politics. General elections were called up later that year, but were again characterised by extreme corruption. The APC party won 74 parliamentary seats, while the SLPP won 15 seats. Later, in 1978, a new constitution was introduced, and the country became a one-party state through the manipulation of the APC party. This intensified public resentment, and more demonstrations against the government were staged but quelled by the army and the police (Abdullah 1998; Gberie 1998).

Another feature of Stevens' administration was the abolition of district councils in 1972, on stylised allegations of mismanagement. This killed local governance and deteriorated community development for decades. District councils were only resuscitated in 2004 after the civil war. Rural development was badly affected owing to over-centralised national decision-making for 32 years (see details in Section 3.3.5).

Stevens retired in 1985 and handed power to the head of the military, Brigadier Joseph Saidu Momoh, whom the former hand-picked as a trusted loyalist (Hanlon 2005; Dupuy & BinningsbØ 2007). Stevens' 18 years of rule was an economic deterioration: at 2.6 percent, economic growth during his rule was below the 3.0 percent registered during the three-year rule of Albert Margai. Growth reached a low of -5.3 percent in 1985, the year Stevens retired. During the first 25 years of self-rule in Sierra Leone (1961-1985), with Stevens serving 75 percent of the time, infant and under-five mortality rates were reduced only by 22 and 24 percent, from 220 and 389 deaths in 1960, respectively. This period also recorded a lacklustre performance in life

expectancy, increasing from 31 only to 43 years.

With his “New Order” proclamation, President Momoh brought hope to the people. He embarked on economic reforms and introduced stringent measures against corruption. It was however a tough test for the new president against the patrimonialist system he had inherited from Stevens. Momoh attempted to instil social ethos in *a square peg in a round hole* to whom change was an enemy. With the lack of new faces in the new APC cabinet after the one party parliamentary elections in May 1986, Momoh could hardly by pass the patrimonial system. The austerity measures he renegotiated with the IMF and the World Bank to curb corruption and reduce informal economy only landed him in trouble: “His efforts sparked a failed coup in 1987 that was instigated by elites from Stevens’ regime and even Stevens himself” (Dupuy & BinningsbØ 2007, p.3). The president took drastic steps against the coup plotters, including his vice president, who was tried and executed along others, but in the middle of paranoia and timidity. He had to renege to his promises. The ensuing years up until the outbreak of the civil war in 1991, and the coup that deposed him in 1992, Momoh’s administration was punctuated by corruption.

The reign of Momoh could best be described as a culmination of Stevens’ protracted abysmal rule. His tenure saw the average GDP growth reducing further to 0.03 percent before the civil war broke out. Neither infant and under-five mortality rates, nor life expectancy changed during the six years of pre-war administration of President Momoh—these rates remained at 171 deaths, 294 deaths, and 43 years, respectively. The years 1991 and 1992 ushered in the civil war and the overthrow of Momoh, respectively.

In summary, Sierra Leone survived a turbulent political atmosphere during the first 30 years of self-rule before descending into civil war (the civil war is discussed in Section 3.4).

There were eight military coups before the war broke out, which will amount to nine coups if the historic student demonstrations of 1977 were included. Clearly, the fear of creative destruction, and extractive political activities were at play during 1961-1990. Whether these were accompanied by extractive economic institutions is a centre of discussion in the next sections. We are going to examine select welfare indicators and sectors that deteriorated during the period before the war.

### **3.3 State failure and socioeconomic collapse before the war**

We will discuss select development sectors of direct relevance to rural poverty and welfare, starting with a summary of socioeconomy-wide failure and collapse of state, before discussing experiences in specific sectors: (i) agriculture and rural development; (ii) microfinance and rural development; (iii) the mining sector, weak institutions and the resource-curse hypothesis; and (iv) development planning and local governance.

#### **3.3.1. Economic and social indicators**

Table 3.1 summarises Sierra Leone's socioeconomic performance in the first 30 years of self-rule. GDP growth rate (decade average) declined sustainably from 3.7 percent during 1961-1964, to -1.6 percent during 1985-1990. The share of manufacturing sector in GDP declined from 6.0 percent to 5.0 percent. The share of total exports in GDP declined from 29 percent to 23 percent. Performance in managing infant and under-five mortality rates and life expectancy can be perceived as marginal. In 30 years, infant and under-five mortality rates reduced only by 26 and 29 percent, and life expectancy increased only by 23 percents. Comparatively, Nepal is among the poorest countries in the world, sharing similar mortality and life expectancy estimates with Sierra Leone in the 1960s, but the former outperformed the latter considerably on these indicators. Nepal's infant and under-five mortality rates and life expectancy rate significantly

dropped by 50, 54 and 42 percent during 1961-1992, respectively. Difference in institutional arrangement is key plausible factor accounting for the difference between the two countries.

**Table 3.1: Socioeconomic indicators of Sierra Leone, 1961-1992**

Rulers	Period	Average GDP Growth	Manu- factured Goods, % GDP	Exports, % GDP	Infant morta- lity rate	Under five morta- lity rate	Life expec- tancy
Milton Margai	1961-1964	3.7	6.0	29.0	221.0	391.3	32.3
Albert Margai	1964-1967	3.0	6.1	27.9	216.3	382.3	33.3
The Military	1967-1968	1.0	6.0	25.4	212.0	374.5	34.0
Siaka Stevens	1968-1985	2.6	5.9	21.8	189.2	330.9	39.7
J.S Momoh	1985-1992	-1.6	5.0	23.5	163.3	278.9	39.6

*Source:* The World Bank Development Indicators.

During 1961-1970, the literacy rate of Sierra Leone increased only from 7.7 to 18 percent (Hanlon 2005, p.1; Bockarie 1994, p.110). An account in Banya (1993, p.163) indicates that this rate declined to 15 percent during the 1980s. Before the outbreak of the war in 1991, more than 80 percent of the population had absolutely been impoverished, and the country was scored 4<sup>th</sup> from the bottom in the global human development report of 1990 [see UNDP Human Development Report of (1990)].

It is rare to see an in-depth research on the political economy of Sierra Leone conclude without mentioning the negative development effects of hosting the Organisation of African Unity summit in Freetown in 1980. According to Dupuy and BinningsbØ, “Stevens bankrupted the state by spending half the entire national budget for the 1979-1980 fiscal year to host the 1980 Organisation of African Unity (OAU) summit” (Dupuy and BinningsbØ 2007, p.2). It is noted in Hirsch (2001, p.29), citing Clapham (1996, p. 179), that President Stevens accorded “wildly inflated contracts that enabled those who were insiders on the scam to walk away with millions...[he formed] his own state company...and sold the most profitable state corporations to



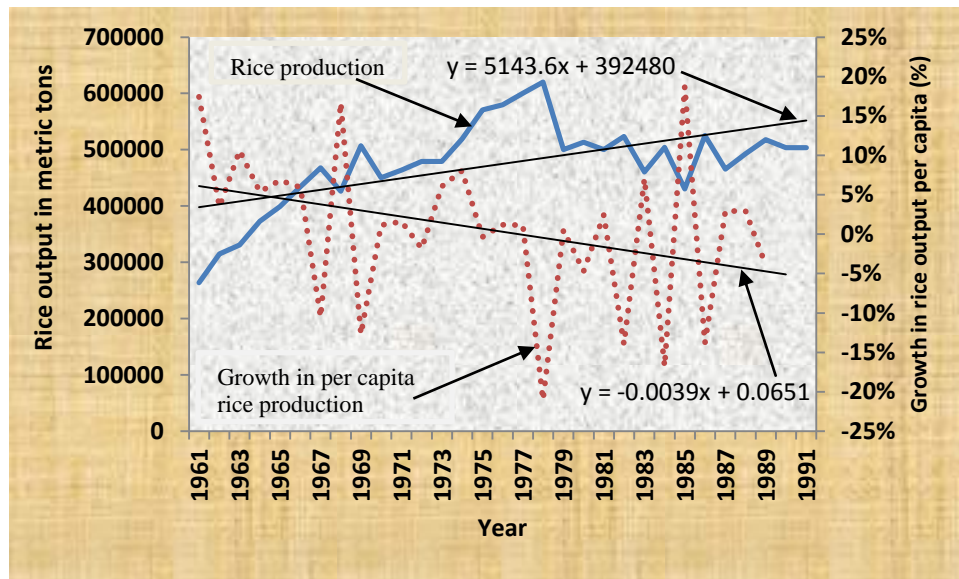
himself.” Loans “were distributed to private individuals and squandered by party stalwarts or top civil servants” (Zack-Williams 1999; p.160). The military were financially comforted as well, to prevent any attempt to oust Stevens from power (Dupuy & BinningsbØ 2007, p.2). External debt burden became a central macroeconomic issue starting from 1980 on account of the OAU summit (Bangura 2001; Jusu 1998). Succeeding Stevens in 1985, Momoh initially clenched fist against corruption. He was determined to revamp the battered economy through austerity measures with IMF and World Bank but it was too late to manage compounded effects that would lead to the war five years later of his assumption of power. Not just succumbing to the status quo, but President Momoh himself had made utterances that characterised a failing state. As education spending in the country was becoming one-sixth of what it was five years before his accession to power, “President Momoh declared that education was a privilege, not a right” (Hanlon 2005, p.1).

### **3.3.2 Agriculture and rural development**

The rural areas accounted for more than 80 percent of the national population before the war. Therefore, national decisions should have been sensitive to the development of the rural areas, where agriculture was the main source of livelihood. Before minerals were discovered in the 1930s, agriculture was the lead foreign exchange earner for Sierra Leone. The country was self-sufficient in rice as staple food, and the grain was exported to neighbouring countries such as the Gambia and Nigeria. Palm oil was also exported to these countries and some parts of the Western World. The first two decades after independence witnessed a general rise in rice production, although production could not keep pace with population growth anymore (Figure 3.2). Downward trend in output became stark starting from 1979, and per capita growth continued to plunge. Unfortunately, rice does not have close substitute in the food basket of the

average Sierra Leonean, making the crop a luxury—a prestigious and income elastic commodity despite the availability of other food crops like cassava, sweet potato, millet, maize and sorghum.

The importation of rice had begun before independence, from Italy, Burma and other places, but not at alarming rates as experienced during post-independence Sierra Leone (Cotay 1959). The decline in domestic rice production was particularly blamed on bad domestic policies, which were focused on subsidising rice importation at the expense of local production. Some commentaries have advanced arguments that the discovery of diamonds in the 1930s has been the most important factor in the general decline of the agricultural sector, as these minerals



**Figure 3.2: Trend in domestic rice production (metric tons), 19961-1990**

Source: Author's construct based on FAO database.

caused significant policy shift towards the mining sector. Young and energetic individuals were drifted to the mining areas from farms; a drift which was especially catalysed by the alluvial mining nature of Sierra Leone's diamonds (see next sections). The early 1950s are referred to as the era of *great diamond rush*. "Many farmers abandoned their farms and rushed to the diamond mining areas in search of quick wealth. Rice production in villages quickly declined, while the

demand for rice shot up. The simultaneous increase in demand for, and the decrease in supply of, rice caused an inflation which was politically unsuitable” (Alie 1990, p.197). The cost of living rose in urban areas, especially in Freetown, igniting series of industrial actions in the years that followed.

Dualistic policies were a colonial legacy (Banya 1993), but they came to a head during Siaka Stevens long rule with over-centralisation of power and decision making at the expense of rural development. The economy became over-dependent on diamonds with thriving corruption. The basic food needs of the population could no longer be met. The macroeconomic effects of the agricultural neglect were exacerbated in the 1970s by the global oil price shocks. The national budget was overstretched, having to subsidise huge importation of rice and petroleum products concurrently. State social welfare schemes merely targeted the relatively better-off urban groups who were the major source of opposition to Stevens, and financing of these schemes included subsidising consumer items and taxing farmers (Acemoglu & Robinson 2012; Davies 2001). Distortionary subsidies were financed by a range of counterproductive state interventions including taxing of rural farmers, deficit financing, and increased external borrowing. Farm acreage drastically shrank—agricultural censuses conducted in 1970/71 and 1984/85 showed a decline in farm holdings by 22 percent from 286,137 to 223,267 (GoSL 1992). Many farm holders left for the mining areas, while others sought greener pastures in urban towns.

A Sierra Leone produce marketing board (SLPMB) was set up in 1949 within the general framework of the African Marketing Board policy to support international trade in key commodities and enhance livelihoods of farmers (Fyle 1981). The SLPMB became dysfunctional in the 1980s due to bad governance. Whereas the Board was meant to improve farmers’ welfare

through price stabilisation, and to generate revenue for the state, farmers became disincentivised through implicit and explicit taxation of production. Exchange rates were overvalued and the Board could no longer save farmers from international market competition. The situation became worse during the long rule of the APC party, particularly during the 1980s when exploitation of farmers was such that the farm gate price constituted only 50 percent of the Board selling price at the international market (Davies 2001; Robinson 2008). Other accounts indicate that as much as 90 percent of farmers' income was sometimes extracted during Stevens' rule (Acemoglu & Robinson 2012, p.338). The railway, which was constructed by the British at the dawn of the 1900s and had become instrumental in transporting cash crops for export, was dismantled in the early 1970s. It was a political strategy to economically strangle the coffee and cocoa producing farmers in the Mendeland, as the main source of cash crop revenue for the state, and the strong hold of opposition SLPP party (ibid, pp 336-337). With no developed road network for a substitute, this heightened the frustration of rural areas.

### **3.3.3 Microfinance and rural development**

Sierra Leone has had a long history of microfinance, even predating the inception of the highly celebrated Bangladesh Grameen Bank established in 1976. But whether microfinance has been effective in alleviating rural poverty in Sierra Leone is what we discuss in this section. Two specialised national agencies were particularly active in coordinating state rural financial support: (i) the National Development Bank established in 1968 to finance agricultural and industrial projects; and (ii) the National Cooperative Development Bank established in 1971 to serve as a central bank for all cooperatives and provide modest loans to individual farmers and cooperatives for agricultural promotion.<sup>15</sup> A range of subsidised credit schemes were

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<sup>15</sup> [http://www.encyclopedia.com/topic/Sierra\\_Leone.aspx](http://www.encyclopedia.com/topic/Sierra_Leone.aspx) (visited 2<sup>nd</sup> August , 2013).

implemented through agricultural projects and the National Development Bank (GoSL 2006). Funding was coming mostly within the arrangement of the donor-supported Integrated Agricultural Development Projects (IADPs). These schemes could not be sustained as interest rates were below administrative cost, coupled with high repayment delinquency and the fact that donor support for the IADPs was winding up. The high rate of competition for these loans mostly left the influential and large businesses to prevail at the expense of the poor. There were Rural Banks (RBs) before the civil war, established to succeed the IADPs. Before they were destroyed during the war, these banks had become unsustainable. Like the credit schemes propped by the IADPs, the RBs were also highly dependent on subsidies from the Central Bank of Sierra Leone for operations which could not be sustained either. The National Cooperative Development Bank was promising, with capital contributions from the various cooperative societies in the country and branches in provincial towns and major cash crop (cocoa and coffee) producing districts. However, subsequent mismanagement led to the collapse of most of its branches before the war (ibid 2006; SLLC 2011).

Other credit support schemes were operational. The state had introduced a Credit Guarantee Scheme since 1974 to encourage commercial banks to provide credit to small scale business operators, especially the agricultural sector. A Credit Guarantee Fund was established under this initiative with financial and technical support from the Bank of Sierra Leone. A guarantee fee of 1 percent of each approved loan was charged. However, commercial banks could not perceive this scheme feasible for business survival, arguing “that the costs of lending small amounts to numerous and widely dispersed enterprises were too high. The guarantee fee of 1 percent was seen as a disincentive because it was considered as a cost” (GoSL 2006, p.99). Again, this scheme could not survive before the war.

### **3.3.4 The mining sector, extractive institutions and the resource-curse**

Mining has been the largest foreign exchange earner for Sierra Leone's economy. As in resource-successful states like Botswana, the rent from Sierra Leone's mining sector could have played significant role in reducing rural poverty through a well selected and managed public investment portfolio aimed at transforming the agrarian sector *inter alia*. But it has been the opposite in Sierra Leone in view of the following evidence.

Undeniably, the public had been disenchanted about the running of the mining industry during colonial period. Illicit mining, smuggling, and inequitable distribution of resource rent had been on the rise. Between 1952 and 1955, illegal miners were producing and smuggling diamonds valued at approximately £5.4 million each year (Van der Laan 1965).

However, it is widely commented that management of the sector was relatively more efficient during colonial rule. The Sierra Leone Selection Trust (SLST), a subsidiary to the then Consolidated African Selection Trust (CAST), was established and given exclusive rights by the colonial government to mine diamonds in Sierra Leone for 99 years. The Trust was effective in thwarting illicit mining. It increased security measures through deployment of armed guards, and conduct of land, border and airborne patrols over its mines jurisdiction. Heavy penalties were imposed on illicit miners and an entry permit was instituted for non-natives into diamond areas. These measures drastically reduced illicit mining in the late 1950s, up to most of the 1960s. It was pressure from illicit mining that eventually led to promulgating the alluvial diamond mining scheme as part of a broader strategy to increase accountability in the sector. Licenses were issued to individual miners and attractive prices were offered for purchase of diamonds compared to neighbouring countries. Consequently, smuggling was reduced and official diamond production was maintained at about 2 million carats annually for a considerable period (Reno 1995).

Unfortunately, postindependence politics could not allow sustainability of the industry for national development and rural poverty reduction. The scramble for minerals continued. Participation in politics and struggle for power were driven by an urge to access mineral resources. The resource-curse came to a head at the assumption of power by Siaka Stevens in 1968, referred to as the genesis of institutionalised illicit mining, patrimonial politics, and corruption (Acemoglu & Robinson 2012; Davies 2001; Dupuy & BinningsbØ 2007; Hanlon 2005; Robinson 2008). According to Dupuy and BinningsbØ, there were already serious weaknesses in the administration of Stevens' predecessors, Sir Milton Margai, who led the country to independence, and his younger brother, Albert, who took over at Milton's death. Milton failed to initiate a process to diversify the economy away from diamonds, and he was authoritative. Albert, the successor, significantly drew on this weakness, before Stevens came to deepen and worsen the situation (Dupuy & Binningsbo 2007). Descending from chieftaincy ruling family in the south, it is argued in Acemoglu and Robinson (2012, p.342) that the two Margais, administering the country immediately after independence, could have inherited a colonial sown aristocracy and extractive proclivity through indirect rule such that neither Stevens nor Momoh, their successors, could be able to redo the baton. Halon comments that Stevens' weak start in the 1960s, rocked by series of coups, accounted for his adoption of patrimonial rule to stay in power.

During 1968-1985 that Stevens retained power, official diamond exports fell from 1.7 million carats, to 50,000 carats (Maconachie 2008, p.9). He embarked on grand political trickery to cement power, supporting illicit mining for political gains among a range of unscrupulous means. The SLST, which later morphed into the National Diamond Mining Company (NDMC), was undermined by Stevens' government aided by his Lebanese henchmen to give way to illicit

mining and informal operations. The country reeked of resource-driven patrimonialism to an extent that, Sierra Leoneans bore a perception that being close to or at the centre of power was the only way out of poverty, and it left many determined to access power by all means. The weak, especially rural inhabitants were reduced to only despair and hope of time.

Rural youth were attracted to diamond mining from farming only to be caught up in unscrupulous arrangement with politicians and businessmen, camped in mining bushes and forest to work for the latter with little or no significant value addition to their livelihood (Richards 1999). Against the backdrop of imbalanced sectoral policies affecting agriculture, coupled with paramount chiefs' extraction of cheap labour from the youth, the youth fled agriculture for diamond areas when farming could have paid better. Chiefs in diamondiferous areas were no better for their young generation; they used the 0.75 percent diamond tax receipt for personal gain instead of investing the rent share in community development (Hanlon 2005).

The *geological nature* of Sierra Leone diamonds is reported to have played a significant role in furthering the resource-curse and the suffering of the masses. According to Maconachie, about 80 percent of diamond mining in Sierra Leone is alluvial and involves little more than digging and sifting through river bank mud, sand or gravel with picks, shovels, buckets and sieves. This attracts workers from other sectors easily, including the youth. The argument is summarised as follows:

Although Sierra Leone's diamonds can be found in kimberlite pipes, as is common in South Africa or Botswana, they are more commonly dispersed in the gravels of river beds and terraces as alluvial deposits. Two river systems, the Sewa and its tributaries, flowing through Bo and Bonthe Districts, and the Moya, flowing through Kenema and Pujehun Districts, have deposited diamonds over large areas in the south and east of Sierra Leone....In a real extent, the country's alluvial diamond mining fields cover almost 20,000 sq km, though the actual diamond-bearing alluvial ground is actually



about 200 km<sup>2</sup>. Often, these deposits are spread across national and chiefdom boundaries. In contrast to South Africa, where diamond mining is associated with the mechanical mining of deep reserves, in Sierra Leone it is not unheard of to find a good quality diamond on the ground surface, particularly after rain. (Maconachie 2008, p.8.)

Nonetheless, the *institutions argument* seems to dominate the resource-curse debate. It “does not mean that all countries with potentially problematic types of resources will suffer; the potential problem of having certain types of resources can be countered by having good institutions” (Boschini et al. 2003, p.3). What is worrying now, as a new resource-curse concern for Sierra Leone, is the discovery of offshore oil in large commercial quantity, raising questions as to whether this will not be another *grievance than growth* which may undermine the future development of the country by becoming a petro-state.<sup>16</sup>

### **3.3.5 Development planning and local governance**

Since the 1950s, development planning has become a strategic thrust in the fight against poverty. Many LDCs have articulated successive strategies to guide use of public resources. But Sierra Leone witnessed weak development planning for most of the 30 years preceding the war. Planning was uninformed and uncoordinated owing to lack of effective statistical system and sustained political will. Government formulated a ten year development plan for the post-colonial period 1962/63-1971/72 but was not statistically informed. There wasn't any survey to inform it and was only written as a proposal by one person conjuring series of projects (Sesay 2007, p.34). The last half of the plan was disrupted by military interregna during 1967/68 and the restoration of an administration that was indifferent to existing plans (ibid). Instead, planning became ad hoc and top-down, carried out at ministerial committee level.

Planning was further weakened by President Stevens' decision to disband all local

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<sup>16</sup> Chan (2012, p.11) defines petro-states as those which “float on vast lakes of oil, and with little or no industrial diversity and seductive rents, [and] are unlikely to escape the resource curse.” These are states that are not only major producers of oil, but also where oil accounts for the largest share of state revenues.

councils in 1972. The councils had served the important role of coordinating rural development, promoting democratic tenets of ‘planning as a dialogue,’ eliciting grassroots’ input into district and national decision processes.<sup>17</sup> This was discouraged for 32 years since 1972: “Over centralisation of political power and management of public financial resources in Freetown precipitated exclusive governance and lack of access to basic social services for the majority of the rural populace” (GoSL 2005a, p.44). There was an over-centralisation of decision making power not only in Freetown but at the Cabinet level.

A new development plan was formulated in 1974 for five years: 1974/75-1978/79. But this was challenged by (i) the international oil price shocks of the 1970s; (ii) the political manipulation of the opposition, and the fact that local councils were no more to facilitate plan implementation on the ground; and (iii) the passing of a one-party constitution in 1978 (see Sesay 2007). There was no political opposition anymore, and no coherent successor to this plan up to the outbreak of the war. The whimsical staging of the OAU summit in 1980 had prolonged effects on the economic fabric. External indebtedness was increased to finance the ambitious summit project against policymakers’ advice; the national currency (the leone), was delinked from the British Pound; and planning was at best ad hoc thereon. By mid 1980s, the economy plunged more egregiously, inflation reaching record highs at “over 50.0 percent per annum” (Sesay 2007, p.37).

As the economy was about shutting down by 1987, with government holding no more programmes with IMF for support, an economic emergency programme (EEP) was instituted to correct economic imbalances that only made the remedy worse than the disease. The public had lost total confidence in the economic institutions with no desire to deposit additional monies in banks. This pushed the EEP to identify and punish persons in possession of own monies above certain limit as an instrument. They introduced price control; administered prices of staple foods and fixing exchange rate; and regulated trade in all goods and services (Bangura 2002; Sesay

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<sup>17</sup> See Jenssen (1998) on planning as a dialogue.

2007). This policy was not sustainable, and the situation was becoming worse. Consequently, government was compelled to re-negotiate new programmes with the IMF in 1989, but it was too late; the civil war was already in the offing.

### **3.4. The civil war, 1991-2001**

Hence, there was outbreak of deadly civil war on March 23, 1991. Lasting till 2002, the war claimed the lives of more than 70,000 persons, maiming thousands others while millions were internally displaced and became refugees abroad. The Revolutionary United Front (RUF) rebel group waged the incursion against the state. Its declared objective was to overthrow a corrupt and tyrannical government headed by Joseph Saidu Momoh and the All People's Congress party which had ruled Sierra Leone since 1968 (GoSL 2004, p.3). The rebellion was led by retired military serviceman, Corporal Foday Sankoh, who was imprisoned in the early 1970s by Stevens' government on alleged involvement in a military coup.

#### **3.4.1 Why the war?**

The causes of the war are evident from the above review (see summary in Box 3.1). It was a manifestation of prolonged system of misrule, bad governance and entrenched poverty. There was breakdown of state accountability; perpetuation of patrimonial politics; over-marginalisation of rural areas and young men; neglect of soaring levels of illiteracy; unprecedented growth of the underclass and impoverished populations; and a sustained tolerance of unproductive colonial-bequeathed chieftaincy system (Abdullah 1998; Davies 2001; Dupuy & BinningsbØ 2007; GoSL 2004; 2005; Hanlon 2005; Robinson 2008). Impoverished youth became alluring to mayhem and easy prey for the RUF with hope of earning better livelihood alternative that was not predictable as poverty-driven rebels.

It appears the nation was ill-prepared for self-rule in light of the episodic developments that suffixed the colonial era. Efforts by the 1947 constitution to prepare indigenous elite into

one political entity bore negative results after independence (GoSL 2004). Elites were divided into cabals and pursuits of separate objectives along ethnic and regional cleavages, each dedicated to protecting the interest of its own, leading to the emergence of loosely conceived political parties with little or no national vision.

**Box 3. 1**  
**Findings of S/Leone Truth & Reconciliation Commission Report: causes of civil war**  
**(GoSL 2004)**  
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**The Colonial Period.** Colonial power in Sierra Leone deliberately created two nations in the same land, one in the colony and the other in the protectorate. The impact of the separate development policies had far-reaching consequences, particularly in the fields of education, access to resources and in the social and political development of the two regions. The policies of the Colonial government led to the preferential development of the Colony at the expense of the Protectorate, thereby fomenting dualistic development that saw the deteriorating of the rural areas in the years ahead. The Colonial government manipulated the Chieftaincy system and, in so doing, undermined its legitimacy. The Chiefs became mere surrogates of the colonial government. They owed their loyalty to their colonial masters rather than to the people they were meant to serve.

**The Postcolonial Period.** By the early 1990s, greed, corruption and bad governance had led to institutional collapse, through the weakening of the Army, the police, the judiciary and the civil service. The entire economy was undermined by grave mismanagement. Selfish leadership bred resentment, poverty and a deplorable lack of access to key services. Notwithstanding the riches endowed to Sierra Leone in the form of diamonds and other mineral resources, the bulk of the population remained impoverished. Indeed, many of the poor were becoming poorer. The political elite in successive regimes excluded society-at-large from meaningful participation in decision-making. Key stakeholders in society, including students, youths, and the populace of the Provinces, were marginalised by the political elite. Ultimately, these marginalised groups played a central role in initiating and fuelling the armed conflict.

More so, the All People's Congress (APC), particularly during the reign of President Siaka Stevens (1969 – 1985), was one that suppressed any semblance of opposition. The creation of a one-party state effectively neutralised all checks and balances on the exercise of executive power. The one-party state systematically closed down avenues for open debate and democratic activity. By the time of the conflict, successive regimes had rendered the country devoid of governmental accountability. Institutions such as the judiciary and civil society had become mere pawns in the hands of the executive. Parliament proved itself to be a servile agent of the executive, lacking courage and determination to resist tyranny. The signs of the impending human catastrophe were plain to see. The Provinces had been almost totally sidelined through the centralisation of political and economic power in Freetown. Local government was in demise across the country. Chiefs and traditional structures did little more than the bidding of the power base in Freetown. Regions and ethnic groups were polarised by the contrasting treatments they were afforded.

The political policies and outcomes of postindependence Sierra Leone have been described as path dependent and a continuity of colonial flaws. Two governance systems have remained in the country: a formal system operated largely in urban centres; and a traditional system run mostly by “corrupt” chiefs covering most of the rural areas (ibid; Hanlon 2005; Robinson 2008). Donor policies are not exempt from the causes of the war. Hanlon argues: “Through the 1980s the government won increasing support from donors, despite growing corruption and patrimonialism and collapsing state institutions, perhaps because it was also faithfully introducing IMF policies such as devaluation” (Hanlon 2005, p.1).

### **3.4.2 Political framework and military coups during the war**

Exactly a year into the civil war in April 1992, the Government of J.S Momoh was overthrown in a military coup of young soldiers, establishing the National Provisional Ruling Council (NPRC). The NPRC was initially popular to the extent that the populace was hopeful of a turnaround in their lives, and an immediate end to the civil war. Yet almost immediately after the coup, tension and divisions erupted within the ruling elite and rank and file of the junta. This was sparked-off by the arrest of a senior military officer Colonel Yayah Kanu on alleged refusal to accept proposal to head the new government. Kanu was summarily executed later among others, following an alleged failed coup to overthrow the nascent regime in December of the same year. Captain Valentine Strasser was installed as new head of state, the youngest in the world at the time at 25, with another 25 year-old vice president.

Typical of military regimes, the 1991 Constitution was immediately suspended by the NPRC. They regularised relations with IMF and World Bank, but paid less attention to prosecuting the war, leading to the rebels taking over many parts of the country. By 1994/95, the rebels had closed in on the edges of the capital city of Freetown, while tension among the ruling elite went unabated. In July 1995, they dismissed the deputy head of state on alleged plan to

overthrow the government, while corruption continued to ascend the senior ranks. Political uncertainties reached an apogee at the announcement of plans to return the country to civilian rule in 1996 through elections. In January 1996, the head of state himself was ousted in a bloodless palace coup, installing “self-stylised” Brigadier General <sup>18</sup> Julius Maada Bio in power as new head of state, accusing the deposed of stifling the peace process and attempting to manipulate the constitution to benefit his age to run for presidency. Yet all-out pressure had to be mounted by the public and civil society on Bio and his new administration to accede to the call for general elections that were held in February of the same year.

The elections returned Sierra Leone People’s Party (SLPP) to power after 29 years, with Ahmad Tejan Kabba as president. But unconstitutional struggles for controlling state resources continued. Just a year after restoring democratic rule, President Kabba was ousted in another military coup, installing Major Johnny Paul Koroma from prison as head of state, establishing the Armed Forces Revolutionary Council (AFRC). The AFRC junta was never recognised by the general citizenry. The regime invited the RUF rebels out of the bush to join them in administration, but only to raise public predicaments to a climax. State resources were abysmally plundered in tandem with physical commissioning of heinous human rights abuses.

Failed diplomatic efforts to persuade the AFRC to return power to Kabba invited the Nigerian-led West African regional military forces to intervene and restore constitutional order after ten months of political vacuum. The ousted AFRC regrouped in the bushes and invaded Freetown yet again in January 1999, resulting in a massacre of at least 3,000 lives and maiming of thousands others in this invasion alone. At this occasion, however, the rebels were permanently flushed out of the capital city through combined forces of the regional military and civil militia.

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<sup>18</sup> It is widely reported Bio quickly promoted himself to Brigadier no sooner than he seized power from his boss: <http://www.faafiye.com/now-homeless-ex-president-of-sierra-leone-lives-with-mom/> (visited 20<sup>th</sup> May, 2012).

A final peace deal, the Lomé Peace Accord, was reached and signed in July 1999 in nearby Republic of Togo, between the government and the leadership of the RUF headed by Foday Sankoh. Later, Sankoh was brought into the fold of a government of national unity headed by Tejan Kabba, but Sankoh accepted no position other than that of chairman of the national strategic mineral resources, as noted in Chapter Two, Section 2.3, on the resource-curse arguments.

To extend those arguments here, there is a strong reservation about rewarding rebels or belligerents with such a strategic resource control as accorded Sankoh in power-sharing arrangements in resource-driven conflict states. This manifested itself in Sierra Leone within a year of Sankoh's acceptance of the position of chairman of national strategic mineral resources. First, Sankoh's relationship with other top members of the RUF high command and allies from the *soldiers-turned rebels* (commonly called the *sobel*s) was severed. Second, by May 2000, Sankoh himself had resumed subversive activities to overthrow President Kabba. He was arrested later that year and subsequently put on trial at a UN backed Special Court for Sierra Leone. Sankoh died during these trials. In September 2000, British soldiers had to intervene to flush out the remnants of the *sobel*s in the provinces. That brought the war to a physical end. General elections were conducted in 2002, and Kabba was re-elected, marking the official end of the war.

To sum up, there were seven military coups during the war, and two external interventions to restore constitutional legitimacy during this period. Since independence to date, the number of military coups in Sierra Leone can be estimated at 15, plus the historic student demonstrations of 1977 aimed at toppling a sitting president for state failure and perpetuating poverty.

### 3.4.3 The economy and social services by the end of the war

The war deepened state collapse. Figure 3.3 presents GDP growth and growth in per capita GDP during the three decades preceding the war (1961-1989), and the war decade (1990-1999). As the figure shows, and explained earlier, growth had assumed a general descent during the first 30 years of independence, before the war broke out. The war decade only exacerbated the situation, growth plummeting further to -4.2 percent during 1990-1999; per capita GDP growth more than deteriorated.

Export to GDP ratio recorded a declining trend (Figure 3.4). It fell from 27.4 percent during 1961-1969, to 24.5 and 19.5 percent during 1970-1979 and 1980-1989, before the war. It

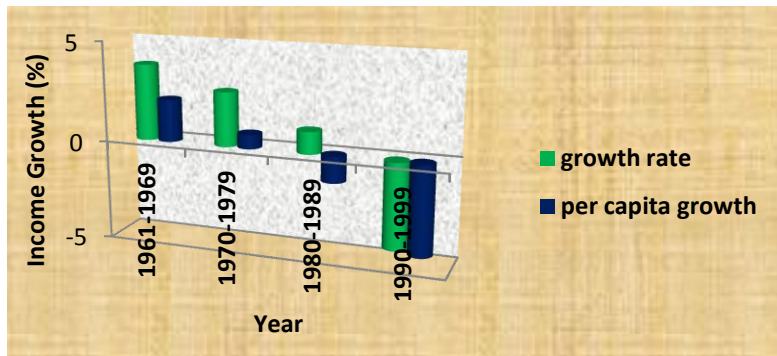


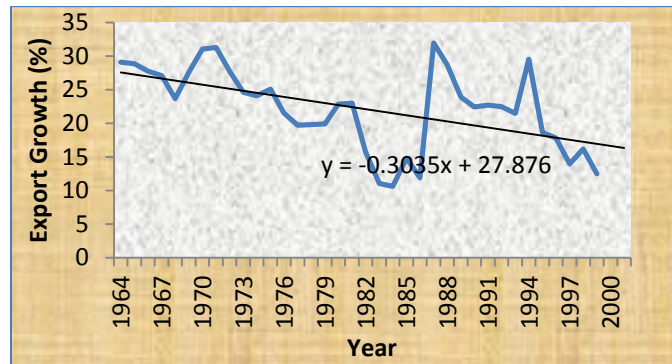
Figure 3.3: S/Leone GDP growth and per capita before & during war, 1961-1999

Source: Author's construct based on World Bank development indicators.

further deteriorated during the war decade, recording a growth of 19.0 percent. The decline in official diamond mining activities during the war mainly accounted for the decline in state export revenue. Official diamond exports had already severely declined before the war, from 2 million carats in 1970/71, to 834,000 carats in 1978/79, and just 12 carats in 1989 (Dupuy & Binningsbø 2007). But in the middle of the war in the 1990s, nothing was officially reported in mining revenues. Diamonds worth US\$450 million were produced annually this time, but were all



smuggled through Liberia and Côte d'Ivoire (Hirsch 2001). Official mining activities dropped from 20 percent of GDP before the war, to 0.1 percent by the end of the war.



**Figure 3.4: Export as percent of GDP, 1964-1999**

*Source:* Author's construct based on World Bank development indicators.

The war destroyed the socioeconomic fabric of the country. Rural farms were abandoned. About 45 percent of the country's 808,000 dwellings were destroyed. Agriculture lost its role as the traditional employer of more than 75 percent of the country's labour force. Production of rice and export crops had declined by 65 and 70 percent during the last five years of the war. Most livestock was lost, and vandalism of fishery facilities caused fish production to plunge to 50 percent of pre war levels. Consequently, food vulnerability increased among farm families. Health and education services abysmally deteriorated. Shortage of medical doctors left more than 40,000 persons attended by one medical doctor compared to 10,000 recommended by WHO. The number of those resorting to using unprotected wells, rivers, streams and bushes as sources of drinking water and toilet drastically increased. By the end of the war, infant and under-five mortality rates had recorded 165 and 282 deaths per 1000 live births, respectively; maternal mortality recorded 1800 per 100,000 live births. About 1270 primary and 820 secondary schools and tertiary institutions were destroyed, leaving female and male illiteracy rates soaring to 89 and 69 percent, respectively (see GoSL 2001; 2002; 2013a).

Government faced the mammoth challenge of disarming, demobilising and reintegrating more than 70,000 ex-combatants, a large share of which were children and youth, besides those orphaned by the war. This has led to multiplication of street children, single-person households, and reported incidence of child trafficking and prostitution (Zack-William 2007). In the absence of comprehensive social protection mechanism, a great number of Sierra Leoneans and their procreation will ever remain trapped in poverty. It is part of our research to model these realities towards enhancing policy's response to long-term poverty challenges induced by the war and its causes.

### **3.5 Post-conflict recovery phase, 2001-2004**

The signing of the Lomé Peace Accord in July 1999 provided the statutory foundation to the peace that has prevailed to date. A national recovery strategy and an interim poverty reduction strategy paper (IPRSP) were immediately implemented to see through transition programmes from war to peace and development. Over 70,000 ex-combatants were disarmed, demobilised and reintegrated, and programmes were implemented for rebuilding of communities, supporting community-based initiatives, and facilitating reparation of war-victims. To consolidate peace and socioeconomic stability, the Truth and Reconciliation Commission was established, as well as a UN backed Special Court for Sierra Leone to try individuals that committed the gravest atrocities during the war. Support came from the international community in different forms. Among the active donor agencies at the time were the IMF, World Bank, African Development Bank, European Union, UN Agencies, Arab Funding Agencies, and several bilateral donors including the United Kingdom Department for International Development, Japan, Germany, and United States. During 2000-2003, Sierra Leone and other countries worked with the UN to sanction against illegal export and import of "conflict-diamonds" or "blood-diamonds," among other initiatives undertaken by Sierra Leone to improve national benefit from diamonds. It acceded to

the Extractive Industries Transparency Initiative to replicate international best practices in running the mining industry.

These are just a few among series of reforms undertaken since the end of the war. Since 2005, comprehensive poverty reduction strategy papers (PRSPs) have been implemented as guiding national development framework. The state is now implementing the third generation PRSP dubbed *the Agenda for Prosperity* (2013-2018), succeeding the PRSP II or *the Agenda for Change* (2008-2012), and PRSP I (2005-2007). Section 4.2 of the next chapter is devoted to expanding the reform and policy discussion started here.

### **3.6 Summary of chapter**

The period 1961-2001 adequately situated Sierra Leone in the *extractive institutions* and *resource-curse* theses. The country was embroiled in bad governance, poverty and political instability despite the abundant natural resources. Self-governance had not yielded the expected social dividend and wage;<sup>19</sup> a realisation that may challenge the rhetoric heaping most of the blame on colonial masters for the deterioration of the state. Postindependence Sierra Leone befits various institutional theories. The argument that colonial masters had sown the seeds of extractive institutions in Sierra Leone as in other parts of Africa is significantly tenable in this review. Political bearing was lost in postindependence Sierra Leone. Struggle for resources constantly punctuated the first four decades of self-rule, for fear of creative destruction that has relegated the country to the group of the poorest on earth. However, while the role of imperialism cannot be overemphasised for the persistence of poverty in Sierra Leone, it is noteworthy that the British left developmental legacies such as relatively good education system, and discovery of minerals that succeeding administrations should have built upon to the best

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<sup>19</sup> Social wage “is the right to enough income [and other basic needs] for living as determined by the basis of citizenship rather than employment” ([http://ieet.org/index.php/tpwiki/social\\_wage](http://ieet.org/index.php/tpwiki/social_wage), visited 30<sup>th</sup> November, 2013); see Mosley et al. (2012) for extended discussion.

interest of society, besides securing self-rule without violence, and inheriting appreciable transport infrastructure. Instead, the economy plunged constantly, and poverty headcount rose in excess of 80 percent before the war. And unfortunately, the so-called “redemption” war of Sankoh only pursued vicious circle, adding to, and prolonging the curse and misery for the masses.

Therefore, the only panacea for growth and sustainable poverty reduction is having the right political economy, as manifested in a pool of natural-resource barren but successful economies in East-Asia, the emerging postwar/landlocked African country of Rwanda, and the most referenced African success story for governance, Botswana, where institutions have been demonstrated as the best resources for growth and poverty reduction (see the next chapter).

Entrenched illiteracy significantly contributed to the prewar governance decay and poverty in Sierra Leone. There was awful lack of critical mass of enlightened populace to enforce accountability from the top; rather a former president declared that education was a privilege, not a right, in a brazen violation of the 1948 Geneva Declaration of Human Rights.

We will move on to the next chapter to review the current development policies of Sierra Leone. Since these policies are inextricably linked to prescriptions of the Bretton Woods Institutions that review is conducted within the framework of the latest IMF and World Bank propagated antipoverty policies to aid-dependent LDCs. In that chapter, lessons are drawn from other countries’ development strategies.

## **Chapter Four**

### **Antipoverty Policies in Least Developed Countries** *Progress in Sierra Leone and Lessons from other Countries*

Sierra Leone is part of the global development policy system. Its status as a least developed country has made its participation in this system all the more crucial for poverty reduction. The international role in the country is exemplified by its relatively high ODA ratios, and the fact that its domestic policies are inextricably linked to frameworks coordinated by the Bretton Woods Institutions. We therefore assert that any assessment of Sierra Leone's policies constitutes an assessment of policies driven by the BWIs in LDCs. We will mainly dwell on the effectiveness of the current policy paradigm (the poverty reduction strategy papers, PRSPs) propagated by these institutions. The first section reviews perspectives on these prototypes that are internationally coordinated by IMF and World Bank. The second section discusses Sierra Leone's experience in implementing these strategies since 2003/04, with particular reference to rural poverty alleviation. Section three culls antipoverty policy lessons from other countries, while the final section concludes the chapter.

#### **4.1 Poverty reduction strategy papers: general perspectives**

##### **4.1.1 Background and optimism**

As noted in Chapter Two, the fight against global poverty has witnessed rounds of policy interventions across the developing world. Failure of policy prescriptions and their underlying theories has caused continuous shift from one development paradigm to another but often within

the same dominant economic philosophy of the free-market system.<sup>20</sup> Following the global economic crises of the 1970s and early '80s, a rescue package to relieve the distress of the troubled economies took the form of the introduction of the structural adjustment programmes (SAPs) by the IMF and the World Bank. But SAPs failed to deliver desired expectations in several parts of the global south that witnessed worsened poverty and underdevelopment.

This led to the introduction of the comprehensive development programmes, requiring borrowing countries from the BWIs to prepare poverty reduction strategy papers as new blueprints for poverty reduction. This phase compelled IMF and the World Bank to adjust their macroeconomic dictates of assistance to poor nations to ensure more pragmatic, poverty-focused initiatives. Pressures from civil society organisations played a significant role in inducing this sea change in global approach to development in light of the increased pervasiveness of poverty across the LDCs.

By the end of the 1990s, the PRSPs came into force with new hopes. The preparation of these documents became a condition for financial aid from the entire donor community. They became benchmark to consider a country for debt relief under the Heavily Indebted Poor Countries (HIPC) initiative. A welcome departure of the PRSPs from SAPs was the focus on democratising and indigenising the planning of a country's development policies. Policy planning came to be guided by the principles of local ownership, empowerment, and popular participation. Decentralisation of central government functions was once again intensified in the spirit of the emerging development vogue with hope of increasing policy impact at the local and rural level. The PRSPs were also expected to strengthen coherence and coordination among donors.

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<sup>20</sup> Development initiatives that have been documented since the Second World War include the UN measures for the economic development of the underdeveloped countries (1951); the equity-through-growth perspective of the 1960s; the MacNamara initiative of the 1970s with the integrated rural development programmes; the structural adjustment programmes of the 1980s and 1990s; and the current initiatives such as the poverty reduction strategy papers and the UN Millennium Development Goals.

The enactment of the UN Millennium Development Goals in 2000 cemented the recognition of the lapses in the administration of development assistance in previous decades. These initiatives were further strengthened through various aid effectiveness pacts, ranging from the Monterey Consensus on Financing Development (2002), the Paris Declaration (2005), to the Accra Agenda for Action (2008) and the Bussan Partnership for Development Effectiveness (2011). But whether the new paradigms have yielded better results for the poor is what we examine next.

#### **4.1.2 Cynicism and reservations**

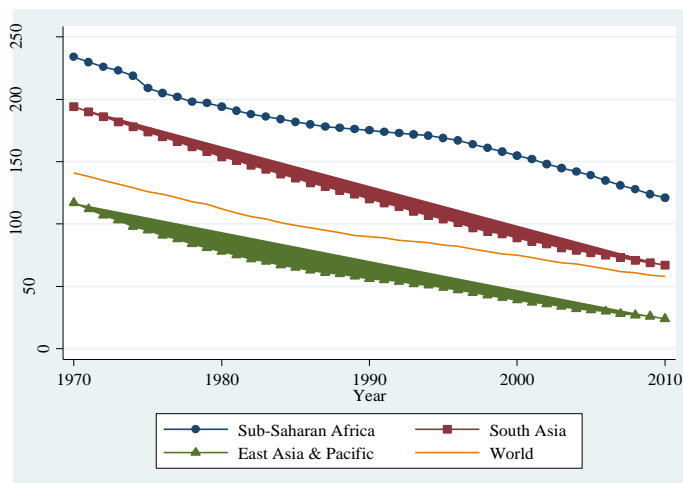
Yet, cynicisms remain rife. Poverty has massively grown in parts of the world, with the rural areas holding the vast majority of the poor. This new paradigm has been described as *old wine in new bottles* masking the same principles of the SAPs. The current estimate of the number of people living in poverty (on less than US\$1.25 a day) is 1.4 billion (IFAD 2011). Of the world's poor, more than 70 percent live in rural areas, while 22,000 children die each day due to conditions of poverty (United Nations Children's Fund, UNICEF, 2010). A total of 925 million people go without enough food, with the developing world constituting 98 percent of the undernourished. About 60 percent of the world's hungry are women (United Nations 2010; 2013), a cause of vast number of infants born with low birth weight in the developing world, and of children becoming easy prey to diseases; and a third of all child deaths in Sub-Saharan Africa are caused by hunger (ibid). About 88 percent of the developing world's population have access to only 15 percent of the world's clean water, the number lacking this resource estimating at 1.7 billion worldwide; as such an estimate of 2.3 billion people currently suffer from water-borne diseases each year (Moore 2001).<sup>21</sup>

While the world has generally seen a dramatic decline in under-five mortality (UFM)

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<sup>21</sup> <http://www.who.int/publications/cra/chapters/volume2/1321-1352.pdf> (visited 17<sup>th</sup> November, 2013).

rates since the 1970s, some regions, especially Sub-Saharan Africa, have lagged behind (Figure 4.1). The global average UFM rates declined from 141 deaths per 1,000 live births in 1970 to 58 deaths in 2010 (World Bank Development Indicators), Sub-Saharan Africa's average declining but less than proportionately, from 234 to 121 deaths. SSA deaths are above both the world average and the averages of Latin America, South Asia, and East-Asia and the Pacific. The second least performing region in managing mortality rates is South Asia (but with a population of 1.4 billion, against 900 million for SSA). African countries with under-five mortality rates above the regional average (121 deaths) include Sierra Leone, Angola, Niger, Guinea, Mali, Liberia, DR Congo, and Malawi. SSA suffers most from poverty related illnesses, especially women and children. For instance, 90 percent of children and 60 percent of women living with HIV are in Sub-Saharan Africa. Literacy rates also leave a lot to be desired in the region. The adult literacy rates for Mali, Niger, Burkina Faso, Ethiopia, Guinea, and Sierra Leone, are 26, 29, 29, 30, 34 and 41 percent, respectively, compared to the regional average of 62. This compares with 63 percent for South Asia, 91 for Latin America and the Caribbean, and 94 for East Asia and the Pacific.



**Figure 4.1: Trends in under-five mortality rates/Asia-Pacific & Africa, 1970-2010**  
*Source: Bangura (2012c, p.2).*



Progress of SSA has been held back by a lack of capacity to transform rural economies which explains the continuous documentation of endemic and chronic poverty in this region (Bangura 2013a). About 50 percent of the region's population is still poor at a daily expenditure benchmark of US\$1.25, Sierra Leone measuring above this average (see Chapters Seven and Eight). At the benchmark of US\$2 per day, the prevalence of SSA's poverty would shoot up to about 70 percent. It is also noted that 36 out of the 50 poorest countries in the world are located in SSA. Rural areas in the region hold most of the poverty which is not surprising as about 75 percent of the global poor lives in this sector. In absolute terms, the prevalence of SSA's rural poverty grew from 268 to 306 million people during 2000-2010, and those in extreme poverty, estimated at 62 percent, decreased only by 3 points during the same period (IFAD 2010). Furthermore, since the 1940s, over US\$ 1 trillion has been provided in aid to Africa, while poverty has remained endemic.

#### **4.1.3 Criticism of the Bretton Woods Institutions**

In light of the above development ironies, various criticisms have been levied at the legitimacy and effectiveness of the PRSPs. Those directed at the IMF and the World Bank can be found in ActionAid Sierra Leone (2007); Båge (2004); Bangura (2012b); Cling et al. (2002); McKinley (2004); Mosley et al. (2012); Moyo (2009); Sachs (2005); Stiglitz (2003); Stiglitz and Uy (1996).

The arguments are summarised as follows:

- The principle of national ownership on which the PRSP approach is predicted is illusory. Whether the development sovereignty of credit recipients is respected by the providers as a planned departure from the structural adjustment policies is the subject of further enquiry. The argument is that, the PRSPs are conditionalities as much as those previously imposed by the IMF and the World Bank within the framework of the SAPs for countries wishing to access financial aid from them. This is obvious to the extent that the PRSPs

have to be ratified by these institutions, thereby querying whether national priorities indeed take precedence within the current domestic policies. Ownership is called to question from the viewpoint that the World Bank and the IMF have had to involve themselves in the monitoring of the implementation of the PRSPs, even at the micro-level; sort of micromanaging the development of aid recipient nations.

- By the same token, there are serious question marks as to the efficacy of the participatory methodologies employed in the PRSP process. The desired level of public engagement in the process is hard to come by, given among other things the urgency with which the PRSPs are often prepared for national governments to be able to access debt relief in good time. Additionally, there are capacity deficiencies in terms of economic policy analysis in a great number of poor countries that limit the extent to which the public is able to propose practical priorities. Capacity constraints are commonly noted among civil society organisations, whose degree of representativeness of the poor and legitimacy is also queried; further putting on hold the effective application of the principle of national ownership and the ability of the indigenes to challenge the prerogatives of the BWIs.
- Due to design flaws, the PRSPs are mostly unrealistic; reported as bunch of shopping lists raising false expectations among the public. Programme financial estimates always far exceed the capacity of national governments to finance them, and filling even a reasonable fraction of the financial gaps through additional funds from external sources is often difficult; at best, aid is extremely unpredictable.
- Contradictions have been highlighted in the effort of these institutions to help fight poverty in the developing world, for the PRSPs are largely perceived as putting the same focus on macroeconomic stability issues as the SAPs at the expense of meaningful poverty spending. The restrictive inflation targeting and other conditions such as the ceiling on governments' wage bills within the poverty reduction and growth facility

(PRGF) arrangements with the IMF has been contradictory, when at the same time governments are required to protect certain social expenditures. Ironically, in the case of Asia (Mckinley 2004), while the neoliberal guidelines required nations to restrict inflation to between 3 and 5 percent of national income, the average annual inflation rate was over 17 percent during Indonesia's fastest period of economic growth in the 1970s, recording annual real GDP growth rate of 7.7 percent. The period 1990-2001 saw China growing at 9 percent annually, yet inflation was above the threshold at 8 percent. And in Sri Lanka, inflation was highest during periods of growth and poverty reduction.

- The PRSPs emphasise an inclusive, pro-poor growth that necessitates the need for better trade and industrial policies that are expected to boost rural productivity in poor countries. Yet, it is commonplace that the thorny issues that restrict income generating potential in the trade sector of developing countries are not addressed in the PRSPs and the BWIs have been silent about it. This pertains to the issue of trade relations between the poor and the rich countries, especially Europe and America. Free trade and elimination of subsidies are guiding market principles of the PRSPs; yet, the equation is not balanced regarding entry of goods from poor countries into rich countries while there is absolutely no restriction on the reverse flow. Unfortunately, a great proportion of goods produced by the south represent the major livelihood activities of the vast majority of already impoverished rural families and are typically primary in nature. In particular, agricultural goods constitute the largest proportion of merchandise exported from the developing countries, implying under the current trade arrangements there is increasing frustration among rural farmers.
- The returns of privatisation and financial liberalisation to the poor economies, especially the policy impact on rural families, have been a continuous subject of discussion in the light of the new version of poverty reduction approaches. The new policies (seen in the

PRSPs) are believed by a number of commentators as disproportionately benefiting capitalists from industrial economies who are better placed to undertake large investment operations than domestic investors, while the government takes a back seat and should only play a regulatory role. Foreign investments have not been beneficial to several impoverished communities given frequently reported cases of poor industrial conditions for workers, land grabs in rural areas, and so on. Restricting the state to intervene in the credit market to provide specialised financial support to the rural sector has denied the poor access to the resources necessary to bail them out of poverty. The poor are placed on the margin as their participation in a totally market-based credit system is acutely constrained by their lack of collateral and other impediments. Yet, in a number of Asian non-BWIs-PRSP economies, state intervention in the financial market has been crucial to the success story in that region for economic growth and poverty reduction.

- Some argue that substantial aid moneys from these institutions are misused, and in some cases involving (but passively) the participation of these institutions with regard to disbursement of loans for international development (Moyo 2009, p.52). Indeed, the sincerity and honesty of these institutions have been called to question in light of the persistent poverty in the south (Stiglitz 2003; pp.53-88).

#### **4.1.4 Criticism of aid agencies in general**

As donor countries are shareholders of the IMF and the World Bank, the criticisms discussed above apply in part, or indirectly, to the bilateral donor community. This brings us to the discussion of development results within the broader context of aid, focusing on bilateral donor commitments and the effectiveness of aid. Over the last decade, there have been firm commitments from the international community to scale up development assistance to fight global poverty within the frameworks of the PRSPs and the MDGs. Donor countries, agencies

and recipient nations were united around a common objective to fight poverty, and each side was mandated to play its role within the partnership. A culmination of the various commitments was the Paris Declaration (2005) which defined five principles for partnerships on development aid and its delivery process. These principles, which are very much related to the PRSPs', are ownership, alignment, harmonisation, managing for development results, and mutual accountability. This was to ensure that aid receiving countries own development plans supported by aid; donors align and harmonise their activities and procedures around these plans; plans to be results oriented and monitored; and citizens in both donor and recipient publics be adequately informed about outcomes of aid in support of the poor in the south. Monitoring indicators were developed and implemented to ensure compliance on both sides, and periodic assessments have been undertaken and reported at high level forums to review performance. Central to the partnership was the need to strengthen development transparency and accountability in the aid delivery system.

However, the poverty indices presented earlier suggest that the results of international partnerships and interventions for global poverty reduction have been negative in many respects; and the achievement of the UN MDGs is highly unlikely for many countries despite these interventions, Lal having this to say: "...the millennium which was so widely celebrated in the West and even elsewhere was not a millennium for everyone..." (Lal 2011, p.18). The following are some of the general criticisms of the aid agencies as found in AusAID (2008); Banerjee & Duflo (2011); Bangura (2009; 2012b); Easterly (2006); Ghani & Lockhart (2008); Keystone (2006); Moyo (2009); Overseas Development Institute, ODI, (2006); Stiglitz (2003); Timberlake (1985); United Kingdom Aid Network, UKAN, (2011):

- There is a weakness in the aid industry in conceptualising accountability. What to account for, who to account to and for whom have always remained elusive in development work. These inadequacies have the potential to undermine aid effectiveness. Downward accountability to the people has been promoted for effective outcomes but has not been effectively realised. What is noticed, at best, is an elitist, ineffective horizontal accountability in the direction of donor agencies from partner governments, NGOs or private operators.
- There is power asymmetry in the global aid administration. Mechanisms to empower recipient countries to enforce accountability from donor agencies are nonexistent. The legacies of the Cold War are still there and have been cause of failure of aid in the light of a world deeply polarised between pro-Soviet (now changing to Russia plus China on the one hand) and pro-western camps. Aid has been used as “a means of rewarding rulers on the basis of whether their foreign policies supported or opposed one of the superpowers—rather than whether they were pursuing any particular development agenda...” (Ghani & Lockhart 2008, p. 88).
- The 2011 international assessment survey on the implementation of the principles of the Paris Declaration found donor partners especially wanting in meeting their commitments in the fight against poverty. The evaluation revealed a huge gap between words and aid effectiveness, as aid agencies demonstrated far less commitment than partner countries. None of the signatory donors was able to achieve all targets of the Declaration set for 2010. Denmark was however distinguished in achieving most targets (7 out of 13), followed by Ireland, Australia and Sweden (UKAN 2011). Surprisingly, the biggest economy in the world, the United States of America, was third from bottom of the 32 donors in the sample. There is generally a strong reason to doubt the political commitment of donor countries to the aid effectiveness agenda. With the exception of

Japan and Germany, the rest “got worse on at least one indicator between 2005 and 2010” (ibid).

- It’s argued that aid fails occasionally because donor agencies fail to understand the great socioeconomic and political diversity across receiving nations that demands customisation than standardisation of aid models.

#### **4.1.5 Criticism of the south**

It would be uncritical to ascribe aid delivery weaknesses entirely to donors. Southern players—recipient governments, local NGOs and private contractors—equally share in the ineffectiveness of aid. These are supposed to be accountable especially to the southern publics. Many critics, for instance, have commented that efforts to enforce social accountability in several African countries have met stiff resistance from public officials and aid moneys have been diverted to private pocket or unproductive, unplanned-for investments—the aid fungibility syndrome. The following are specific criticisms of aid recipient institutions as found in Acemoglu and Robinson (2012); Bangura (2012b); Chibwana (2010); Collier (2007); Keystone (2006); Kusek & Rist (2004); Moyo (2009); Nyamwamu (2010):

- Public officials in the beneficiary countries see themselves as being under attack whenever results-based management methods are introduced in the public service.
- There is power imbalance on this side of the chain, between intended beneficiaries on the one hand, and government operatives, NGOs and private contractors on the other. This paralyses the beneficiaries’ role in enforcing social accountability for development results, as Keystone (2006, p. 4) notes: “Accountability has to do with how one manages the unequal distribution of power in place when those that are meant to benefit from one’s work have weak political and economic voice.”

- In parts of Africa only less than 20 percent of aid meant for communities has reached them; in some cases it has not been more than one percent (Moyo 2009, p.53; Collier 2007, pp.149-150), while “corruption analysts estimate at least US\$10 billion—nearly half of Africa’s 2003 foreign aid receipts—departs Africa every year” (Moyo 2009, p.57).

#### **4.1.6 What then about aid?**

Under these circumstances the big question remains: Do we still need development aid? Collier (2007, p.100) suggests that aid adds positively to the economic growth of the “bottom billion” of the world’s population, while Moyo charges that between 1970 and 2000 “the most aid-dependent countries...exhibited growth rates averaging *minus* 0.2 per cent per annum” (Moyo 2009, pp.46-47). The stance in Easterly (2006) is mixed but weighs more heavily towards the right that while not oblivious of the need to scale up aid the displeasure lies mainly in its delivery; the bucket leaks profusely and little gets to the intended beneficiary. Banerjee and Duflo, in full support of Collier, and partly Sachs, believe that once aid is got aright it is useful, otherwise not (Banerjee & Duflo 2012; Collier 2007; Sachs 2005), alongside Stiglitz, who maintains that aid is more predictable than domestic tax revenue for many LDCs with precarious economies, thus it is useful, but if consistent and flexible (Stiglitz 2003). Although Mosley et al. substantially regard donors as having pivotal role in reducing poverty, they underscore that “it is *not* the case that pro-poor initiatives are always strongest in aid-supported countries” (Mosley et al. 2012, p.11). In any case, to the extent that countries have used aid and transformed into donors and success stories—albeit in the minority historically, Botswana distinguished in Africa followed by a few others such as Rwanda—is testimony to at least aid’s intrinsic potentiality in serving as a chief financial lever for LDCs. But as this may throw overt support for more aid the success of aid certainly relies on the efficacy of its delivery to intended beneficiaries. This



debate, which is part of the general resource-curse discourses (see Chapter Two), is literally a clamouring for good governance and efficient institutions in both the LDCs and aid agencies in the delivery of services to the poor. Aid is a resource as any other resource, including locally mobilised revenues which will not be beneficial without good institutions. Against this background we shall move on to examining poverty reduction strategies implemented in Sierra Leone.

#### **4.2 Policy progress in Sierra Leone since the end of the war**

It is about twelve years now since the Sierra Leone civil war ended. Since that time (2001/02), the country has implemented series of poverty reduction strategy papers guided by the IMF and the World Bank. It started with an interim poverty reduction strategy paper (IPRSP 2001-2004) as part of an overall response to the immediate post-conflict challenges. It is now in the third generation PRSP, the *Agenda for Prosperity* (2013-2018), succeeding the *Agenda for Change* or second PRSP (2008-2012). The first generation full PRSP spanned from 2005 to 2007 after the successful implementation of the IPRSP. The Agenda for Prosperity now sets the nation's baseline strategy and plans for achieving its Vision 2035 aspiring to take Sierra Leone to a middle-income status by 2035, with hunger eradicated, and 80 percent of the population living above the poverty line.

As expected for countries emerging from brutal political conflicts, coupled with their participation in the PRSPs, Sierra Leone has received substantial per capita ODA and, although challenges remain daunting, it has recorded immense achievements in recovering and normalising the economy. Institutional rebuilding and strengthening have been ongoing. Unprecedented GDP growth levels were recorded in the first two postwar years: 18.20 percent in 2001, and 27.50 percent in 2002. The trend remained impressive till 2008 when growth slowed

down to 5.32 percent due to global economic crises *inter alia*; and it further plummeted to 3.25 percent in 2009. Growth momentarily soared thereafter, recording 15.22 percent in 2012. The average growth for the period 2003-2012 was 6.90 percent. Among the key challenges currently facing the state is the translation of spending and growth into tangible results for the teeming masses, especially for the rural population. While urban poverty pleasantly declined from 47 percent in 2003, to 35 percent in 2011 based on the Foster-Greer-Thorbecke estimator, the reduction of rural poverty was not as encouraging, from 79 to 68 percent during the same period (see Table 7.34 of Chapter Seven). The country remains low on the UN Human Development Index although it has moved up some notches from being the least (or thereabout) since 2009. It is hoped that, with sustained institutional building, supported by public sector reforms, and improved service delivery mechanism, the ongoing massive development projects of government would further and drastically reduce rural poverty.

Comprehensive empirical analyses are undertaken in later chapters on progress made in the fight against rural poverty using household survey data. Meanwhile, we shall turn to reviewing current rural-related development policies of the country, highlighting general milestones achieved, challenges encountered, and strategies going forward.

#### **4.2.1 Agricultural development**

After the war, agriculture regained its position as the mainstay of the Sierra Leone economy, with a national employment share of more than 70 percent. This ratio is greater for rural economic activities. Out of 2,282 household respondents during the 2003 national integrated household survey, 90 percent indicated that they were mainly employed in agricultural activities such as crop production, pastoral activities, fishing, and others. The vast majority were engaged in crop cultivation (99 percent), with rice production accounting for the largest share (84

percent). Rice predominance indicates agricultural activities are little diversified, with few value-adding activities. We have continued to witness low degree of substitutability between rice crop (the country's staple) and other produce such as cassava and sweet potatoes. Unfortunately, Sierra Leone has still not been able to produce rice domestically to meet the needs of the population, despite availability of vast arable land for this purpose.

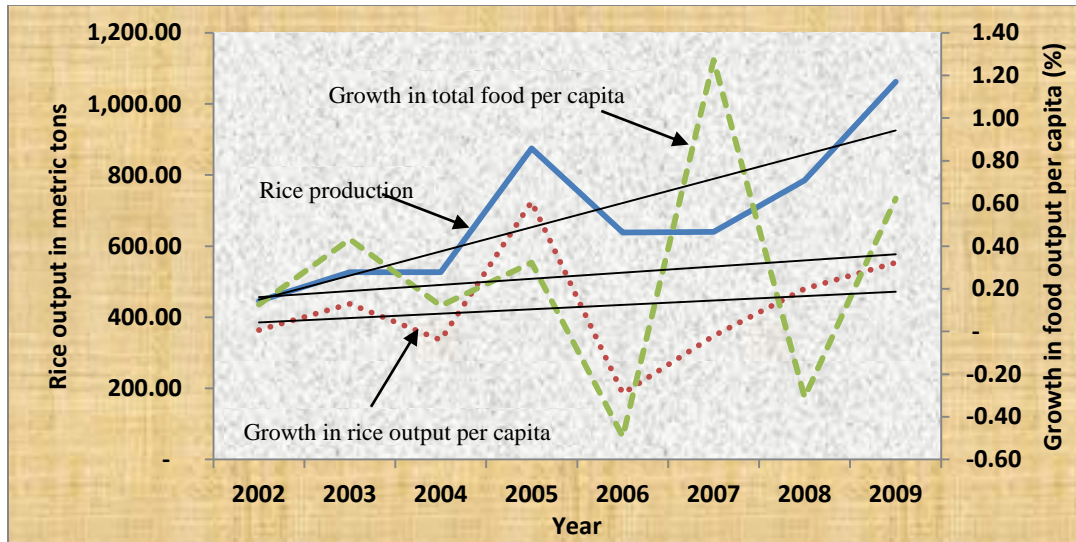
Rice, cassava, potato and groundnut have been at the fore of policy monitoring as key food crops, with greater attention to rice as the country's staple and the basis for estimating food self sufficiency of the country. Table 4.1 shows performance in the production of the four crops for the period 2002-2010. There has been a general increase in the trend of production of the crops. Weighted against the population, however, the output performance has not been as encouraging; the slope of the trends is flattened (Figure 4.2).

The cost of rice continues to impose immense strain on the budgets of both wage dependent households and the families that are already poor, coupled with the overall negative macroeconomic implications it has for the state since most of the grain is still imported to meet local consumption needs. It is however worthy of highlight that the trend in the per capita output of the grain is far impressive compared to pre-war and war levels.

**Table 4.1: Trend in key food crop production during 2002-2010**

	2002	2003	2004	2005	2006	2007	2008	2009	2010
<b>Food crop output ( 000' metric ton)</b>									
Rice (Paddy) Production	422.07	445.63	526.62	526.62	875.00	637.98	640.00	784.73	1,062.00
Cassava Production	895.82	1,091.18	1,759.29	2,287.06	2,973.10	1,236.85	4,058.29	2,516.60	4,474.28
Sweet potato production	45.45	74.45	153.20	153.20	168.13	158.22	180.07	160.70	187.34
Groundnut production	98.40	117.00	152.00	56.56	115.20	118.85	133.06	75.05	146.70
Total output production	1,461.73	1,728.26	2,591.11	3,023.43	4,131.43	2,151.90	5,011.42	3,537.08	5,870.32
<b>Growth in per capita food crop output</b>									
National Population (000)	4,512.45	4,734.84	4,957.23	5,165.28	5,337.46	5,488.11	5,624.42	5,746.37	5,875.51
Rice output per capita	0.09	0.09	0.11	0.10	0.16	0.12	0.11	0.14	0.18
Food output per capita	0.32	0.37	0.52	0.59	0.77	0.39	0.89	0.62	1.00
Growth: rice per capita	-	0.01	0.13	(0.04)	0.61	(0.29)	(0.02)	0.20	0.32
Growth: output per capita	-	0.13	0.43	0.12	0.32	(0.49)	1.27	(0.31)	0.62

*Source:* Various progress reports on implementation of Sierra Leone PRSP.



**Figure 4.2: Production trend of rice, cassava, potato & groundnut, S/Leone 2002-09**  
*Source:* Author's construct based on Table 4.1.

It is against the background of continued fluctuating performance in the supply of basic food needs, and agriculture being the lead economic sector for employing the vast majority of the rural population, that rural development has become a top priority in the government's policy agenda. Attention is also paid to boosting the country's main cash crops: cocoa and coffee. Series of strategies have been implemented to boost agricultural productivity. Most notable include the implementation of a comprehensive smallholder commercialisation programme (SCP), and other initiatives within the framework of the Comprehensive African Agricultural Development Programme (CAADP) and the National Sustainable Agricultural Development Programme (NSAP). These initiatives have seen more than 500 agricultural business centres established throughout the country, receiving a range of agribusiness support including training, equipment and machinery, improved inputs, and so on. If sustainable, this could help transform rural agriculture, mitigate post harvest loss, and create the conditions for an improved value chain in the sector. A key challenge to these efforts is ensuring equitable distribution of this assistance to farmers to avoid undercutting the less privileged.

Successful agricultural transformation requires an integrated rural sectoral development strategy, which the government is pursuing. It has designed initiatives in other sectors to perform a role complementary to agriculture and rural development. They include strategies relating to rural finance, rural roads development and electrification, health, and education. The resuscitation of local government after the war was also in recognition of its support role to rural poverty reduction and development. We shall turn next to examining these complementary strategies.

#### **4.2.2 Rural finance**

Although microfinance has been fraught with numerous problems in the past, empirics suggest that it matters for agriculture investment and development in Sierra Leone (Fofanah & Bangura 2011). It remains a pursued instrument within the current PRSP of government to promote small to medium scale operations including rural development. Various institutions are key stakeholders in the current microfinance strategy, including commercial financial institutions, microfinance institutions (MFIs), donors, and the government as regulator. A Micro Finance Policy came into force in 2002, which has been reviewed recently. The Microfinance Investment and Technical Assistance Facility (MITAF) was established to provide technical guidance and facilitate the general administration of funds, which is expected to expand access of financial services across the country with a focus on rural areas. This is expected to minimise the exclusion of rural businesses in the credit market in view of the fact that currently agricultural loans account for only 2 percent of gross loans, despite the sector engages more than 70 percent of the labour force and produces close to 50 percent of GDP (SLLC 2011).

Since microfinance has huge market element, risk is key among the factors militating against lending to the rural sector, partly explained by the inadequate infrastructure and

undiversified economic activities, thereby justifying the focus of lending on “blue-chip” operations. It is for this reason that informal credit institutions such as moneylenders, rotating savings and credit associations (ROSCAs), together with relatives, have sprung up and become commonplace as credit sources in Sierra Leone and West Africa in general (SLLC 2011; Hope 2008). Commentaries have partly blamed the inadequate credit to the rural areas on the adoption of financial liberalisation policies which have tended to restrict state’s involvement in the provision of credit (McKinley 2004; among others). Generally, however, credit risk is a major cause of restricted lending to rural operators, and part of government current efforts in response to risk issues is the passing of the Credit Reference Bureau (CRB) Act and the setting up of a CBR Section at the Central Bank of Sierra Leone. This is expected to facilitate access to lending from commercial banks through credit data gathering, analysis, and dissemination of reports on performing credit beneficiaries and none performing beneficiaries, to address *adverse selection* and *moral hazard* problems among other issues. This is hoped to increase outreach of credit operations in the rural areas.

#### **4.2.3 Rural road network and electrification**

The state continues to be challenged by an existence of poor roads network (GoSL 2013a, p.96). Of the 11,300 km of classified roads in the national road system, only 8 percent is paved road network, the rural areas affected the most: less than 22 percent of the rural population is within 2.0 km of all-season roads network. In view of the multiplying effect that a sound road system could have for poverty reduction and the competitiveness of the macroeconomy, government has redoubled its emphasis on improving the road system with particular focus on increasing the connectivity between the rural communities and the markets and other services. At least 20 all-season road projects have been planned for implementation across the country in the country’s

Agenda for Prosperity.

A massive feeder roads programme has been ongoing with enormous donor-government funding but challenged by a weak management arrangement. Such roads could be fast to deteriorate as rains pour and could constitute a waste of resources in the absence of concrete plans. As such, the government has put into force a feeder roads policy since 2011. A key aspect of the policy is to ensure the effective involvement of district councils and local communities in the management and maintenance of feeder roads.

An underdeveloped energy sector has perennially decelerated economic growth and poverty reduction efforts. Despite the huge energy potentials highlighted in Chapter Three, currently only 10 percent of the population can access electricity from the national power grid (ibid, p.94). Supply is worse in the rural areas, where the national household survey of 2011 suggests that no rural household is using electricity for lighting or cooking purposes (see Chapter Seven). Noting the retarding effect this could have in the fight against poverty, government has redoubled its determination to alleviate the country's energy problems with a substantial focus on rural electrification. However, the existing rural strategy is largely long term, involving *inter alia* extension works on the only national hydroelectric power supply utility completed in 2009, from Phase I to Phase II; participating in the West African Power Pool Project; and negotiating power purchase agreements with neighbouring countries. The available short to medium term strategy is the rolling out of supply of solar energy to villages through an established Barefoot Solar Energy Development College.

#### **4.2.4 Access to education**

Rural illiteracy was reported in the last National Census (2004) at 63 percent, versus 38 in the urban areas. Government main policy response to this disparity is to improve access to basic education at all levels, with special focus on increasing facilities in the remote communities and

supporting the girl child. This is central to Vision 2035 which aims at ensuring that education will be free and compulsory as provided for in the 1991 Constitution. In the last one and a half decades, government has become sensitive to the spatial disparity in schooling, and has moved to provide special education support to the most poverty-ridden regions. This includes payment of school and public examinations fees with special attention to the girl child. The number of primary schools has been substantially increased after the war, from 4,298 in 2004, to 5,931 in 2011, with attendant increases in primary gross enrolment of over 100 percent for both boys and girls (ibid 2013, p.61).

Malnourishment has been a serious problem with rural school children and this has attracted the attention of donor organisations such as the World Food Programme to provide school feeding support in collaboration with government. Local non-governmental organisations such as ActionAid and Centre for Democracy and Human Rights have provided other forms of support towards rural education. These efforts have the potential to drastically reduce rural illiteracy if sustained.

The government encounters the challenge of providing sufficient school structures at secondary level to match facilities at primary level so that primary graduates can easily be absorbed into secondary. But there is a huge mismatch currently: whereas the number of primary schools estimates at 5,931, the number of junior and senior secondary schools estimate at 888 and 208, respectively (GoSL 2012b, p.24). This mismatch badly constrains primary school leavers in remote communities from smoothly transitioning to secondary, with a lot dropping out as a result, and it creates disincentive for rural parents to send children to school, while cultural barriers to educating children, especially the girl child still exist in some communities. Communities where formal schools are not within walking distance have witnessed



mushrooming of unauthorised schools, outnumbering the official ones in some districts.

Other challenges facing rural education include insufficient teaching and learning materials; human, technical and financial capacity constraints at District Education Offices; and acute shortage of qualified teachers in remote rural areas. Acute shortage of teachers is mostly a result of incentive incompatibility discouraging them from opting for rural schools, coupled with poor accommodation, health concerns, and the generally inadequate social amenities in the rural areas. The skewed distribution of schools and the long distance it causes in some communities has restricted school participation; many parents are discouraged from sending their children to larger towns after primary school graduation to pursue secondary education where they are unable to care for them.

Furthermore, rural education has been fraught with policy inadequacies, and some studies have attributed this to harsh conditionality imposed by the International Monetary Fund [See ActionAid-Sierra Leone (2007); Centre for Democracy & Human Rights, CDHR (2008); supported by claims in McKinley (2004) on Asia]. In particular, high pupil-teacher ratios have continued to prevail and exceed government poverty reduction targets and the global Education For All targets by a considerable measure in light of restrictive public spending associated with the IMF. In the north of Sierra Leone (holding the largest share of the nation's population at 35 percent), this ratio has been estimated at around 1:76 compared to the national policy target of 1:50, and the Education For All target of 1:45, and it is largely blamed on the wage bill cap and teacher recruitment ceiling imposed by the IMF on government expenditure.

#### **4.2.5 Health, water, sanitation and nutrition**

There has been laudable progress in the health sector especially following the government's bold initiative to implement a free healthcare programme for pregnant women, lactating mothers and

children under-five years in 2010. If sustained, this could have significant knock-on effects on other dimensions of rural poverty and the global human development index that the country is noted to be one of the worst performers in the world. Immunisation services for infants and under-five children have improved dramatically, as well as supply of vaccines and essential drugs. Ambulance services for some reachable rural communities have been enhanced, while obstetric care has been integrated into some peripheral health units. Campaigns for the promotion of early and exclusive breast feeding have been intensified and there is increased provision of vitamin A and other nutritional supplement for children among other services. Malaria has been of great concern; thus the fight against the disease has been stepped up among children and vulnerable populations through increased supply of insecticide treated mosquito bed nets targeting children and pregnant women. The number of sites and centres testing for HIV/AIDs has been increased, with increased treatment for prevention of parent to child infection of the disease. Attention has also been increased towards tuberculosis, increasing the number of centres testing and treating the diseases across the country.

There has been great concern about the deplorable water and sanitation situation contributing to weighing the country down on the global human development index and this has captured increased attention of both government and non-governmental organisations. The response in the rural areas includes sinking of boreholes in communities and installation of solar powered and gravity aided water supply systems.

Despite the foregoing efforts at the input and activity level, awesome challenges remain as spelled out by the generally appalling health statistics at outcome level. Infant and under-five mortality rates have remained among the highest in the world at 128 and 217 deaths per 1000 births, respectively (UNICEF & SSL 2011), while maternal mortality stands at 857 per 100,000

births (GoSL 2008a); this constitutes an improvement, however, from 2005 estimates of 170 deaths (infant), 286 deaths (under-five), and 1,300 deaths (maternal) according to UNCEF and SSL (2005). Malaria, tuberculosis, low birth weights, birth trauma, diarrheal diseases, malnutrition, and HIV/AIDS remain lead causes of deaths in Sierra Leone (WHO 2011). The current estimates of WHO put the country first in malaria and tuberculosis related deaths in the world out of a sample of 192 countries; second and sixth in the incidence of low birth weight and birth trauma; twelfth, fifteenth and thirty-fourth in diarrheal diseases, malnutrition and HIV/AIDs incidences, respectively (ibid). Scaled-up efforts by government going forward include the articulation of national food and nutrition security policy, and a comprehensive social protection strategy that we are going to discuss next.

#### **4.2.6 Social protection**

It is claimed that masses in parts of the LDCs have been trapped in deep poverty because both international and local policy institutions failed to build into the development discourse a strong social protection position; thus, the poor have got poorer and increased in numbers even as economies grow (Mosley et al. 2012). Social protection is the difference between having high economic growth and but deteriorating social development indicators in the *growth without development thesis*. The inequality and political upheavals experienced in the LDCs are a function of the absence of or limited social protection. In line with the Universal Declaration of Human Rights of 1948, these mechanisms should help individuals insure against unexpected loss of income, and improve social wage through improved equity in the distribution of resources, and maintaining a minimum standard of socioeconomic livelihood and security to protect citizens against vulnerability.

The social security situation of Sierra Leone has been dire both in terms of manifestations of deprivation and policy management. This has made the situation of the most vulnerable in

society egregiously wanting. The situation of children, women, and the disabled has particularly remained precarious, leaving little or no surprises about the relatively high malnutrition and death rates recorded. Currently, 44 percent of children under the age of five are stunted, the rural areas recording the worst at 45.7 percent (UNICEF & SSL 2011, p.19). The proportion of households that are “food insecure due to poverty, low productivity and poor access to markets” is estimated at 45 percent (GoSL 2013a, p.104); and only 22 percent of the children under-five are able to have 3.0 meals per day (GoSL 2012c, p.10). Sierra Leone has one of the smallest shares of public spending related to social protection across Sub-Saharan Africa.

Against this background, GoSL has dedicated a full pillar in its Agenda for Prosperity to address the mounting social security needs of the country as an imperative for achieving the shared middle income status aspired for by 2035. Government notes in particular that extreme poverty and hunger is heinous and restricts a great number from emerging out of the scourge of poverty, taking into consideration the risks of multiplying generations of pauper thereby stymieing economic growth and throwing the country into chaos if necessary action is not taken. Socially insecure households “suffer from severe hunger during most of the year, become physically weak, tend to sell or consume their productive assets...give up investing in their future (like sending children to school), and die from infections that other people survive” (Schubert 2012, p.8). The government has therefore formulated and put into action a comprehensive National Social Protection Policy since 2011 to respond to various vulnerabilities within the Agenda for Prosperity, in the areas of household income protection, healthcare, education, and other relevant sectors. Owing to sectoral overlaps of vulnerabilities, institutional arrangements have been put in place to coordinate interventions across the relevant sectors, including establishment of agency to coordinate implementation of social protection policies and plans.

#### **4.2.7 Governance, service delivery and accountability**

The greatest challenge that the state has encountered since independence is ensuring probity and efficiency in public service delivery. Desired results from public investment are difficult to come by without *investing in the investment process*. That is, sound commitment mechanism should be at the fore of resource utilisation and poverty reduction. Recognising this, the government has made *good governance* a standalone pillar in its national development framework since the war ended. It has continued to strengthen public financial management systems right through the district level. Programmes have been ongoing to strengthen the civil service as engine of production of public commodities. Devolution of central functions to local councils has continued, and aid coordination and project monitoring have been scaled-up. The country now has one of the most robust anti-corruption commissions in Africa with prosecutorial powers to flank public service delivery. There are nonetheless critical challenges in the way of these reforms. We will briefly discuss three among these reforms that are especially crucial to rural poverty alleviation.

#### **4.2.8 Decentralisation and local judiciary**

A much reported cause of poverty and the civil war of Sierra Leone is over-centralised development administration in the capital city that caused the marginalisation of the rural people for decades (see Chapter Three). As part of broader postwar response strategy, local government was resuscitated in 2004, re-establishing the district councils through the Local Government Act of 2004. Once again, plural development has been promoted at the local level, bringing socioeconomic governance close to the rural people, and this is expected to boost implementation of sectoral policies. Since 2004, devolution of central functions to the districts has been pursued vigorously and accompanied by service delivery capacity building efforts for

local councils. Councils are again preparing and implementing district development plans with the communities. The fiscal component of the devolution process has been effective; councils now manage huge development budget. From the centre, a specialised department in the Ministry of Finance and Economic Development coordinates fiscal decentralisation in close collaboration with the Ministry of Local Government and Rural Development. A key challenge is sustaining councils' operations fiscally as local revenue generation capacity is extremely low, coupled with ensuring that they manage fiscal transfers from central government efficiently. These are pursued in the government's Agenda for Prosperity under the 7<sup>th</sup> Pillar (GoSL 2013a).

The effectiveness of district councils' operations is contingent upon the extent of functionality of the ward committees. These committees are designated as the lowest administrative units and service delivery authority in the country's decentralisation system after district councils. They are meant to interface between the communities and councils, facilitating identification of priority projects for inclusion in district development plans. Each ward elects a councillor every four years as community representative at district council. But the work of councillors is fraught with logistical problems to coordinate community activities, while many have limited education and are elected through political patronage. Reports indicate that in most communities, people identify themselves with traditional leaders (the paramount chiefs) more than the councillors, suggesting the need to strengthen chiefdom councils in the development process (GoSL 2008b; 2010).

The government has pursued reforms in the local/customary justice system as a vital input into rural poverty reduction in terms of protection of property rights, resolving conflicts and maintaining stability in the local economy. However, the effectiveness of local judiciary has also been constrained by logistical problems and poor infrastructure to coordinate justice in rural

communities, coupled with issues of patronage and political meddling in the course of conflict resolution, which mostly affects the weak and poor, and causes outmigration.<sup>22</sup> These issues are being pursued in government's current development policy.

#### **4.2.9 Coordination of development aid**

External assistance has been a key funding source for the implementation of government programmes. As a result, government has improved the landscape for aid coordination in terms of tracking and reporting on external assistance information. Donor agencies have consequently tried to harmonise procedures and align support to national priorities. However, within the Paris Declaration framework, national surveys indicate a lot remains to be done in regard to donor practices in the area of mutual accountability between the government and donors; the use of country systems is still weak on the side of most donors. These weaknesses echo concern raised at the international level Paris Declaration surveys discussed earlier. On the local side of the aid delivery chain, chunks of aid money come through NGOs, but their accountability to local communities and authorities, even central government, is limited. Government NGO policy, if well implemented will be a key instrument to regulate NGO activities towards better results.

#### **4.2.10 Monitoring and evaluation for development results**

This has been rekindled through the introduction of result based management strategy in the public sector. Now, all heads of government ministries, departments and agencies regularly report on progress made in implementing sector projects and programmes to the office of the president. The Ministry of Finance and Economic Development has coordinated nationwide monitoring of projects in collaboration with line agencies and civil society. The current president

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<sup>22</sup> Testimonies were obtained on this during key informant interviews conducted by this research in rural communities. For related and general bottlenecks of local justice system, see GoSL (2010b).

of the republic, Ernest Bai Koroma, has been referred to as the chief national monitoring and evaluation (M&E) officer in light of the commitment he demonstrates to M&E. He has led monitoring teams to supervise flagship projects across the country. However, a key challenge has been the lack of a coherent framework for development monitoring. The current arrangement is ad hoc; numerous and uncoordinated outfits have sprung up across the public sector spectrum to monitor public projects, leaving too much duplicity of functions. Questions as to who does what, where, and how are not yet clear in the current M&E landscape; it is a challenge the government has planned to address in its Agenda for Prosperity.

#### **4.2.11 Land and population development**

Sierra Leone has had a rather weak land tenure system, which has prevailed for decades. This is blamed on the colonial past that bequeathed postcolonial administrations an unresolved land system and a dual model of governance: (i) a statutory governance in the Crown Colony, now covering the capital of Freetown and western peninsula, with market-based land acquisition model accounting for 21 percent of the national population and 0.77 percent of the national land size; (ii) a native/customary land governance system in the protectorate, now designated as the provinces and rural areas which is predominantly communal and accounts for 79 and 99.23 percent of the national population and land area, respectively (Foray 2011; Johnson 2011; Williams & Oredola-Davies 2006).

The state has recognised that insecure land tenure and rights and inconsistencies between statutory and customary legal provisions have seriously affected rural productivity and economic growth (Foray 2011). Therefore, it has formulated a land reform policy aimed at ensuring a translucent, effective and equitable land tenure system that meets social and public demands and is consistent with growing investment opportunities in agriculture and other sectors. This is also



crucial towards resolving the growing concern about land grabs and its poverty exacerbating effects (Christian Aid 2013).

Government has also articulated a population strategy, which is expected to complement the intended effects of the land reform. There is growing concern that the growth of public services has not kept pace with population growth. The national population is currently 6.4 million with a growth rate of about 2.0 percent. Fertility is 5.1, higher than that of Cote D'Ivoire, 4.9; Ghana, 4.0; and Botswana, 3.2; per woman in the appropriate age cohort (GoSL 2013a, p.81). It is higher than the desired rate of 4.3 for SSA (World Bank Development Indicators). Government has planned to reduce this to 3.8 children in Sierra Leone by 2018 as aspired in the Agenda for Prosperity (GoSL 2013a, p.81). The strategies include the revitalisation of the National Population Commission; conducting regular population monitoring surveys; promoting family planning methods; and pursuing an integrated, multi-sectoral approach to rural development.

Next is a review of antipoverty policies from other countries to cull lessons for Sierra Leone, focusing on selected strategies with direct pertinence to promoting rural development.

### **4.3 Antipoverty policy lessons from other countries**

#### **4.3.1 Transformation of agriculture**

Before China opened up globally in 1978, it experienced a high poverty incidence at 60 percent, and mostly in the rural areas. For a long time, it had adopted restrictive and regulatory policies permitting farmers to engage only in certain crop activities, mostly grain production. This limited the operational space for rural farmers and caused entrenched poverty. The emergence of reforms in 1978 engendered the relaxation of this restriction. Farmers have been supported since then to diversify into other food crops such as fruits, vegetables and sugarcane (Binglong Li et al. 2009;

Dowling & Valenzuela 2010). Higher prices were now offered farmers, leading to rising productivity and rural incomes, with knock-on effect on the industrial sector and others as demand for their products and services increased consequently. These reforms led China to achieving the most remarkable results in rural poverty reduction, with the poor slashing from 250 million in 1978, to 14.78 million in 2007, poverty incidence declining from 30.7 percent, to 1.6 percent in the same period (Binglong Li et al. 2009).

Technology and adoption of high yielding rice varieties (HYVs) under the Green Revolution led to drastic reduction of poverty in rural Asia (Binglong Li et al. 2009; Dowling & Valenzuela 2010; Otsuka et al. 2009). It permitted increased productivity with less expansion in acreage. During the first eight years of the Revolution, rice productivity due to application of HYVs was far greater than old technologies in India, Indonesia, Myanmar, The Philippines, and Sri Lanka—the share of HYVs in rice productivity growth ranges from more than 50 percent in Sri Lanka, to more than 75 percent in the rest (Dowling & Valenzuela 2010).

In light of the risks surrounding application of improved technologies in agriculture, Dalton has earlier argued for all countries that, “A legitimate role for any central government wanting to accelerate local development is for it to bear some portion of the financial risk of economic and technological innovation” (Dalton 1971, p.104).

The key lesson: Agricultural productivity requires strong political support and structural transformation through research and development, and getting market incentives right. This requires integrated sectoral strategies: policies aimed at supporting other sectors such as land administration and education are prerequisites for increased efficiency in agriculture, as we discuss next.

### 4.3.2 Land distribution

A common model of land reform for poverty reduction is one aimed at redistributing the resource from large estate holders to poor families, reflecting the *latifundio-minifundio* agrarian system of Latin America.<sup>23</sup> The inequitable land arrangement in this region has contributed to the deterioration of agricultural productivity and the rising crime rates and insurgencies in countries like Columbia (Berry 2006; Todaro & Smith 2011). Large parts of Sub-Saharan Africa have not yet encountered land distribution issues compared to Latin America and parts of Asia, where large areas of land are concentrated “in the hands of small class of powerful landowners” (Todaro & Smith 2011). However, it is important to think also that idle land or collectively owned land has the potential to block economic and poverty reducing opportunities. In large parts of Sub-Saharan Africa, ownership is still largely clan and communal based and land productivity is exposed to the tragedy of the commons (Johnson 2011). It is believed that the urge to undertake effective investment in land will drastically increase if ownership is exclusively bestowed on individuals or members of families to encourage market (Binglong et al. 2009; Johnson 2011). This (contract right) model was applied by China during their reform stage from the late 1970s to the 80s. The Chinese adopted a “family contract operation system” where rural communities divided up collectively owned land equally amongst all members to create market incentives such that a rural family was permitted to contract or operate its own portion at will (Binglong et al. 2009). This model is supported by Sobhan, that lack of individual exclusive land rights is part of the social injustice that has entrenched poverty in many parts of the world, and opportunities can be increased for the poor if land tenure and security issues can be addressed (Sobhan 2006). Korea and Taiwan eradicated land holding classes and made wage

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<sup>23</sup>In Latin America the *latifundio-minifundio* refers to an entrenched system of land ownership where the resource is concentrated in the hands of the wealthy at the expense of poor households.

income the major source of advancement; this encouraged knowledge investment and catalysed structural transformation towards overall development (Mengistu 2009; Stiglitz 2003).

The key lesson: land is initially the most vital resource to majority of rural inhabitants; its equitable distribution is crucial to rural poverty alleviation and requires a strong political will to make it possible. Its collective ownership will discourage investment since it will take the form of public good with free riding implication; individualising the resource and encouraging the market is necessary. But most essential to rural poverty alleviation is knowledge investment from a long-term welfare standpoint and sustainable national development.

### **4.3.3 Rural education**

Inertia may creep into rural development if agricultural support is not provided in tandem with education and training. Education has widespread multiplier effects, and its leading role in achieving sustainable development cannot be realised unless the rural populace are well educated in the process (Acker & Gasperini 2003, p.81). As such, a number of developing countries have adopted different strategies in response to rural education challenges. Among these are: (i) deployment of teachers in remote areas in the face of poor socioeconomic conditions in rural areas to attract them; (ii) reduction of distance to school; and (iii) responding to other contexts including culture. In the ensuing paragraphs, we will review country strategies implemented in response to these challenges as reported in Mulkeen (2005); and Moulton (2001).

Teachers: As a policy on health grounds, Uganda and Mozambique have considered to post teachers with health problems to schools near to medical facilities. To respond to regional bottlenecks characterised by factors such as ethnic and language barriers, Mozambique considered recruitment and deployment of teachers be done at regional level. Due to mountainous geography and poor infrastructure, Lesotho also decentralised recruitment of

teachers to the community level through school management committees (SMCs). The disadvantage this has is where express preference was shown by an SMC for an applicant (often a preconceived local person) that was less qualified than an outsider who was more qualified and had shown an interest to migrate to the community in question. Another strategy was to require graduates from a region's teacher training college to teach in that region. Malawi recruited untrained temporary teachers who were later trained, while others (such as Uganda, Tanzania, Lesotho and Mozambique) provided teachers with monetary and non-monetary incentive system to attract them to remote communities, ranging from provision of hardship allowance and travel allowance, to household subsidies, special study leave, and better training opportunities; a further challenge though is providing incentives that are substantial enough to outstrip the socioeconomic costs associated with deployment in rural areas, and determining schools to be accorded top priorities. Some have encouraged teachers to serve in a remote community only for an agreed period of time in exchange for promotion and career development opportunity later; and Ghana adopted a policy of posting newly qualified teachers in pairs for one to draw strength from the other.

Distance: Mozambique had maintained reasonable school size between 100 and 200 in a number of rural settlements to increase chances of engaging with the communities. This strategy may however be economically inefficient in the utilisation of teacher capital, especially where dropout rates are high leading to lower pupil teacher ratios. Lesotho had a policy of making more qualified teachers in a school teach lower grades so as to lower dropout rates and to even out pupil teacher ratios across all grades. In Ethiopia, growth in rural school enrolment was partly attributed to home visits by teachers. And for communities dominated by nomads and pastoralists, constructing schools there may not be economically efficient as in the Karamoja

region in Uganda; thus the authorities provided mobile educational system, teachers following children wherever they took animals to graze and classes were conducted under trees.

Other contexts including culture: It has been argued that the most successful rural school models are those which are designed with modification to the national school system in order to suit specific rural situations and to ensure sustainability. The Escuela Nueva in Rural Columbia and the Bangladesh Rural Advancement Committee (BRAC) are among globally celebrated initiatives for success in the application of customised models in rural areas. Established in the early 1980s, the Escuela Nueva programme has been the best known for conducting multi-grade schooling, and pupils who were unable to attend school were taught at home, and also supported through student study groups; teachers benefited from on-the-job training, and networks of rural community teachers were established to ensure interaction among them. Parents worked closely with teachers, integrating the former's cultural and other concerns into the curriculum to ensure that schooling was culturally sensitive and sustainable. In relatively short period, this model led to rural schools expanding to 22,000 in number.

The BRAC schools targeted mainly girls in rural Bangladesh, and capitalised on already successful rural development projects like credit support and healthcare programmes. The initiative started in 1985 with each school catering for 30 children within a few kilometres, and renting a room in houses to conduct classes. Teachers are picked from the communities, intensively trained for 15 days, provided with retraining at least once a month, and paid modest wages. Simple materials were used for school to enhance sustainability; no fees were paid and parents attended school meetings. The government permitted BRAC school leavers to enter the fourth grade in government schools. By 1998, about 34,000 BRAC schools were servicing not less than 1.2 million children that would otherwise have been left out of schools.

The key lesson: Spatial equity in resource distribution is crucial to ensuring provision of minimum social amenities and infrastructural development in rural areas to attract services such as those of teachers and private sector intervention towards rural education. Conventional models of learning should be modified to capture peculiar rural contexts, and concerted efforts with non-governmental organisations should be encouraged to increase chances of success.

#### **4.3.4 Rural nutrition and health**

Nutrition encapsulates issues of affordability, availability and information regarding access to food in the right quantity and quality, and the processes and methods of administering food in a given environment. This definition has important implication for health in remote rural communities. However, whereas the loading of nutrition on human development is substantial, and has had a long history of evidence-based conclusions, it is often neglected in development policy discourses (Bangura 2013b; Suárez-Herrera 2006; Walraven 2011). In Britain, the great decline (of 80 to 90 percent) in mortality from infectious diseases between the mid-19<sup>th</sup> century and the first half of the 20<sup>th</sup> century was largely attributed to improved nutrition (Walraven 2011). Medical interventions like vaccinations and antibiotics had not been introduced until the 1940s and 1950s (Nandy 2004; Walraven 2011). These facts underscore the role of nutritional management in ensuring cost-effective healthcare, and poverty reduction and development at low levels of income. It connotes the importance of public health and the need to promote knowledge about nutritional alternatives at the community level.

Indonesia, Kenya, Thailand, Egypt, Sri Lanka and the Philippines have placed nutrition at the centre of macro food policy analysis (Berg & Austin 1984). Berg and Austin have argued that structural inequities are crucial diminishing factors of nutrition standards across households and no well-intentioned nutrition programme will be able to emerge without a strong political

will to ensure equitable distribution of resources such as land to permit generation of meaningful incomes for the poor to afford nutritional commodities (see also Sobhan 2006).

Community participation in strategies for alleviating undernutrition is crucial to the enhancement of health in remote settlements, and their participation can be made effective through education and awareness-raising. Conducting research on Malawi, Babu highlights the importance of community education to take advantage of the enormous nutritional and medical value the poor can derive from indigenous plant foods. In particular, emphases are laid on communicating the value of the *moringa leaves* as a rich source of Vitamin A and Vitamin C in rural Malawi.

The key lesson: Rural education should be emphasised for improved nutrition and health. Generally, health, nutrition, and education should be integral into any social protection strategy.

#### **4.3.5 Social protection**

Chile is globally recognised as a success story in the implementation of social security policies. Its social security system has undergone successive reformations since 1973, and employed coherent programming involving local communities, public institutions, the research community, donors, and civil society. In 2000, the Chilean president was directly involved in conceptualising and implementing a specialised programme *Programa Puente* targeted at those in extreme poverty. It formed the basis for the elaboration of comprehensive social security system for the country the *Chile Solidario* (Palma & Urzua 2005). An indigent benefiting from the Chilean support programme was required to initially meet 53 benchmarks defined as minimum conditions to break out of poverty, and assistance included psychosocial support, protection bonds, guaranteed cash subsidies, and preferential access to skill development, work and social security programmes. More importantly, personnel were recruited to counsel and follow up with



each beneficiary family, and Chile's poverty headcount ratio is now estimated at 14.4 percent.<sup>24</sup>

China has also been successful in promoting rural social security (Binglong Li et al. 2009). The *rural old-age insurance* allows farmers to buy insurance cover in the system. But challenges posed by occasional dwindling of farmers' incomes led to the introduction of the *cooperative medical system* to ensure continuity of their protection, covering the entire rural population, with multiple funding from personal payments, collective support, and government subsidy, covering wide range of diseases. This is complemented by the *rural medical relief system*, supporting those in extreme poverty, enabling beneficiaries to stay on the cooperative medical system. The *five-guarantee subsistence programme* was designed to provide support to helpless old-aged people, disabled people and parentless children in rural areas. This was funded initially from rural taxes and fees, but later included into government budget to sustain the scheme, and expenditures were administered by local administration through established village autonomous entities.

For social protection to effectively contribute to poverty alleviation it depends on careful conceptualisation and application than the size of the resources provided, otherwise the non-poor will be funded more than the poor. In the ensuing paragraphs, we shall look at various targeting options reported in the Southern Africa Regional Hunger and Vulnerability Programme, SA-RHVP (2009) for various countries.

Applied in Bolivia, the *universal categorical targeting option* entails the provision of grants to all children irrespective of the income level of the parents. This is not an optimal poverty reduction option since it includes children of the non-poor. It is also true for the *social pensions* for all persons beyond a certain age in Mauritius and Lesotho. Even if means-tested as

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<sup>24</sup> World Bank Development Indicators: <http://data.worldbank.org/indicator/SI.POV.NAHC/countries> (visited 26<sup>th</sup> July, 2013).

in South Africa, categorical programmes imply focusing on certain vulnerabilities leaving out the others. South Africa tries to minimise this drawback by running multiple means-tested categorical schemes covering most vulnerable groups, but very poor countries can hardly afford to run more than one categorical scheme, which means excluding many extremely needy households. *Conditional cash transfer schemes* are those providing support to households if certain conditions are fulfilled such as regularly sending children to school, and are found in many Latin American countries. However, this may exclude many poor households in the rural areas where bad geographic terrains among other factors significantly restrict utilisation of educational facilities. Malawi and Zambia have applied means-tested *inclusive social cash transfer programmes* targeting extremely poor households that are unable to fend for themselves because they are labour constrained. This has the advantage of focusing on only the poor and the poorest, and could work better than the options discussed above. To make *conditional transfers effective*, a requirement is to have benefit provided only to the poor that are employed in predetermined public works that are normally not attractive to the non-poor; and or the state can prioritise subsidising food consumed mostly by the poor (Bardhan & Udry 2009).

The key lesson: Social protection is an inevitable option for poverty alleviation in regions that are badly awash with poverty. It is inconceivable to see *blame-the-victim* poverty theory applicable where social protection is badly needed to help those trapped in extreme indigence. But social protection will widen inequality, and constitute misallocation of resources if not carefully planned, implemented, and monitored.

#### 4.3.6 Governance, service delivery and poverty

Having the right leadership and efficient institutions is the most essential resource in bailing the masses out of poverty. The type of political system practised in a country does not necessarily matter for service delivery especially in the early stages of development; what is important most is a willing and capable leadership to respond to the needs of the masses. When it comes to these arguments, a lot of reference is made to the rapid growth and development of East-Asia (EA). The fundamentals of the EA success lay in the leadership of those economies to first and most understand their societies and peculiarities at the initial stage of development, relative to the rest of the world. They made development choices that reflected domestic realities pursued within a cooperative framework of politicians, bureaucrats, and the corporate sector, optimally balancing the two extreme orthodoxies of economic liberalism and command economic philosophies, recognising that the path to success depended on a public-private partnership model that was guided by strong state interventions informed by rigidly applied principles of transparency, accountability, and rule of law [see Bangura (2012a); Stiglitz (2006); among others].

The state-led EA successes gave birth to the *developmental state* theory in late twentieth century, opposed to *the regulatory orientation theory* which imposes stronger limit on state participation towards the conduct of private economic activities.<sup>25</sup> The developmental state model, originating from Japan, is characterised by a focused state-led macroeconomic planning in East Asia (see Chapter Two). Adopted in other Asian economies like India and the Philippines, and in some parts of Latin America, this model is reported to have accelerated the economic boom and poverty reduction in East Asia, ensuring that multinational corporations (MNCs) conduct themselves around activities that are consistent with maximising the welfare of the people. Unlike economies where wholesale market policies were imposed by the BWIs, East Asia dictated their own markets. They paced them, and sequenced them. Understanding that

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<sup>25</sup> [http://en.wikipedia.org/wiki/Developmental\\_state](http://en.wikipedia.org/wiki/Developmental_state) (visited 17<sup>th</sup> January, 2012).

development went beyond economics to include social transformation, they undertook cutting-edge complementary investment with a special focus on education for all. In the end, rural poverty and inequality declined as the macroeconomy grew, against Lewis and Kuznets thinking of *trickle-down* and *initial widening of inequality* in the early stages of development (Dowling & Valenzuela 2010; Mengistu 2009; Stiglitz 2003).

In Africa, Botswana's approach has been associated with the developmental state, one of the only four African countries that have graduated from IDA assistance of the World Bank (Moyo 2009, pp.37-38).<sup>26</sup> Its accession to success story is based on good state governance and accountability, nursed by inclusive traditional values inherited from precolonial ancestry and preserved throughout against the odds of imperialism (Acemoglu & Robinson 2012). Its income per capita has grown at an average of more than 6 percent annually since it gained independence in 1966 with the same political party in power to date. Its poverty incidence reduced from 58 in 1986, to 30.6 in 2003.<sup>27</sup> Another African hopeful in governance is Rwanda, which deserves special review.

Rwanda is particularly an excellent case review because it bears horrific political history in recent times similar to Sierra Leone, the two histories differ only in degree of human loss and duration: Rwanda losing nearly a million Rwandans in her genocide in 1994 in just over three months period of political upheavals (Glencorse 2010), while Sierra Leone losing more than seventy-thousand Sierra Leoneans in her civil war during 1991-2001. Despite critical challenges, Rwanda has become an international spotlight as emerging African country in effective leadership and service delivery to the poor. It has reduced under-five mortality rate from 299 deaths per 1000 births in 1994 to less than 55 currently; life expectancy increased from 28 years in 1994 to 59 currently; HIV/AIDs stemmed from 13.9 percent in 1994, to 3.0 percent; poverty

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<sup>26</sup> The four graduates are Botswana, Equatorial Guinea, Swaziland, and Mauritius (ibid).

<sup>27</sup> World Bank Development Indicators; HIV/AIDs may have been a key factor constraining effort at reducing the poverty ratio of Botswana below what the current statistics are [see Stiglitz (2003, p.37)].

headcount reduced from 78 to 45 percent; and net primary school enrolment currently near to 100 percent, with negligible disparity between boys and girls (World Bank Development Indicators; Glencorse 2010). The key success factors for Rwanda as reported in Glencorse (2010) are summarised as follows.

Despite the recent horrific history, the leadership of Rwanda has secured a deep sense of citizenship that has allowed for peace and a collective sense of ownership over development outcomes. It has pursued its own development model drawing on factors leading to the genocide, while grappling with how best it could leverage its significant assets to support national regeneration and self-reliance. It has pursued its Vision 2020 since 1998. Broadly based and consultative, the government has constantly reviewed this long term perspective in response to emerging challenges nationally and internationally, and it is coherently operationalised through the articulation of short to medium term strategies such as poverty reduction strategies and public investment programmes. Development plans are well understood by the people and legitimised right through to the village level; there is an existence of strong cultural voluntarism in the Rwandan people thinking about how they can contribute to the success of the vision; with president Kagame holding monthly meetings with ordinary Rwandans seeking their advice towards strengthening programme implementation. Lastly, public leaders are conditioned to lead by example; for instance, to curb misuse of state funds and stem costs in 2005, nearly all government fleet of cars were sold raising revenue of over US\$9 million; vehicle loan schemes were implemented instead, to send a clear message that public resources were meant for the people, poverty reduction, and overall national development (Glencorse 2010, p.9).

The key lesson: The most vital resource in the fight against poverty and promoting sustainable development is having the right political leadership with a sense of compassion and altruism. Once the right leadership is secured, the right institutions will follow, and the chances that everyone will prosper will be enhanced.

#### 4.4 Summary of chapter

It is crucial for donor agencies to take heed of the criticisms of their operations in order to achieve the expected objective of the global aid industry: bailing out the poor and promoting sustainable development. While there is a torrent of donor criticisms, however, it seems there is yet to be appropriate alternative to aid for a range of LDCs due to weak economic management, which of course is blamed partly on externally imposed, aid-stringed policies. Realistically, aid agencies and the BWIs have a significant role to continue to play in the policy discourse of the south. Perhaps their only major weakness has been an incapacity to contextualise policy prescriptions to aid recipients, who, as sovereign states, should be under no coercion to accept these prescriptions *hook line and sinker* especially aspects of them that are deemed inconsistent with realities on the ground. Ethiopia, under Meles Zenawi, demonstrated policy ownership resisting IMF suggestions that were deemed incompatible with Ethiopian driven poverty reduction goals; Uganda, under Yoweri Museveni, resisted them over cutting expenditure on basic education; and the leadership of Malaysia and China also resisted them over the handling of the 1997 East Asia financial crisis (Stiglitz 2003, pp. 25-52; 76; 122-126).

With respect to weaknesses of aid recipients in the service delivery chain, one is led to disagree with the criticism of BWIs' current involvement in the monitoring of donor projects in LDCs as an infringement on sovereignties. It is not. If anything, this can be considered a sincere effort against the backdrop of persistent poverty in aid-recipient countries, with special reference to Sub-Saharan Africa. The argument should rather be for all donors to work in close collaboration with national governments and other local partners until local institutions have been firmed up and levels of literacy raised enough to enable the ordinary citizens to actively participate in enforcing accountability from their governments and service providers.

The concern about the interventions of multinational corporations in LDCs is quite legitimate. Sierra Leone is currently witnessing a flurry of FDI, for which red flags have been raised about chances of communities becoming poorer through improper land deals with

investors (Christian Aid 2013, p.1), and there are also issues of imported unemployment (GoSL 2012a, p.69). However, given the benefit associated with openness to trade and globalisation, the onus squarely rests on the state to regulate FDI so that they will meaningfully contribute to poverty reduction. Moreover, it can be argued that FDI contribution to poverty reduction in LDCs is constrained by the high rate of illiteracy affecting labour productivity in many parts of the region including Sierra Leone. This makes addressing the perceived exploitation of FDI a long-term challenge requiring huge domestic investment in education, science and technology. Developing and supporting SMEs can be a crucial entry point to addressing this concern in the short to medium term.

This chapter underlines that high mortality is a key factor contributing to Sierra Leone's weak ratings on the global human development index. Therefore, government's free healthcare programme is a step in the right direction. Although the government faces serious fiscal challenges in this programme, these can be curtailed through enhanced accountability in the public service delivery system. Enhancing accountability is generally crucial for the natural wealth of the country to yield the desired social dividend and wage.

We have learned various antipoverty lessons from other countries for replications in Sierra Leone. The lead determinants of poverty culled from these lessons, and the chapter in general are: effective political leadership; accountability in public service delivery; education/enlightened citizenry; and well managed social protection programmes. We will now move on to the next chapter laying the theoretical and empirical foundation for the survey data analysis ahead.

## Chapter Five

### Measurement of Poverty and Previous Empirical Studies

Chief among the challenges of development research is determination of appropriate choice of analytical variables and their measurement. Generally, policies emerging from any research can only be as good as the choice of the variables used in the analysis and the mode of their measurement. It is against this note that we deem it crucially essential to carefully review the literature on relevant perspectives of measuring and modelling poverty, and the application of various models in previous empirical studies so as to inform our research design in the next chapter.

This chapter is therefore organised as follows. Section 5.1 provides a literature review of measurement and modelling of poverty. It discusses the traditional money metric perspectives of analysing household welfare as well as the non-money metric perspectives, highlighting strengths and drawbacks of the respective methodologies. Section 5.2 examines the general empirical literature on determinants of poverty. It highlights factors found significantly explaining wellbeing of households in different country contexts and methods applied in the investigation process. Section 5.3 looks at the empirical literature on Sierra Leone, while 5.4 summarises the chapter.

#### **5.1 Measurement and modelling of poverty: money metric perspectives**

The money metric models have predominated poverty research and policy in the last six decades based on the physiological thinking of deprivations. Household income and consumption are the main focus of these models including aspects of the basic needs approach (Röder 2009; Shaffer 2008; World Bank 2005). A key feature of these models is the specification of poverty lines as



benchmarks against which the quality of life is measured and individuals (or households) are categorised as poor or non-poor based on an estimated minimum basic needs requirement. One of the methods for deriving the poverty line is the food-energy intake (FEI) method. The FEI is the monetary valuation of a set of specified food needs that meet pre-determined average food energy requirements expressed in kilo calories or joules as unit of measurement. An aggregate (the absolute) poverty line is obtained by summing up the food energy requirement and expenditures on non-food needs such as health goods and services, nutritional needs, education, water, sanitation, and so on. This aggregate represents the cost of basic needs formalised as follows (World Bank 2005):

$$Z^{BN} = Z^F + Z^{NF}, \dots \dots \dots 5.1$$

where  $Z^{BN}$  is the minimum basic needs poverty line;  $Z^F$  is the food poverty line; and  $Z^{NF}$  is the non-food component. Underlying the poverty line,  $Z$ , of a country or region is a minimum utility,  $U_z$ , derived by the average individual or household from the minimum consumption necessary for a standard wellbeing given the level of prices,  $p$ , and demographic characteristics of the household,  $x$ . The poverty line is thus formalised as follows (ibid):

$$Z = f(U_z|p, x), \dots \dots \dots 5.2$$

Price variability and inflationary pressures may necessitate upward adjustment of both food and absolute poverty lines to reflect changing economic realities, while in other cases regional differences in cost profile necessitate the setting of different poverty lines within the same country. A counterpart of the absolute poverty line is the relative poverty line, which is mostly applied in developed countries like those in the European Union, setting poverty line at certain percentage points of the median income of the population or a percentage of other average

welfare statistic of the population; this changes the poverty line as income changes, unlike the absolute poverty line that is more or less arbitrarily fixed.

On the basis of these welfare benchmarks, various poverty indices are estimated, and profiles are drawn as to how many the poor are, who and where they are, and what the depth and severity of their deprivations are. Such profiling has been the basis for policy targeting in many countries. We will look at some of the important indices used in profiling the poor.

### 5.1.1 The headcount index

The headcount is simply the percentage of the population counted as poor. This is the total number of those falling below the poverty line expressed as a proportion of the total population. It is also known as the measure of poverty incidence, with the following algebraic expression (Röder 2009; World Bank 2005):

$$P_0 = \frac{1}{N} \sum_{i=1}^N I(y_i < z), \dots \dots \dots 5.3$$

where  $P_0$  is the headcount index or ratio;  $N$  is the sample population;  $y_i$  represents the income or consumption level of the  $i^{\text{th}}$  individual;  $z$  is the poverty line; and  $I$  is an indicator variable, taking value zero ( $I=0$ ) if the  $i^{\text{th}}$  individual is on or above the poverty line (i.e.,  $y_i \geq z$ ); it takes one ( $I=1$ ) if the individual has income or consumption level below the poverty line (i.e.,  $y_i < z$ ). To derive national level estimate of the headcount, national population weights are applied in estimating the index (ibid).

While fiscal decisions have been a lot guided by this measure in allocating resources across regions, it does not capture the depth and intensity of poverty among the poor. A region with lower incidence (headcount ratio) could have deeper poverty with different policy

implication in terms of the average distance by which the poor there may have fallen below the poverty line than a region with higher incidence. For this reason, we will look next at measurement of depth/intensity of poverty (gap index), and extreme poverty.

### 5.1.2 Poverty gap index and extreme poverty

The poverty gap index attempts to address the shortcomings of the headcount ratio, estimating the depth of poverty in terms of the average distance from the poverty line that a person under it is situated. The index is crucial for planning national budget. It is a measure of the minimum amount of resources needed to bail people out of poverty on the assumption that full information about the poor is available and resources are perfectly targeted. It is algebraically expressed as follows (Bardhan & Udry 1999; Röder 2009; World Bank 2005; amongst others):

$$P_1 = \frac{1}{N} \sum_{i=1}^N \frac{(z - y_i)}{z} \cdot I(y_i < z), \dots \dots .5.4$$

where  $P_1$  is the poverty gap measure; all other variables are as defined earlier. A variant of the poverty gap index is the severity of poverty ratio,  $P_2$ , which is a simple measure of inequality among the poor, and how sensitive policies towards one locality should be relative to the other [Eq. (5.5)].

$$P_2 = \frac{1}{N} \sum_{i=1}^N \left[ \frac{G_i}{z} \right]^2 \dots \dots \dots .5.5$$

From Eq. (5.4),  $G_i$  is the poverty gap [ $G_i = (z - y_i) \cdot I(y_i < z)$ ]. As the first level gap index,  $P_1$ , the  $P_2$  also estimates the resources needed to eradicate poverty but focused on those whose poverty is more deepened—that is, second degree depth of poverty—based on the same assumption of perfect resource targeting and full information about the location of the poor.

Another widely applied deprivation index that measures depth of poverty is the extreme poverty ratio, estimated based on the food poverty line. The index estimates the proportion of persons for whom even if all their total income or consumption is devoted to food alone will still live below the food poverty line. It is a measure of the total number of persons suffering from severe hunger who, in the absence of immediate state response, could starve to death or adopt problematic coping strategies including selling of productive asset, pulling children out of school and using child labour (Schubert 2012).

The three indices of the headcount index, poverty gap, and severity index are referred to as the Foster-Greer-Thorbecke (FGT) family of poverty indices.<sup>28</sup> We shall look at other variants of measuring the poor as follows.

### 5.1.3 The Watts index and Morduch’s time taken to exit poverty

The Watts index estimates the average ratio of expenditure of the poor relative to the poverty line. From Eq. (5.6), the N individuals in the population are arranged in ascending order of income or expenditure and the average is taken of the logs of the respective ratios of income/expenditure  $y_i$  to poverty line  $z$  of the  $q$  individuals whose spending fall below the poverty line; this gives the Watts index,  $W$  as follows (Röder 2009; World Bank 2005).

$$W = \frac{1}{N} \sum_{i=1}^q \ln\left(\frac{z}{y_i}\right) \dots \dots \dots 5.6$$

A useful extension of the Watts Index for policy analysis is the Morduch’s Index which estimates the length of time the average poor person would take to exit poverty at a specified annual growth rate of per capita expenditure (Morduch 1998; World Bank 2005). This index,  $t_g^j$

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<sup>28</sup> Foster, Greer and Thorbecke (1984).

in Eq.(5.7), is tremendously useful for macroeconomic programming relating to growth and poverty targeting. From the equation,  $g$  is annual growth rate of consumption,  $z$  is the poverty line,  $x_j$  is the current consumption level of the  $j^{\text{th}}$  individual below the poverty line and  $W$  is the Watts index (ibid).

$$t_g^j = \frac{\ln\left(\frac{z}{x_j}\right)}{g} = \frac{W}{g} \dots \dots \dots 5.7$$

While the Watts index is noted to be attractive in research and satisfies “all the theoretical properties that one would want in a poverty index” (World Bank 2005, p.79) including the axioms of transferability and decomposability, it is not as appealing intuitively, thereby lessening its practical application (ibid; Röder 2009). The Morduch’s exit time index is practically appealing in terms of growth targeting for poverty reduction, although it has a limitation in terms of assuming that the poor are on the same plain of poverty and have access to production resources when it is not necessarily so (Carter & Barrett 2008, p.23).

We will turn next to measures of welfare inequality or distribution-sensitive programming of the poor, aimed at testing the *vital few and trivial many rule*.

#### 5.1.4 Poverty and inequality

The measures of inequality complement the indices examined above for profiling the poor. The severity of inequality can have telling implication for security and social stability. While poverty and inequality can be differentiated the two are related concepts to the extent that societies with widening inequality can be associated with and prone to high incidence of poverty and insecurity (Acemoglu & Robinson 2011; Shaffer 2008; amongst others). In the next sub-sections, we will examine the literature on three sets of inequality measures: (i) the Gini Coefficient, Generalised

Entropy, and Atkinson measures; (ii) percentile dispersion ratios and Engel coefficient; and (iii) benefit incidence analysis.

The Gini Coefficient ( $G_c$ ), Generalised Entropy [GE( $\alpha$ )], and Atkinson ( $A_\epsilon$ )

These are three widely discussed inequality measures. The Gini,  $G_c$ , is most widely used and is constructed based on the Lorenz curve. The curve graphs the cumulative percentage of households in ascending order of welfare (poor to rich) often on the horizontal axis, and the cumulative percentage of expenditure or income on the vertical axis. The coefficient is algebraically expressed as follows (World Bank 2005):

$$Gini = 1 - \sum_{i=1}^N (x_i - x_{i-1})(y_i - y_{i-1}), \dots \dots \dots 5.8$$

where  $x_i$  is a point on the x-axis and  $y_i$  is a point on the y-axis. A value equal to zero implies equal distribution of resources, while one implies perfect inequality. (See RÖder 2009 for variant mathematical expressions, among others.) The Generalised Entropy is expressed as follows (World Bank 2005):

$$GE(\alpha) = \frac{1}{\alpha(\alpha-1)} \left[ \frac{1}{N} \sum_{i=1}^N \left( \frac{y_i}{\bar{y}} \right)^\alpha - 1 \right], \dots \dots \dots 5.9$$

where  $\bar{y}$  is household mean income or per capita consumption; a value equal to zero implies equal distribution while higher values implies higher inequality; the term  $\alpha$  measures differential policy attention given to different income levels at various regions of the distribution such that lower values imply that policies pay more attention to welfare differential in the lower regions of the distribution while higher values imply more attention to welfare differential in the higher regions of the distribution. The ratio is referred to as Theil’s T Index if  $\alpha=0$ , and Theil’s L Index

if  $\alpha=1$ ; the most frequently used values of  $\alpha$  are 0, 1 & 2 (ibid, p.218). The Atkinson's version is generally algebraically expressed as follows:

$$A_{\varepsilon} = 1 - \left[ \frac{1}{N} \sum_{i=1}^N \left( \frac{y_i}{\bar{y}} \right)^{1-\varepsilon} \right]^{\frac{1}{1-\varepsilon}}, \varepsilon \neq 1 \dots\dots\dots 5.10$$

which reduces to

$$A_{\varepsilon} = 1 - \frac{\prod_{i=1}^N \left( \frac{y_i}{\bar{y}} \right)^{\frac{1}{N}}}{\bar{y}}, \text{ if } \varepsilon = 1 \dots\dots\dots 5.11$$

where  $\varepsilon$  is a measure of aversion to inequality. The three inequality measures satisfy five key properties of a good inequality measure: mean independence; population size independence; symmetry (insensitive to swapping of incomes); and Pigou-Dalton Transfer sensitivity (sensitive to transfer of incomes); and statistical testability (ibid). The Gini is limited in satisfying decomposability axiom in terms of additivity of ratios across groups, which the Generalised Entropy and Atkinson satisfy more appreciably. Notwithstanding, the Gini is most widely reported.

Percentile dispersion ratios and Engel Coefficient

These are other key methods used in monitoring progress made in fighting poverty. The common percentiles utilised in studies are the quintiles and deciles (Demery 2000; RÖder 2009; World Bank 2005; among others). Quintile dispersion ratio measures the average consumption expenditure of the richest 20 percent of the population divided by the average expenditure of the bottom 20 percent. Decile dispersion ratio measures the average expenditure of the riches 10 percent of the population divided by the average expenditure of the bottom 10 percent. These are gauged overtime to determine policy progress. Engel coefficient is derived in respect to Engel's Law, stating "that household's expenditures on food in the aggregate decline as incomes rises; in

other words the income elasticity of demand for food in the aggregate is less than one... declines towards zero with income growth” (Röder 2009, p.8). In this respect, Engel Coefficient is derived as the ratio of household’s food consumption to its total expenditures, implying that the poorer the household becomes the more its share of food spending in the total expenditure on food+nonfood (ibid, pp.8-10). It also implies the poorer households are less inclined to investing in key poverty reducing sectors such as education and formal healthcare.

### Benefit incidence analysis

Benefit incidence analysis (BIA) assesses the extent to which public spending on basic services has benefited the poor compared to the rich. Owing to differences in service utilisation capabilities, the rich are often better placed to benefit from public spending more than the poor even though theoretically the focus is on the latter in the frame of pro-poor principles (Demery 2000). BIA tries to investigate this, and advises pro-poor re-configuration of policy if spending were found pro-rich than intended. This tool has been applied in poverty studies in several developing countries (Demery 2000; Hunter et al. 2003; Palma & Urzua 2005; Ravallion 1994; van de Walle 1998; World Bank 1993a; 1993b; among others).

BIA is a three-step methodology (Demery 2000, pp.4-5): (i) determining unit subsidy in providing a particular service, culling data from officially reported public expenditure accounts on services supported; (ii) imputing the unit subsidy to households or individuals identified as users of the service with the aid of household surveys; and (iii) aggregating individuals (or households) into sub-groups of the population in order to compare how the subsidy is distributed across such groups, using predetermined welfare indicator such as income or expenditure.

Equation (5.12) presents a mathematical model for the estimation of public spending benefit accruing to various income or other socioeconomic groups, reproduced from Demery



(2000, p.5) with education subsidy as an example—spending at primary, secondary, and tertiary level is denoted as 1, 2 & 3, respectively.

$$X_j \equiv \sum_{i=1}^3 E_{ij} \frac{S_i}{E_i} \equiv \sum_{i=1}^3 \frac{E_{ij}}{E_i} S_i, \dots \dots \dots 5.12$$

This is reduced to:

$$X_j = \sum_{i=1}^3 e_{ij} S_i, \dots \dots \dots 5.13$$

where  $X_j$  denotes the total education subsidy allocated to group  $j$ ;  $E_{ij}$  denotes school enrolments of group  $j$  at education level  $i$  ( $i=1,2,3$ );  $E_i$  denotes total enrolment across all groups at level  $i$ ; and  $S_i$  is government *net* spending on education level,  $i$ . Netted out of the subsidy (spending) are fees and other cost borne by the beneficiaries for utilising the school services, or their contribution to the provision of the service, the deductible being zero if the contribution is retained at the facility as matching fund. The ratio  $S_i/E_i$  is the unit subsidy; the ratio  $E_{ij}/E_i$ , denoted by  $e_{ij}$ , is the standard benefit incidence estimate (SBIE) which is the share of subsidy or benefit across various groups and is used to interpret whether the poor have received more or less from public services (say, education) than the rich. This formula can be generalised to estimate differential benefit shares for spending in other sectors such as health.

Standard benefit incidence estimates are too basic. They can be deceptive in advising fiscal decisions aimed at supporting the poor given their statistical tendency to suggest that resource distribution is pro-poor when it is not necessarily the case (Demery 2000, p.13). Thus, studies have adjusted the standard benefit incidence formula to include other parameters such as differences in demographic needs between groups (Demery 2000; Deaton & Muellbauer 1986). In the case of education, for instance, it is recommended for SBIEs to be adjusted to account for differentials in total and school age populations between groups. Or per capita subsidy based on school age population can be a better yardstick in determining benefit differentials than SBIEs.

### **5.1.5 General drawbacks of use of money metric measures**

Important drawbacks have been noted for the use of money metric poverty measures. Because of the predominance of informal economic activities in the developing world, estimates on actual household incomes are difficult to obtain due to poor records management. As such, household consumption expenditure is highly recommended to measure economic status instead of income receipt (Deaton & Zaidi 2002). However, the expenditure approach can be fraught with memory recall errors, and can affect the true economic status of households. Where surveys are dominated by farmers, output approach can be used to measure economic status of households since farmers can be good at keeping records on quantity of goods they produce every year (Sirven 2006), but this is not unchallenged by having to correctly recall the amount of goods and services consumed each day.

Another concern pertains to the use of food energy intake in determining poverty lines. Caution should be exercised in the estimation of minimum caloric requirement of individuals because the needs, for instance, of children and adults in the households may differ. Furthermore, calorie requirement in the FEI method more or less arbitrarily determines the desirable energy requirement for an individual, with the assumption that there is “standard (time-invariant) metabolic rates, weights, and heights for particular age and sex categories” (Johnston & Sender 2008; p.60). Yet calorie requirements may be sensitive to activity levels, weight, and time. However, per adult equivalence scales have been employed in many surveys to adjust welfare estimates based on expected varying needs of household members; and the shortcomings of using one national average minimum caloric requirement can be mitigated through the setting of different poverty lines for different regions (World Bank 2005).

## **5.2 Measurement and modelling of poverty: non-money metric perspectives**

To complement the money metric measures of poverty, various alternatives (nonfinancial measures) have been utilised, including multidimensional poverty yardsticks such as level of household stock of assets. Asset is multifaceted, and operationally includes not only “private productive and financial wealth,” but also includes “social, geographic and market access positions that confer economic advantage” (Carter & Barrett 2008, p.13). In multidimensional analysis, several components of deprivation are compounded to explain poverty on the premise that, “when poverty is conceptualised as the occurrence of various cumulative deprivations, it should be measured through the “aggregation” of the different hardship factors experienced by the individuals” (Coromaldi & Zoli 2007, p.4). Single poverty measure alternatives to money metric measures are such as education, health, and nutrition indicators, which are suitable measures of long-period trends in deprivation than income indices (Mosley et al. 2008; Sahn & Stifel 2003; among others).

In the next section, we will present a formalisation of asset-adjusted Foster-Greer-Thorbecke poverty estimator. The section that follows will discuss and formalise broader perspectives of multidimensional poverty.

### **5.2.1 Asset-adjusted Foster-Greer-Thorbecke poverty estimator**

The asset-based thesis argues that poverty has to be analysed from a dynamic standpoint. That is, there is need to determine the degree of household resilience to livelihood shocks and business cycles; distinguish between chronic and transitory poverty; distinguish between stochastic and structural poverty; and determine the persistence of poverty into the longer term (Carter & Barrett 2008, pp.12-33; Shaffer 2008, pp.20-24). This is against the background that, any predicted level of household expenditure corresponds to a predicted level of household asset

holdings such that an increase in income or expenditure without a corresponding and proportionate increase in stock of asset only constitutes a stochastic welfare transition. Gifts received by individuals at the time of conducting household budget surveys may only regard the said individuals as nonpoor for a very short time from an income-expenditure poverty line perspective. As long as they were at low asset level or below the *micawber* threshold before the gifts, they would soon revert to poverty. The converse is true. A decrease in income or spending might only constitute a stochastic welfare decline, placing a person in poverty only temporarily, as long as there is no corresponding decrease in predicted stock of asset holdings. Therefore, the Foster-Greer-Thorbecke flow-based, income poverty estimator is adjusted for asset as shown in the following mathematical expression (Carter & Barrett 2008).

$$P_{\alpha}^A = \frac{1}{N} \sum_{i=1}^N I_i^A \left( \frac{A-A_i}{A} \right)^{\alpha}, \dots\dots\dots 5.14$$

where  $A_i$  is stock of the  $i^{\text{th}}$  household's asset;  $\underline{A}$  is asset poverty line, the minimum threshold asset that is consistent with predicted minimum household expenditure level necessary to live an acceptable quality of life;  $I_i^A$  is an indicator variable taking value 1 if the actual stock of asset  $A_i$  is less than the benchmark,  $\underline{A}$ ; an indicator value of 0 reflects households with asset level equal to or greater than the minimum threshold. Thus,  $P_0^A$  ( $\alpha = 0$ ) is headcount ratio of the structurally poor;  $P_1^A$  ( $\alpha = 1$ ) is ratio indicating the amount of asset needed to be transferred to the structurally poor to break free of asset poverty, i.e., to be placed at the minimum threshold,  $\underline{A}$ . As in the conventional FGT model, higher values of  $\alpha$  ( $\alpha \geq 2$ ) provide measures of degree of sensitivity to the distribution of assets among the poor.

A key challenge to the application of asset-based poverty approach is the construction of



is the sum of the products of the factor loadings (or asset weights)  $a_{nm}$  and the values of the observed variables,  $Y_n$ . The interpretation of the factor variables follows the same logic and direction as the normal (observed) variables: the higher the factor (or asset) scores for observations or cases (e.g. households) the higher the corresponding values on the observed variables; the reverse is true (Hair et al. 2010, p.127; Rummel 1967, p.469).

### **5.2.2 Further perspectives of multidimensional poverty**

Sen conceptualises poverty in terms of certain basic capabilities to function, including the capability to lead a long, healthy, and creative life, and to enjoy a decent standard of living, freedom, dignity, self-respect and the respect of others (Shaffer 2008; Sen 2000). Depriving individuals to participate in socioeconomic and political activities reduces their relational resources and resourcefulness, and constitutes denial of access to material gains and better quality of life (Acemoglu & Robinson 2012; Wagle 2010; Shaffer 2008). Human rights based institutions like the UNDP and ILO have endorsed Sen and others' wisdom that "[a] decent standard of living, adequate nutrition, healthcare and other social and economic achievements are not just development goals. They are human rights inherent in human freedom and dignity" (UNDP 2000, p.73).

Consequently, Shaffer conceptualises seven mutually reinforcing social, economic and political constructs dubbed *poverty reducing capitals* (Shaffer 2008, pp.8-9). The first is the *economic capital*, comprising the three traditional production factors of land, labour and physical/financial capital. The second is the *human capital* relating to acquisition of the requisite education, health and nutritional status. The third is the *social capital* viewed as derived welfare opportunities due to belonging to social organisations and networks. The fourth is the *political capital* seen as leverage and resources derived from being a member of informal and formal political organisations. The fifth is the *cultural capital* referring to accepted norms, values, and

beliefs that accord an individual roles, responsibilities and recognition in society, the inculcation of which bestows trust and access to resources. The sixth is *coercive capital* comprising use of violence and intimidation as instruments to see through ones welfare interest and secure resources. The seventh and final one is the *natural capital* comprising natural resource endowment and knowledge to ensure efficient management of these resources. Each of these capitals is a composite index (perceived as asset to individuals), aggregated from a series of sub-indicators and variables.

Wagle presents related multidimensional conceptualisations, moving steps further to formalise the interrelationship among such poverty constructs econometrically (Wagle 2010, pp.55-86). Wagle explores the determinants of poverty from three broad dimensions: the *economic wellbeing dimension*, comprising indicators such as income, wealth, consumption, and households' subjective view of adequacy of income and consumption; the *capability dimension*, which embodies the inner quality of life and is perceived to be a function of education, health, nutrition, self-respect, prestige, gender, racial, and ethnic disparities; and the *social inclusion dimension*, which captures the extent of an individual's access to relational resources as a measure of the degree of one's social inclusivity or integration in society in light of participation in economic, political, civic or cultural activities. Operationally, the social inclusion dimension is cascaded further into economic inclusion (having access to job opportunities, etc), political inclusion, and civic/cultural inclusion, which themselves are multiples of sub-indicators. Essentially, Wagle models five poverty dimensions: economic wellbeing dimension; capability dimension; economic inclusion dimension; political inclusion dimension; and civic/cultural inclusion dimension. The five dimensions are interrelated and formalised in the following system of equations (ibid, pp.77-80).

$$\begin{aligned}
EW &= \alpha_{EW}X_{EW} + \theta_{EW}X_C + \beta_{EW}X_{EI} + \Delta_{EW}X_{PI} + \lambda_{EW}X_{CI} + \epsilon_{EW} \\
C &= \alpha_C X_{EW} + \theta_C X_C + \beta_C X_{EI} + \Delta_C X_{PI} + \lambda_C X_{CI} + \epsilon_C \\
EI &= \alpha_{EI}X_{EW} + \theta_{EI}X_C + \beta_{EI}X_{EI} + \Delta_{EI}X_{PI} + \lambda_{EI}X_{CI} + \epsilon_{EI} \\
PI &= \alpha_{PI}X_{EW} + \theta_{PI}X_C + \beta_{PI}X_{EI} + \Delta_{PI}X_{PI} + \lambda_{PI}X_{CI} + \epsilon_{PI} \\
CI &= \alpha_{CI}X_{EW} + \theta_{CI}X_C + \beta_{CI}X_{EI} + \Delta_{CI}X_{PI} + \lambda_{CI}X_{CI} + \epsilon_{CI},
\end{aligned} \tag{5.17}$$

where EW is economic wellbeing dimension; C is capability dimension; EI is economic inclusion dimension; PI is political inclusion dimension; and CI is civic/cultural inclusion dimension. These are dependent latent factor variables. The variables,  $X_{EW}$ ,  $X_C$ ,  $X_{EI}$ ,  $X_{PI}$  and  $X_{CI}$  are vectors of indicators/measures of the five poverty dimensions respectively. These are the independent latent factor variables. It is clear from this formalisation that all five dimensions are interrelated directly or indirectly. Each affects itself and the other in the web of relationship, which suggests that the appropriate estimation technique for such models is a system approach or structural (simultaneous) equation framework given the nonrecursive nature of the specification (we shall discuss in Section 5.3.8 the theoretical foundation to applying simultaneous equation techniques in studying household poverty).

### 5.2.3 General drawbacks of the non-money metric measures

Multidimensional methodologies are still scarce in poverty research in LDCs due to data and computational challenges. Constructing asset indices, for instance, theoretically requires obtaining prices for asset items as weights, but surveys encounter considerable difficulties in capturing these weights. However, with the availability of advanced statistical programmes, factor variables (or indices) can easily be constructed to aid multidimensional analysis. We will now move on to reviewing previous empirical studies of determinants of poverty.



### **5.3 Empirical literature on determinants of poverty**

Poverty determinants are conceptually categorised into (i) individual level characteristics such as income, expenditure and age; (ii) household level characteristics such as household size, gender of household head, and housing conditions; (iii) community characteristics such as distance to school and other services; (iv) regional characteristics such as geographic location of households and distribution of resources; and (v) macro level characteristics such as credit support to households, amount of resources allocated to local authorities, implementation of sectoral policies, and effectiveness of service delivery. [See Sahn & Stifel (2003); World Bank (2005); among others.] Our empirical review focuses on econometric estimation of relationships among these characteristics as poverty variables. We shall discuss both single and simultaneous equation determinants. We will start with single equation, focusing on welfare outcomes commonly investigated in the literature, such as household income, education attainment, healthcare demand, nutrition standards, child mortality, employment, and migration.

#### **5.3.1 Determinants of household income**

Chaudhry (2003) carried out empirical investigation of determinants of rural poverty in the Bahawalpur District of Pakistan. Household per capita income function was estimated based on a sample of 415 observations drawn from four villages, applying ordinary least squares (OLS) estimation methods. It also applied logistic regression to estimate probability of households becoming poor. Factors found significant in explaining poverty include: household size; education level attained; size of landholding; ownership of livestock; land under irrigation; ratio of female-male workers; dependency ratio; age of household head; and participation in economic activities.

Runsinarith (2011) analysed determinants of rural poverty in Cambodia, using panel data

of 826 households from nine villages, estimating fixed and random effect models for the period 2001-2008, and analysing per capita expenditure of households. The factors found significant include: dependency ratio; per capita asset index; size of land under irrigation; ratio of non-irrigated land; microfinance; and external shocks.

In an effort to analyse effects of Green Revolution and Land Reform on rural household wellbeing in the Philippines, Estudillo et al. (2009) analysed income response in four rice growing villages characterised by irrigated, rain-fed, and upland ecosystems. They separately estimated OLS regressions for rice-incomes; non-rice incomes; and off-farm incomes in 1985 and 2001. Factors found significant across the regressions include: ownership and irrigation of land; leasehold of land; education attainment; ratio of overseas workers; and number of persons in higher age brackets.

In Thai villages, Cherdchuchai et al. (2009) studied determinants of rural poverty by analysing factors affecting incomes from rice, non-rice and non-farm sources running separate OLS and Tobit regressions for the Central Plain and the Northeast using 1987 and 2004 data. Factors found significant include: land ownership; land owned leasehold; share tenancy; rented out land; ratio of irrigated to non-irrigated land; number of adults in the household; education attainment; village conditions including dependency on rainfall and proneness to drought.

In studying determinants of rural poverty in Bangladesh, Hossain et al. (2009) also ran separate income regressions using Tobit models for rice, non-rice and non-farm earning sources for 1988, 2000 and 2004 data. Factors found significant in at least one of the regressions include: sharecropped land; leasehold of land; renting out of land; land under irrigation; number of adult workers; workers with education; access to electricity; and village conditions such as proneness to drought. In Tamil Nadu area in India, Kajisa and Palanichamy (2009) investigated effects of Green Revolution policies on poverty, analysing income response of the poor during “Early Green Revolution (1971-4; 1975-80);” “Late Green Revolution (1981-6; 1987-92);” and “Post-

Green Revolution (1993-8; 1999-2003).” Factors found significant include: land irrigated with modern technology; land irrigated with traditional technology; land not irrigated; ratio of owner cultivated land; number of adults and children in the household; female adult proportion; and education attainment.

*Africa.* Studying 9,924 households using national integrated household survey, Okurut, Odwee and Adebua (2002) analysed factors affecting regional poverty in Uganda in 1992, comparing regression estimates of the provinces and the whole country based on logistic probability framework. Factors found significant include: education, household size, and migration.

To understand rural poverty in Ethiopia, Kenya and Uganda, Matsumoto et al. (2009) studied factors affecting incomes earned through crop activities, livestock activities and non-agricultural activities based on data collected in 2003 and 2004 using Tobit models. The factors found significant were similar for the three countries, including: land productivity; distance to the nearest town; land size; asset value; average years of schooling of adults; gender of head of household; number of adult men; and number of children.

In the two provinces of Zambezia and Sofala in Mozambique, Cunguara and Kajisa (2009) studied determinants of rural household poverty, estimating OLS and Tobit models for farm and non-farm incomes based on 2002 and 2005 data. Factors found significant include: education attainment; gender of household head; number of persons in various age brackets; land size; number of cattle possessed; access to extension services; membership in agricultural organisations; receipt of price information; and use of manual and nonmanual irrigation.

Analysing determinants of poverty from the perspective of vulnerability, Oni and Yusuf (2008) examined factors explaining expected income poverty among farming households in Nigeria using feasible generalised least squares to predict consumption. Factors found significant

in explaining poverty in the present and future are: education attainment; residential location of households (rural/urban); regional location; age; and household size.

### **5.3.2 Determinants of household education**

Hossain et al. (2009) investigated factors affecting child schooling in rural Bangladesh using data for 1988, 2000, and 2004. They fitted separate probit regression models for primary, secondary and tertiary enrolment. Factors found significant across the regressions include: predicted rice income of households; predicted non-rice income; predicted non-farm income; education of adult male members; and education of adult female members. In India, Kajisa and Palanichamy (2009) investigated determinants of rural household education status in Tamil Nadu area, regarding effect of Green Revolution. They estimated school attendance regressions during Early Green Revolution; Late Green Revolution; and Post Green Revolution. Factors found significant include: land under modern irrigation; land with no irrigation; number of adults in the household; ratio of female adults; education level attained; sex of child; farm income; nonfarm income; and time dummies.

In rural Philippines, Takahashi and Otsuka (2009) investigated determinants of changes in years of schooling during 1979-2003, fitting Tobit models. Factors found significant include: predicted agricultural income; predicted nonfarm income; ownership of land; ratio of land irrigated; year of child birth; sex of child; whether head of household was alive; number of female siblings; and ratio of young siblings. Cherdchuchai et al. (2009) investigated determinants of education investment in rural Thailand, modelling number of children that completed schooling. Factors found significant (fitting OLS) include: age of child; number of siblings; whether enumerated child the eldest or not; mothers' level of schooling; proportion of owned land; proportion of leasehold tenancy; land under irrigation; and proneness to external shocks

including floods.

*Africa*. In rural Kenya, Uganda and Ethiopia, determinants of education investment were investigated by Matsumoto et al. (2009), estimating separate regressions for school completion at the 5<sup>th</sup>, 6<sup>th</sup>, 7<sup>th</sup> and 8<sup>th</sup> grades for each country using OLS. Factors found significant include: household income; number of children in the ages from 14 up to 18; whether a child enumerated was orphan; mother's education; father's education; and age of head.

In Mozambique, two types of models were estimated by Cunguara and Kajisa (2009) in investigating determinants of investment in schooling. They utilised a poisson framework to model factors affecting incremental years in school, and a probit framework to examine factors affecting school enrolment. Factors found significant across the two models include: gender of child; age of child; level of schooling attained by head; age of head; and male members that were 15-59 years old.

### **5.3.3 Determinants of healthcare demand**

Most of the literature reviewed undertook analysis of household decisions regarding choice of healthcare providers. Common research questions modelled are whether households prefer traditional healers (or self-care) to formal providers because they are income poor; whether this preference is driven by poor physical accessibility conditions; or whether other factors are more important in explaining health-seeking behaviour (Bangura 2011; Kasirye, Ssewanyana, Nabyonga & Lawson 2006; Lindelow 2003; among others).

All studies reviewed here are on *Africa*. Focusing on whether income matters in influencing demand for curative healthcare in Mozambique, Lindelow (2003) carried out various econometric estimations using binary and multinomial logistic and probit techniques. Factors found significant in explaining health seeking behaviour include: household consumption levels;

education attainment; age of respondent; occupational status; availability of health centres; whether households are resident in rural or urban area; time spent travelling to health centres; types of illness; own and cross prices of medical products; and quality of services.

In Uganda, Kasirye et al. (2006) utilised nested multinomial framework to analyse determinants of demand for healthcare services, modelling healthcare provider types and responses based on age. Factors found significantly affecting healthcare decisions include: age; education attainment; sex of household head; consumption level of household; distance to service centres; proportion of nurses and doctors; quality of services; and residential location of households. The determinants we have discussed in this section are at input level in the health status results chain. The next section combines health determinants at outcome and impact level.

#### **5.3.4 Determinants of child malnutrition and mortality**

Alderman, Appleton, Haddad, Song and Yohannes (2001) conducted a study on determinants of child malnutrition in 63 countries, carrying out household and national level analyses. The nutrition measures modelled were based on WHO guidelines that define standardised child growth scores (z-scores) on which nutrition status is estimated. They modelled stunting (height-for-age) and underweight (weight-for-age), with the central objective of investigating whether income mattered in nutritional management. Income, at household and national level, was found significant but with low elasticities; that is, non-income policies were more crucial, such as education of parents, which was also found significant. Other significant variables include household and community infrastructure, and time trend capturing effectiveness of policies.

Houweling, Kunst, Looman and Mackenback (2005) carried out a cross-country analysis of determinants of under-five mortality among the poor and rich in 43 developing countries, with the central objective of analysing differential effects of determinants between these two income

groups focusing on socioeconomic, political and healthcare factors. They examined effects of GDP per capita and female literacy as socioeconomic indicators; Gastil's political right index,<sup>29</sup> tax-GDP ratio, and ethnic fragmentation index as proxies to capture effect of political maturity of states and their capacity; and public spending on health as measure of government commitment. Income was found more significant in explaining child mortality among the rich, while effect of public health management and ethnic fragmentation was stronger among the poor. The rest did not show wide differential effects between the two groups.

Rutstein (2000) also carried out cross-country analysis of determinants of trends in infant and under-five mortality in 56 countries fitting OLS regressions. Seven successive child growth models were estimated: regressions for neonates; post- neonates; infants; toddlers (1 year olds); childhood (2-3 year olds); childhood (1-4 year olds); and under-five year olds. Factors found significant across the various estimations include: order of birth; age of mother at birth; birth interval; whether birth attended by medical professionals; access to full vaccination; nutritional status of the child; sources of water; housing material for floor; and access to electricity.

*Africa.* Using national integrated household surveys, Mackinnon (1995) investigated determinants of child nutrition and mortality during the political and economic recovery of Uganda. The nutrition measures modelled were height-for-age z-scores (child stunting) and weight-for-height z-scores (child wasting or thinning). Under-five deaths were modelled in determining the mortality situation. Both investigations utilised OLS and Tobit regression techniques. Factors found significantly affecting nutrition include: education of parents; price of food; regional and residential location of households; and sex of child. Those found significantly explaining mortality include: education of parents; toilet facilities; regional and residential location of households; spending level of household; age of mother; number of rooms occupied;

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<sup>29</sup> See Gastil (1990).

sex of child; and energy source for cooking. Also in Uganda, Ssewanyana and Younger (2007) investigated determinants of infant mortality, fitting probit regression. Factors found significantly affecting infant mortality include: level of assets owned by households; whether child is first born; whether births were multiple; educational level attained by mothers; access to vaccinations; and policy trends.

Mosley et al. (2012) carried out a comparative political economy modelling of infant mortality between *peasant-export economies* in Ghana and Uganda, and *settler economies* in Kenya and Zimbabwe. Political instability was found significant in explaining mortality, alongside other factors: share of export price received by farmers, agricultural value added, and effectiveness of national policies.

In Zambia, Garenne and Gakusi (2006) used time series data to analysed determinants of under-five mortality changes. Factors found significant include: gross domestic product; health expenditure; medical imports; international aid; and time trend.

### **5.3.5 Determinants of occupational choices and migration decisions**

For rural Philippines, using survey data collected in rice growing Central Luzon region, Takahashi and Otsuka (2009) separately analysed factors affecting four types of household occupational decisions using sequential probit modelling: decision to work in general; decision to participate in off-farm activities; decision to out-migrate for work within country; and decision to travel abroad for work. Factors found significantly explaining these decisions include: year of birth of respondent; sex; education attainment; land owned leasehold; share-tenancy; ratio of land irrigated; father's education; mother's education; and distance from Manila.

*Africa.* Bezabih, Gebreegziabher, GrebreMedhin and Köhlin (2010) investigated factors affecting household decisions to participate in off-farm activities in rural Ethiopia using binary



and multinomial logistic regressions, obtaining data from household surveys and meteorological estimates. Factors found significantly affecting decision to participate in off-farm activities include: annual rainfall; age of household head; adult labour; and literacy level. Also in Ethiopia, Kuma, Getnet, Baker and Kassa (2011) investigated smallholder farmers' participation in farm product value-adding activities, a case study of farm-level milk value addition among smallholder dairy farmers. Using survey data, and through application of probit modelling, the factors found significant in affecting decision to participate in milk value addition activities include: level of milk yield; distance to urban centres; age of participating farmers; number of children in the household; extension services; and importance of milk products during holiday and fasting seasons.

Utilising household and community data, Matsumoto et al. (2009) analysed determinants of occupational choices of households using multinomial probit models for Kenya, Uganda, and Ethiopia. The choices modelled are: participation in on-farm activities; local nonfarm; and jobs obtained through migration. Running separate models for each country, the factors found affecting decision include: land productivity; distance to nearest market; age of respondent; years of schooling; number of local languages spoken; sex dummy; marital status of respondents; land size; and assets of respondents.

Having delved into single equation determinants with single indicator (or observed) dependent variables, we shall review next single equation determinants with multidimensional (composite indicator) dependent variables.

### **5.3.6 Multidimensional determinants of poverty: single equation**

In a much developed country, Italy, Coromaldi and Zoli (2007) analysed determinants of multidimensional poverty, separately running six equations with logistic framework. Six

composite factors were separately extracted as dependent variables from 42 observed indicators. These are: household expenditure capacity; consumption deprivation; health status; capacity to repay debt; basic housing durables index; and housing conditions index. These composite variables were regressed on the same (scale/observed) explanatory variables. Predictors found significant in explaining them include: age of respondent; geographic and residential location; education level attained; employment status; health status; and marital status.

*Africa.* With primary objective of explaining the impact of social capital on multidimensional poverty in Madagascar, Sirven (2006) regressed asset index on social capital index and other variables using probit framework. The asset index (the dependent variable) was constructed through multiple correspondence factor analysis (MCFA) based on household possession of seven durable assets. The social capital index, as independent variable, was measured by the level of involvement in network activities, collective action, associations, and traditional ceremonies. Social capital index was significant in explaining asset poverty, among other variables, such as area of land cultivated; age of respondent; education level attained; and location of respondents.

In Cameroon, Ningaye, Ndanyou and Saakou (2011) analysed determinants of multidimensional poverty, estimating a much dense composite dependent variable than in Sirven (2006) for Madagascar. They utilised 23 observed indicators (ranging from household durables, water and sanitation, to education and infrastructure) to construct asset index as dependent variable through MCFA. Factors found significant in affecting this poverty index are: age of household size; geographic and residential location of the household; whether respondent is single parent; whether family is nuclear or extended; and types of economic activity engaged in.

### **5.3.7 Summary of single equation determinants**

It could be inferred from above that determinants of poverty are very similar across the various welfare outcomes reviewed: income; education; health; nutrition; mortality; employment; migration; and the composite/multidimensional welfare outcomes. And these outcomes appear to affect each other. Thus, a general drawback deduced from the foregoing analyses is the presence of endogeneity in any single equation poverty analysis. Which implies carrying out simultaneous equation estimation is crucially necessary to improve reliability of parameter estimates before any postestimation policy analysis is conducted. Furthermore, some of the studies reviewed are found to have included too many variables in the estimation, from as many as 25, 30, 45, to 56, 90 and beyond. This can be unwieldy, despite that the effect of having many variables can be attenuated by large samples to ensure minimum acceptable degrees of freedom. Chances of high and multiple multicollinearities in the single equations reviewed are high, and may constrain identification of appropriate policy direction if left unaddressed. Therefore, the next review shall examine treatment of endogeneity problems in data—having reciprocal causation between dependent and independent variables, a common phenomenon in household welfare analysis. We shall also review applications for reducing many variables to parsimonious size before estimating relationships within simultaneous equation framework.

### **5.3.8 Simultaneous equation determinants of poverty**

First, we will provide a brief theoretical background to the empirical review undertaken here. Households in LDCs are compelled to undertake concurrent decisions in optimising their welfare objectives, and these decisions affect each other (Bardhan & Udry 1999; Sadoulet & de Janry 1995; Sahn & Stifel 2003; Singh et al. 1986). Such decisions emanate from the widespread market failures characterising LDCs and turning the average household into serving multiple

economic functions of simultaneously being a consumer, producer and wage-worker.

Sahn and Stifel discuss these simultaneous decision problems in the case of meeting health and nutrition needs of households, that, “the theoretical foundations for modelling household expenditure and child health and nutrition must be considered concurrently given the simultaneity of choices that govern the levels and patterns of consumption with those of “inputs” into child nutrition” (Sahn & Stifel, p. 472). Both per capita expenditure on normal goods and services and human capital factors to the household such as health and nutrition can be derived from a single household model formalised as follows (ibid, pp.472-473):

$$\max_{x,l,\theta,\beta} u(x, l, \theta; A, Z), \dots \dots \dots 5.18$$

where  $u(.)$  is the utility function to maximise;  $x$  is the consumption of normal goods and services;  $l$  is household leisure;  $\theta$  is a vector of health and nutritional status as other goods purchased or produced by the household; and  $A$  and  $Z$  are, respectively, observable household and community characteristics that affect household utility. Maximising this utility function is subject to the following budget constraint (ibid):

$$px = w(T - l) + y, \dots \dots \dots 5.19$$

where  $p$  is a vector of prices;  $w$  is a vector of household members’ wages;  $T$  is a vector of the household members’ maximum work hours; and  $y$  is household non-wage income. Underlying this utility maximising problem is a biological health and nutrition production technology expressed as follows (ibid):

$$h_i = h(I_h, A, Z, \mu_i), \dots \dots \dots 5.20$$

where  $h_i$  is health and nutrition status of the household;  $I_h$  is a vector of health and nutritional inputs;  $A$  and  $Z$  are observed household and community characteristics affecting utility; and  $\mu_i$  represents unobservable individual, family and community characteristics that affect health and nutritional status. The input vector  $I_h$  includes “consumption goods which contributes positively to household welfare both directly through [the consumption of goods and services]  $x$  and indirectly through [health and nutrition status]  $h$ ” (ibid).

Solving the above household problem will result to the following quasi-reduced form solutions for health and nutrition,  $h$ , as well as for household consumption level,  $x$  (ibid):

$$h_i = \hat{h}(x, A, Z, \varepsilon_i) \dots\dots 5.21$$

$$x_i = \hat{x}(h, A, Z, \epsilon_i) \dots\dots 5.22$$

It can be seen from these optimal solutions that both health and nutrition,  $h_i$ , and spending on normal goods and services,  $x_i$ , affect each other alongside effects from household and community characteristics. The terms  $\varepsilon_i$  and  $\epsilon_i$  are errors representing unobserved influences in the system. This optimisation underpins Wagle’s five simultaneous equations in Eq.(5.17) above that specifies five household welfare dimensions: economic; capability; economic inclusion; political inclusion; and civic/cultural inclusion dimension.

The need to investigate determinants of household poverty within simultaneous equation frameworks is underscored in various studies, including Wagle (2010) discussed above, and Grossman (2000), among others. Grossman notes three possibilities of any correlation between formal schooling and health outcome. First, causality is expected to run from changes in level of schooling, to changes in health outcome. Second, another is expected to run from changes in health status, to changes in the stock of knowledge. And third, where there is no causality between the two outcomes (health and education), at all. The causality that runs from schooling to health is underpinned by *productive efficiency* and *allocative efficiency* paths, in terms of

increasing capability to access health products through increased employment opportunities and income, and through acquisition of health information, respectively. The reverse causality from health to schooling suggests that there are high chances of healthier children going to school and staying in attendance with excellence; and any current causality running from education to health outcome could have essentially emanated from past health status including that of parents. Causality between schooling and health may not exist if observed correlation between the two outcomes is the result of other factors such as improved delivery of public services, cognitive and physical abilities, parental characteristics, and time preference. These perspectives lend credence to nonrecursive simultaneous equation estimation in studying household welfare, and we will look next at a few empirical studies with this application.

In China, Fin, Zhang and Zhang (2000) employed nonrecursive simultaneous equations to analyse determinants of growth and poverty in rural areas, focusing on the role of public investments, using panel data of 25 provinces for the period 1970-1997. They estimated ten equations, ranging from income poverty, agricultural income, wage determination, to number of rural telephone sets, rural electrification consumption, and agricultural terms of trade. The main factors found significantly affecting agricultural income growth and poverty reduction, directly or indirectly, are government expenditure on education; expenditure on agricultural research and extension; and expenditure on rural telecommunications. The results also show that there are regional tradeoffs in achieving growth and poverty alleviation goals.

In India, Fan, Hazell and Thorat (1998) also employed nonrecursive simultaneous equations to analyse determinants of poverty at country level for the period 1970-1993. As in Fin et al. (2000), they estimated ten equations ranging from income poverty, agricultural income, to rural electrification consumption, and agricultural terms of trade. The main factors found significantly affecting agricultural income and poverty are: government spending on productivity enhancing investments, such as agricultural R&D, extension, and irrigation; spending on rural

infrastructure (including roads and electricity); spending on education and other social amenities; and whether rural development was efficiently targeted to the rural poor.

Wagle (2010) estimated a nonrecursive simultaneous equation system to analyse determinants of poverty in Kathmandu, Nepal, and in the United States, using structural equation modelling (SEM) framework. Five equations were estimated in which the dependent variables were the determinants of themselves and all are composite/factor dimensions derived through factor analysis within the SEM. The dependent variables were Wagle's five poverty dimensions discussed earlier: economic wellbeing; capability; economic inclusion; political inclusion; and civic/cultural inclusion [see Eq. (5.17) above]. In Kathmandu, the capability factor (for which level of education attained had the highest loading) was found as the most important predictor of poverty, economic wellbeing the second most important predictor. In the USA, the capability and cultural/civic factors were lead predictors of poverty, followed by political inclusion and economic wellbeing.

*Africa.* In Nigeria, Umeh, Benjamin and Asogwa (2011) investigated determinants of poverty at farm household level using a recursive two-stage least squares simultaneous equations with 'household poverty gap' and 'household farm level efficiency estimates' as endogenous variables. The factors found affecting poverty include: technical, economic, and allocative efficiency; per capita income; farm size; age; dependency ratio; off-farm employment; membership in farmer associations; food expenditure; per capita expenditure; access to markets; extension contacts; transfer income; household size; and tax.

In Ghana, Uganda, Kenya and Zimbabwe, Mosley et al. 2012 estimated a political economy simultaneous equation model to explain poverty in comparative terms. The dependent variables were: infant mortality, real wage index, and a conflict dummy as proxy of political instability. Political instability was found significant in increasing infant mortality, among other factors, including education. In turn, instability was found to decrease with increase in

government investment in small-scale farming and subsistence sector, and with increase in real wage. We will close the empirical review by examining previous studies on Sierra Leone in the next section.

### **5.3.9 Determinants of poverty in Sierra Leone**

Fitting OLS estimator to Sierra Leone's integrated household survey of 2003 (SLIHS2003), World Bank (2008) analysed determinants of household income poverty comparing rural, urban and national estimates. Factors found significant in predicting poverty include: level of education attained; employment status of household head; types of farming activities; household size; regional and residential location; and migration. The Bank discovered similar findings analysing determinants of income poverty using SLIHS2011 (World Bank 2013a). Fagernas and Wallace (2007) also analysed determinants of income poverty based on SLIHS2003, and found the following as significant predictors among others: postwar characteristics (such as being a displaced person; a refugee; and having dwelling destroyed during the war); and asset ownership such as livestock.

The 2008 study by the Bank included analysis of determinants of primary school enrolment at national level, comparing boys' and girls' enrolment regressions, using Sierra Leone's Core Welfare Indicator Questionnaire Survey (2007), fitting a probit model. The factors found significant in explaining why a child was enrolled or not include: sources of income of the parents; age of the child; whether father was alive; whether mother was alive; regional and residential location of households; the sex of head of household; education of head and spouse; and distance to school. Using SLIHS2011, Bangura (2013a) undertook a path (recursive simultaneous equation) analysis of determinants of rural household expenditure on child schooling, running two equations: income of parents proxied by income of head of household; and expenditure on child schooling. Factors found explaining education spending include:



income of parents as intermediate endogenous determinant; expansion of farm acreage; adoption of improved technology; provision of credit facilities; and equitable distribution of public services across regions.

Also in 2008, the World Bank analysed healthcare demand using standard probit model to determine factors affecting probability of not going for formal healthcare when falling sick, using SLIHS2003. Those found significant include: age of respondent; geographic location of respondent; wage employment; types of illness; distance to healthcare facilities; cost of services; and quality of services. These findings were corroborated in Bangura (2011) using the same survey and fitting a multinomial logit regression to analyse factors influencing four healthcare decisions: self-medication; traditional care; public care; and private care.

Kargbo (2011) applied time series data with vector autoregressive scheme to determine long-run determinants of nutrition (caloric intake) and food prices. Factors found significantly affecting nutrition include: per capita income; exchange rate; food prices; openness to trade; and policy effectiveness. Income, exchange rate, trade and general policy effectiveness were also found significantly affecting food prices, coupled with money supply. Bangura (2013b) investigated determinants of undernutrition and child mortality, fitting seemingly unrelated regression framework for undernutrition, and probit model for infant and under-five mortality, using Sierra Leone's Demographic and Health Survey (2008). Factors found affecting undernutrition include: mothers' education; housing environment measured by household density, accommodation capacity and sanitary condition; regional development differentials; having vegetables in the diet for mothers and children; and immunisation. Those found affecting child mortality include: mothers' education; household density; recognition of gendered differential needs for children; nutritional deficiency; micronutrient supplement; and postnatal care.

Based on Sierra Leone's employment survey (2006), Peeters et al. (2009) investigated determinants of probability of hiring employees in both formal and informal businesses. Factors found significantly explaining employment decisions are: age of potential employees; level of education of employees; size of the business; sectoral location of the business; and residential location of the business.

#### **5.4 Summary of chapter**

This chapter has provided extensive conceptual and empirical foundation for the choice of the research design elaborated in the next chapter. It has examined a range of perspectives on how poverty can be measured and the implications of various modes of measurement. The asset approach to poverty provides us with deeper insight into issues of human welfare deprivation from a dynamic viewpoint than the conventional, flow-based income-expenditure approach. However, while the asset thesis presents a highly insightful discourse, what is missing in the reviewed literature is an explanation of the process of creating assets, whether durable, human capital, infrastructural, social, or political asset. This research perceives income or expenditure as direct measure of the ability to command basic necessities including assets of all kinds, while reflexively, assets also generate income. The reciprocal relationship between the two (asset and income) should be well captured in any welfare analysis, which this study will take into consideration in planning our empirical analytical approach in the next chapter.

We note from the above review that a pool of works have conducted single equation estimation analyses and have run numerous variables in their regressions thereby risking superfluousness and multicollinearity problems in proffering policies. We shall take this into consideration during the formulation of our empirical research design. We intend to adopt data reduction methods such as factor analysis, as we envisage the enormous challenge of handling multitudinous but relevant variables.

Given the objectives of our research, and the shortcomings highlighted above regarding the limitations of single equation analysis, we also intend to employ structural (simultaneous) equation modelling as key analytical technique in our study. We particularly intend to draw significant guidance from Wagle's (2010) nonrecursive multidimensional simultaneous equation framework. With this, we hope to add new perspective and substantially contribute to the understanding of poverty in Sierra Leone and LDCs in general.

## **Chapter Six**

### **General Research Methodology**

The last four chapters have been devoted to a detailed review of theoretical perspectives of poverty, empirical testing of perspectives and country policy experiences in dealing with poverty. The reviews highlight a wide range of viewpoints and commentaries in the literature as to what the causes of poverty are and its manifestations; what models to apply to reduce poverty and improve the overall development of a country; how poverty can be measured and understood to ensure the formulation of appropriate policies; and which factors have been considered most significant for policy targeting in different country contexts. The reviews reflect the broad dimensional nature of poverty and development. They indicate that there is an unlimited range of issues, factors, and determinants bordering the understanding of poverty. The broad issues highlighted range from socioeconomic, cultural, to structural and political dimensions. While all of these should theoretically be considered by any developing country, they only signal a menu of possible policies that each country could draw on to formulate poverty reducing strategies based on domestic realities. Each country needs to reflect on its context through rigorous analytic works to prioritise which among the myriad of factors are deemed most plausible to address over a given planned period. Against the backdrop of these four reviews, with particular reference to the history, political economy and policy experiences of Sierra Leone coupled with lessons learnt from other countries, six key areas have been prioritised for an empirical investigation and analysis of determinants of rural poverty in Sierra Leone. The six areas for empirical investigation are: (i) economic wellbeing of rural households; (ii) education status of the households; (iii) health status of the households; (iv) status of child nutrition; (v) off-farm labour

participation by the households (employment status); and (vi) migration.

The latest national integrated household survey of 2011 (SLIHS2011) substantially supports the choice of these analytical areas. In the survey, heads of households were asked as to which development areas the state should focus intervene to improve living standards. The top six reported by 6,760 respondents nationwide are: employment creation; access to education; access to housing; stabilising commodity prices; access to health; and improving road conditions (Table 6.1). To firm up and finalise the selection of the six analytical areas for empirical estimation, this study further conducted interviews with 100 development experts and practitioners across Sierra Leone to indicate which other areas—besides economic wellbeing, education, health, nutrition, employment, and migration—that the state could additionally prioritise to improve standards of living in the rural sector (see Annex 5 for interview questionnaire). The top additional six from the interviews are: road network; improving agricultural technology and support; providing recreational facilities; providing electricity; improving housing, water, sanitation and environmental conditions; and improving local governance and politics. These are followed by: provision of financial services; addressing early marriage/teenage pregnancy; reducing fertility rates, improving family planning and managing household size/density; transforming cultural and traditional beliefs; improving justice and security; and empowering women (Table 6.2). These new priority areas are more or less intermediate poverty indicators and measures that could lead to manifestation of poverty at the outcome level such as the six broad dimensions prioritised for empirical investigation: improved economic wellbeing; improved education; health; nutrition; employment; and improved reward from migration. As discussed in detail below, the additional priority areas would serve as exogenous determinants of these six dimensions.

The next section provides arguments and justification for the choice of the six poverty dimensions for the empirical investigation. The sections that follow explain the analytical framework, broadly divided into “descriptive/nonparametric analysis” and “econometric analysis.” The final sections discuss the data used in the analysis and summarise the chapter.

**Table 6.1: Priority policy areas identified by households, SLIHS2011**

<b>Priority Areas</b>	<b>Obs.</b>	<b>%</b>
Create employment	2,541	37.70
Improve access to education	1,119	16.60
Improve access to housing	636	9.44
Regulate prices of basic commodities	609	9.04
Improve access to health	568	8.43
Pave roads	557	8.26
Improve access to credit	467	6.93
Fight against corruption	95	1.41
Improve access to electricity	43	0.64
Others	105	1.56
<b>Total</b>	<b>6,740</b>	<b>100</b>

*Source:* Sierra Leone Integrated Household Survey 2011.

**Table 6.2: Other policy areas identified during key informant interviews**

<b>Priority Areas</b>	<b>Obs.</b>	<b>%</b>
Road Network	38	20.32
Agricultural Technology & Support	27	14.44
Recreational Facilities	18	9.63
Electricity	17	9.09
Housing, Water, Sanitation & the Environment	13	6.95
Improving Governance & Politics	12	6.42
Financial Services	11	5.88
Early Marriage & Teenage Pregnancy	9	4.81
Fertility, Family Planning & Household	9	4.81
Cultural & Traditional Beliefs	8	4.28
Justice & Security	8	4.28
Empower Women	4	2.14
Polygamous Marriages	3	1.60
Corporate social responsibility	2	1.07
Others	16	8.56
<b>Total</b>	<b>187</b>	<b>100</b>

*Source:* Author’s field interviews across Sierra Leone, 2012.

## **6.1 Justifying the choice of poverty status dimensions for the empirical investigation**

Poverty is a measure of status of wellbeing and quality of life of individuals or group of individuals. The dimensions that we have chosen to analyse are manifestations and broad outcome indicators of a healthy and functional life. Economic wellbeing, often proxied by income, remains a key poverty dimension. However, we acknowledge the prolonged dominance of this measure in the poverty literature and the neglect of other crucial yardsticks and realities needed to be part of the analysis given the multidimensionality of human deprivation. Several previous studies have concentrated on income analysis, leading to a major limitation in the understanding of poverty from the viewpoint of comprehensiveness. It is for these limitations, in support of the growing multidimensional poverty thinking, that we have added five other dimensions to the analysis of rural welfare, all of which are justified as follows.

### **6.1.1 Rural household economic wellbeing**

Income, consumption expenditure, and asset are lead measures of economic wellbeing. Some have argued that consumption expenditure can be the most effective measure of standard of living (Deaton & Zaidi 2002; World Bank 2005). Yet where farming is the dominant economic activity, annual production estimates are perceived by others as better measure of economic status (Sirven 2006), while from a dynamic point of view asset can be a better yardstick (Carter & Barrett 2008). However, the fact that individual proxy measures have serious limitations, has led some to argue that the best approach to measuring wellbeing is by aggregating individual yardsticks into composite factor measures (Coromaldi & Zoli 2007; Wagle 2010).

Whichever is the proxy, economic wellbeing remains a critical poverty dimension. Income or consumption level is a direct measure of the level of monetary earnings an individual or household obtains through economic occupation, liquidation of stored wealth or asset, and

transfers from non-occupational sources. It is a quintessential measure of the ability of households to command basic necessities for survival and wellbeing; a necessary measure of capability to access both monetary and non-monetary resources to maintain healthy and minimum quality of life. Nonetheless, since high income or consumption or stock of asset does not necessarily and automatically imply an improvement of quality of life in general, it is prudent to consider other welfare dimensions.

### **6.1.2 Rural household education**

Perhaps the most critical dimension of quality of life in terms of building human capabilities is access to education. In all the reviews carried out, illiteracy was most notable for rising levels of poverty, especially across Sub-Saharan Africa, and it came out clearly in the political economy review chapter on Sierra Leone. There is vast scholarly literature suggesting that education is the most essential correlate of poverty and human development (Demery 2000; among others). The expected knock-on effect of education on other poverty reducing development areas can be immensely huge, as noted in the case of the dramatic improvement in managing social indicators such as child mortality in Sri Lanka, Indian State of Kerala, and Rwanda at relatively low levels of income (Aldermine 2001; Glencorse 2010).

### **6.1.3 Rural healthcare**

The need for constant analysis of household health status is elaborated in the human capital investment models with regard to time preference over one's life cycle investment. Rational persons are expected to invest both in health and education to ensure adequate labour market earnings towards retirement. Health and education—two critical components in life cycle investment—do not only go direct to supporting income, but reinforce each other in the process (Grossman 2000). Needless to indicate that health is needed to keep children in school and



parents active at workplace, and to induce the requisite strength and energy to undertake farming as mainstay of the vast majority of rural inhabitants.

The performance of Sierra Leone on the global human development index has not been encouraging largely because of weak performance in health outcomes, and this necessitates continued diagnostic analysis of health status in rural Sierra Leone which accounts for more than 60 percent of the population, and are badly undersupplied with social services. The country is still home to some of the worst health indicators in the world, with infant and under-five mortality rates estimating at 128 and 217 deaths per 1000 live births, with the rural areas affected the most.

#### **6.1.4 Rural nutrition**

Chapter Four provided significant justification of the need to factor nutrition into both micro- and macro-policy analysis for its contribution towards health, and socioeconomic development in general. As in other countries, such as Angola, malnutrition has been a major health concern in Sierra Leone. It is a fundamental development dimension that has negatively impacted on the gross national income of Sierra Leone (World Bank 2011; UNICEF 2004). For a considerable period up to 2006, Sierra Leone had annually lost over US\$28 million in GDP to vitamin and mineral deficiencies, for which “scaling up core micronutrient interventions would cost less than US\$4 million per year” (World Bank 2011, p.1). The country’s incidence of stunting children has been among the highest in the world, ranked 43<sup>rd</sup> out of a sample of 136 in 2009 (UNICEF 2009). The rural areas have been more affected, recording a stunting incidence of 39 percent in 2008, compared to 30 percent for urban areas according to the country’s Demographic and Health Survey (2008). Sierra Leone’s Multiple Indicator Cluster Survey (2010) in fact estimates rural stunting to have increased to 45.7 percent. In general, deaths due to malnutrition are

estimated at 26 per 100,000 live births, ranking Sierra Leone 15<sup>th</sup> out of 192 countries (WHO 2011). This presents high risk of serious setbacks in the human capital formation processes of the country, besides its immediate debilitating impact on household incomes, thereby necessitating continuous analysis of this area to inform policy.

#### **6.1.5 Household participation in off-farm employment**

It is noted in light of development of rural Philippines, Thailand, Bangladesh and Tamil Nadu in India that, "...the development of the nonfarm sector and increased access of households to nonfarm labor markets are clearly the major driving force behind the reduction in poverty in rural villages in Asia....Economic development in Asia is clearly pro-poor and returns to labor [have] increased relative to the returns to land." (Otsuka et al. 2009, pp.201-209). We have therefore chosen off-farm employment as another crucial poverty dimension for our empirical investigation, to determine its implication for poverty reduction among rural households. Ensuring sustainable rural livelihoods requires support beyond agriculture, demanding overall transformation of the rural economy to provide diverse welfare opportunities.

#### **6.1.6 Rural migration**

Where it is grounded on sound economic rationality, migration could have huge potential for poverty reduction. Possession of minimum education and skills is a basic presumption in its undertaking and success (see Chapter two). But where these capabilities are lacking, migration could best be described as coping strategy, and we intend to model this in our analysis to determine the extent to which rural Sierra Leoneans have benefited from it. In Sierra Leone, migration may have improved the wellbeing of some rural households. But generally, its net positive contribution to rural welfare is doubtful in light of the low skills possessed by most migrants. Agriculture has perennially deteriorated due to weak policy attention after discovery of

diamonds and other minerals in colonial times, sending young people off the farms for the mines, yet returns from the latter have not been any better for many (if not majority) than returns from agriculture. Some abandoned rural areas in search of jobs in urban areas with little or no education and skills required in the labour market, thereby further deteriorating agriculture. The incapacity to domestically produce the country's staple grain (rice) to levels required by the population has perennially caused untold deprivation for households in both rural and urban areas in light of high costs of the grain; besides the negative national budget implication it has in terms of its importation to maintain supply. It is therefore decisive to understand how migration plays out with other welfare areas intended for our analysis so as to adequately advise policy for rural development.

The six poverty dimensions argued above are interrelated, and as such, an integrated analysis can be appropriate to advise policy. Therefore, one of the analytical approaches intended for our study is the implementation of structural simultaneous equation estimation, borrowing from a range of expositions including Bardhan & Udry (1999), Sadoulet & de Janry (1995), Singh et al. (1986), and Wagle (2010). We will present the analytical framework in the next sections.

## **6.2 Descriptive and nonparametric analytical framework**

This framework will mainly address the first and second objectives of the research: *(1) To analyse the key conditions and characteristics underpinning rural household poverty and how these have changed since 2003; and (2) To analyse the extent to which development programmes have been effective in reducing rural poverty since 2003* (see Chapter One, Section 1.7). The following sub-sections present the focus areas of the analysis to deliver these objectives.

### **6.2.1 Conditions and characteristics of rural households**

We have argued that a key measure of effectiveness of public policies for poverty alleviation is ascertaining whether structural changes in households have accompanied the policies implemented. Policies must effect change in rigid age-old household structures in order to initiate desired changes in income poverty and the drive to prosperity. Policies should be adequately informed with the context in which the households strive for survival. We shall therefore begin the analysis by attempting to understand these contexts through examining simple statistical estimates of selected observed measures and indicators of livelihoods reported in the national household surveys employed for our analysis (details of the surveys are presented later). The context and structural variables we hypothesise and describe as prime household characteristics leading to manifestations of poverty are as follow:

- household composition and size, and family system;
- socioeconomic situations such as rural occupational structure and sources of income;
- landscape of rural education, health, housing and the environment, and nutrition;
- opportunities for engaging in off-farm employment;
- coping methods in times of crises including migration; and
- effectiveness of local governance and service delivery to the communities.

### **6.2.2 Changes in rural income poverty profile**

This will inform us about changes in the average status of welfare of rural households during 2003-2011—this is the period between the two main national surveys we will use in our analysis. The statistics obtained here will indicate the amount of income poverty that has been reduced or increased since 2003. Poverty indices obtained are based on estimated minimum expenditure (on food and nonfood) necessary for individuals to live acceptable quality of life and to be able to

function well. These indices are the FGT family of poverty measures discussed in Chapter Five, Sections 5.1 .1 & 5.1.2. The FGT indices we choose to analyse are: headcount poverty index; poverty gap index; and extreme poverty index (the statistical programmes used in processing our data are discussed in the results chapters, Chapters Seven & Eight). We shall estimate changes in income inequality between socioeconomic groups and geographic locations based on the gini coefficient, quintile dispersion ratios, and Engel coefficient. We shall also estimate the minimum public financial investment required to eradicate both extreme and full stocks of poverty for rural areas based on the FGT estimator. We will estimate poverty resources for urban areas for us to assess policy effectiveness in reducing rural poverty relative to urban poverty.

**6.2.3 Benefit incidence analysis**

Benefit incidence analysis is chosen from the analytical techniques reviewed in Chapter Five to decipher whether public policies have been pro-poor. We shall apply both standard BIA and adjusted BIA for reasons discussed earlier in Chapter Five to ensure realistic determination of policy effectiveness—one of the reasons being that standard BIA tends to statistically overestimate benefit of services to the poor. We will adopt the formula from Eq. (5.12) in Chapter Five, Page 153, for the calculation of the standard benefit estimates (Demery 2000) with slight modification to suit our application context for education and health sectors as follows:

$$X_j \equiv \sum_{i=1}^n U_{ij} \frac{S_i}{U_i} \equiv \sum_{i=1}^n \frac{U_{ij}}{U_i} S_i \dots\dots\dots 6.1$$

where  $X_j$  denotes total education or health subsidy allocated to group  $j$ , and  $j$  is income level of the household head or household geographic or residential location;  $U_{ij}$  denotes school enrolment by group  $j$  or group  $j$ 's attendance of health facilities with respect to the  $i^{th}$  service level of education or healthcare—our focus is on basic education spending from primary to junior

secondary, and primary healthcare spending (GoSL 2005b; 2011);  $U_i$  denotes total school enrolment or health attendance across all socioeconomic groups with respect to the  $i^{\text{th}}$  service level of education or healthcare; and  $S_i$  is total government spending with respect to the  $i^{\text{th}}$  service level of education or healthcare. From this equation [Eq.(6.1) above], the standard benefit incidence estimates, SBIEs or  $e_{ij}$  are expressed as follows:

$$e_{ij} = \frac{U_{ij}}{U_j} \dots \dots \dots 6.2$$

For education, the SBIEs shall be adjusted for group differences in both total and school age populations. The adjustment is done by calculating the ratio of the SBIEs to the total population, and then to the basic school age population in group  $j$  as expressed in Eqs.(6.3) & (6.4) as follows:

$$SBIEs_{adjusted1} = \frac{e_{ij}}{\text{total population in group } j} \dots \dots \dots 6.3$$

$$SBIEs_{adjusted2} = \frac{e_{ij}}{\text{school age population in group } j} \dots \dots \dots 6.4$$

Interpretation of estimates: For the standard benefit estimates,  $e_{ij}$ , the closer to 1 (or 100 percent) is education spending to group  $j$ , the better the benefit group  $j$  receives from education services. For the adjusted ratios, groups with shares in excess of 1 (or more than 100 percent) indicate larger public service benefit to them than the average share of the population across all groups (World Bank 2008). Another ratio we shall compute and compare with the SBIEs for education is per capita public spending, estimated as ratio of “public spending on education” to “school age population” in group  $j$ ; the higher the ratio the more the service share to a particular group (Demery 2000; among others).

For the health sector, the SBIEs are adjusted for differences in the shares of total

population, and population of women and under-five children across groups. Adjusting for the population of women and under-five children is aimed at assessing effectiveness of government's Free Healthcare Programme focusing on women and children since 2010. Similarly, we adjust the SBIEs here by computing the ratio of the SBIEs to the total population, and then to the combined population of women and under-five children in group j as expressed in Eqs.(6.5) & (6.6) as follows:

$$SBIEs_{adjusted1} = \frac{e_{ij}}{\text{total population in group } j} \dots\dots\dots 6.5$$

$$SBIEs_{adjusted2} = \frac{e_{ij}}{\text{women \& under-five children population in group } j} \dots\dots 6.6$$

The interpretation of the estimates for health follows the same logic as in the interpretation of education spending estimates.

**6.2.4 Sensitivity of central government grant distribution formula to poverty**

This analysis will directly complement the BIA, and is unique to this research for Sierra Leone. The aim is to determine the extent to which central government transfers to local councils have been equitable and poverty sensitive. Fiscal devolution is central to the government's decentralisation and poverty reduction programmes. Equitable distribution of resources (on the basis of need) constitutes a fundamental dimension in government's efforts at eradicating poverty. There are development disparities across the 19 local councils of the country. Thirteen of these cover the rural districts, and six cover urban towns and cities. It is crucial that these disparities (defined by differences in income poverty and other socioeconomic conditions) be continuously reflected in resource allocation formulas.

Indeed, the government resource allocation formulas have drawn on various guiding principles: equity; simplicity; transparency; flexibility; adaptability; stability; demand-

orientation; revenue adequacy; and budget autonomy (GoSL 2005b, p.2). However, it has not been ascertained before whether resource distribution has been pro-poor so as to inform subsequent fiscal decisions. We shall attempt to fill this gap by testing the pro-poor sensitivity of government grant distribution formula in the education sector. We are choosing education because of the broad scholarly and development consensus on its lead role in poverty reduction.

Eq. (6.7) presents the current grant distribution formula used by government to allocate basic education resources to the 19 local councils, covering school fees subsidies, text books, teaching and learning materials, examinations fees, and so on (GoSL 2011, p.28; 2005b, p.9):

$$F_{CE} = \left( \frac{EN_C}{EN} \right) * F_E, \dots\dots\dots 6.7$$

where  $F_{CE}$  is funding entitlement of local council C out of total resource pool of  $F_E$  in support of basic education;  $EN_C$  is council C's total enrolment at the relevant school levels including enrolment for examinations;  $EN$  is national enrolment. It is noticed from Eq. (6.7) that, the rate of service utilisation,  $EN_C/EN$ , is the only basis for resource allocation currently; but this may fall short of equitable distribution of education resources. With respect to this formula, urban areas are naturally expected to receive more benefit than rural areas for an LDC like Sierra Leone despite the fact that the rural sector carries the largest number of the poor. This should not be surprising because urban areas are generally more favourably located in terms of physical accessibility of public services. They have greater chances of utilising these services more than the rural areas, which are disproportionately challenged by bad geographic terrains and poor road conditions. Basically, this resource transfer method falls under the conditional transfer typology in our discussion of social protection assistance in Chapter Four with attendant shortcomings. We will therefore conduct a pro-poor distribution sensitivity test as described next.



We shall group the 19 local councils into urban and rural local councils: six urban councils and 13 rural councils. Resources allocated to the two broad groups and across all councils are compared based on the *government formula* (Eq. (6.7)), on the one hand. On the other hand we will compare them on the basis of a *simulated formula*. We develop the simulated formula through designing different resource allocation scenario, an alternative allocator we call *the simulator*. The resource distribution estimates of the simulator are then compared with estimates from the government formula in monetary terms. Precisely, in addition to the service utilisation rate (school enrolment, SE) that has been the only basis for distributing education support in the government formula, our simulator considers two more parameters: total school age population covered by each council (SAP) and resources needed to eradicate poverty gap in each council (GRN). We assume that the three indicators—SE, SAP and GRN—are equally important, so we assign them the same weight in the total resource pool,  $F_E$ . Based on our simulator on these three indicators, a third of  $F_E$  will be initially set aside for allocation to local councils on the basis of each of the three indicators: SE, SAP and GRN. Therefore, the simulator adjusts government allocation formula of Eq.(6.8) as follows:

$$F_{CE(adjusted)} = \frac{EN_C}{EN} \cdot \frac{1}{3} F_E + \frac{SAP_C}{SAP} \cdot \frac{1}{3} F_E + \frac{GRN_C}{GRN} \cdot \frac{1}{3} F_E, \dots \dots \dots 6.8$$

where  $F_{CE(adjusted)}$  is the simulated education funding entitlement of local council C out of total resource pool,  $F_E$ ; the term  $EN_C$  is school enrolment covered by council C;  $EN$  is total school enrolment in the country;  $SAP_C$  is school age population covered by council C;  $SAP$  is total school age population in the country;  $GRN_C$  is gap resources needed to eradicate poverty in the administrative jurisdiction of council C; and  $GRN$  is total gap resources needed nationally to eradicate poverty.

We use poverty gap differentials (GRN) in the simulator because it is fundamental to guiding poverty resource targeting in national budgets (Chapter Five, Section 5.1.2). The index does not only reflect gap in the economic ability of the household to afford food, but also nonfood needs including educational services. For the consideration of school age population differentials (SAP), we argue that education resources must not be perceived to benefit only those in school. A fraction can be devoted to ensuring that those out of school (but in the school age) are able to access education as a basic human right.

The simulator ideally suggests what the resource distribution should be. This shall enable us calculate the *variance* between its estimates and actual government allocations, which we will then interpret as one of the sensitivity measures. Another measure we shall estimate is a *sensitivity index* (SI), which we define as actual (government) spending divided by simulated spending. An SI greater than 1 (or 100 percent) shows councils that may have proportionately received resources over and above the average amount received by all 19 councils; those with lower ratios indicate shortfall in receipt.

A limitation of this simulation is the assumption that all three indicators—school enrolment, school age population, and poverty gap—have the same weight in the formula. But this assumption is only to test sensitivity of allocations based on a plausible and more effective alternative allocator or guide. The key point is that, allocations on the basis of school enrolment only could be misleading and we are attempting to investigate this.

We shall close the descriptive and nonparametric analyses here. The strength of this analytical phase lies in its potential to reveal general patterns of behaviour of the poverty data, and general circumstances underlying rural household welfare and initial policy direction. We are however mindful that this framework does not have the full capability to reveal in-depth

measure of association and causality among variables to better indicate to policymakers the areas of utmost importance for resource prioritisation and poverty alleviation. We need econometric analysis to complement the descriptive analysis, and to particularly address the other objectives of the research.

### **6.3 Econometric analytical framework**

This mainly addresses the third and fourth objectives of the research: (3) *To determine factors that are most significant towards reducing rural poverty in Sierra Leone*; (4) *To analyse different policy scenarios for rural poverty reduction in the years to come*. The results from descriptive and econometric analyses are combined to address the last research objective: (5) *To advise priority policy areas and framework for guiding decision-making that is consistent with sustainable poverty reduction and rural development*. (The 5<sup>th</sup> research objective is mainly addressed in Chapter Nine, based on results obtained from Seven & Eight, devoted to addressing objectives 1 to 4.)

Understanding rural household livelihood system is central in this research. We define this system as the concurrent undertaking of series of welfare investment decisions by a single household to maximise utility within the boundaries of its meagre resources with each decision affecting the other. And we have envisaged econometric analysis as more appropriate tool to explain such livelihood systems. We will start with presenting a conceptual framework of the econometric model.

#### **6.3.1 Conceptual framework of the estimation model**

Figure 6.1 presents a construct of the household livelihood system we aim at analysing, which comprises two panels. Panel (a) on the left hand side shows wellbeing dimensions as subject of our investigation: economic wellbeing (EW); education (ED); health (H); nutrition (N);

employment (EM); and migration (M). These are the dependent variables. Panel (b) on the right hand side shows policy choice indicators, highlighting determinants or predictors of household poverty and welfare. These are the independent variables whose effects on EW, ED, H, N, EM and M we seek to investigate. The six dependent variables determine themselves in the system, serving as endogenous regressors in addition to hypothesised effects from exogenous determinants.

Predominantly, we shall employ multidimensional approach to the econometric analysis. This is highly recommended in contemporary poverty scholarship because a single indicator such as income or consumption cannot be exhaustive measure of deprivation and quality of life. In multidimensional analysis, several components of deprivation are compounded to explain poverty on the premise that, “when poverty is conceptualised as the occurrence of various cumulative deprivations, it should be measured through the “aggregation” of the different hardship factors experienced by the individuals,” requiring construction of factor variables for such analysis (Coromaldi & Zoli 2007, p.4). We will principally borrow from Wagle’s framework, which conceptualises five broad household welfare dimensions for poverty analysis: economic wellbeing; capability; economic inclusion; political inclusion; and civic/cultural inclusion. We will also borrow from Shaffer’s conceptualisation of seven broad welfare dimensions referred to as poverty reducing “capitals”: economic capital; human capital; social capital; political capital; cultural capital; coercive capital; and natural capital. We will give consideration to the six welfare dimensions analysed by Coromaldi and Zoli that can broadly be grouped into economic wellbeing; health status; and housing conditions. And we will consider multidimensional poverty studies that analyse single composite variables, constructed with numerous observed deprivation indicators as undertaken by Sirven and others.



our research because education, health, nutrition and employment are four key decisions that compete for limited household resources; and all are outcome level welfare indicators among the ultimate welfare targets individuals strive to achieve. The framework of Wagle is tested in urban areas—Kathmandu in Nepal, and in the USA, necessitating construction of dense factors for analysing deprivations there—whereas we are analysing rural poverty situation in Sierra Leone. In a rural context as ours, even a single welfare indicator like level of income or consumption can substantially explain aggregate quality of life including chances of access to network resources and power at the local level. Which leads us to highlight that, some empirical tests have not found significant difference between use of single indicator proxies and composite indicators in analysing poverty (Bourguignon & Chakravarty 2003; Wagle 2010). Others have analysed a mix of single observed indicators and factor variables in their regressions (Sahn & Stifel 2003; Ssewanyana & Younger 2007). Drawing on the latter, and consistent with addressing key aspects of our research objectives, we plan to run a third level regression estimation involving observed single indicators and factor variables (see details in Chapter Eight, Section 8.12).

### **6.3.2 Specification of the model and estimation techniques**

We will conduct three-level regression estimations. The first level involves separate estimation of six equations, each representing analysis of one of the six poverty dimensions prioritised—economic wellbeing, education, health, nutrition, employment, and migration—using OLS method. These six dimensions are welfare decisions undertaken by the household. The second and third levels undertake nonrecursive simultaneous equation estimations using full and partial maximum likelihood methods, respectively. The first level estimation assumes that the household undertakes the six decisions independently, as assumed in most empirical works

reviewed (see Chapter Five). This assumption is relaxed in the second and third level estimations on conceptually more practical basis in respect to the high likelihood (for LDCs) of households undertaking such six welfare decisions concurrently and each affecting the other (Bardhan & Udry 1999; Sadoulet & de Janry 1995; among others).

We noted in Chapter Five that observed variables characterising household poverty are multitudinous and are generally categorised into individual/household level characteristics; community level characteristics; regional characteristics; and national level characteristics. We have hypothesised below that the six poverty dimensions we seek to study are a function of such numerous characteristics, which pose serious challenge in terms of choice of variables to include in regression estimation. Some researchers have had to run single equations with long and unwieldy list of variables, thereby risking generating spurious results. In order not to fall into such traps so as to avoid advising deceitful policies we will extensively utilise factor analysis in our estimations, in view of the fact that the relevant poverty indicators we initially identified for the analysis run up to more than 90 observed variables across the six equations (**Annex 1**).

Factor analysis aids researchers to initially identify appropriate variables for further analysis. It can be approached in two ways: (i) selecting the variables with the highest factor loadings as surrogate representatives of extracted factor dimensions, and using the selected (observed) variables in further analysis, such as regression estimation; or (ii) replacing the original set of (observed) variables with entirely new and small set of variables aggregated from the original set to form factor scores, which can then be used in the regression analysis. [See Hair et al. (2010, p. 94).] The first and second stages in our econometric analysis will extensively utilise factor analysis to reduce the data set and derive factor scores for regression estimation. Rummel's factor model in Eq.(5.16), Page 157 in Chapter Five provides the mathematical mechanism involved in our factor extraction process. This is detailed in the relevant analysis sections in Chapter Eight. We will move on to specifying the OLS equations.

### 6.3.3 Equation-by-equation estimation: the OLS approach

#### General specification of the economic wellbeing model

The economic wellbeing model is specified in compact form as follows.

$$ECO\_W_i^h = \alpha_i + \sum_i^n \beta_i X_i + \varepsilon_i \dots\dots\dots 6.9$$

The term  $ECO\_W_i^h$  is the dependent factor variable denoting economic wellbeing of the  $i^{\text{th}}$  household.  $X_i$  is a vector of explanatory factor variables. The terms  $\alpha_i$  and  $\beta_i$  are parameters to be estimated, while  $\varepsilon_i$  is error term. Based on the available survey data described below, and guided by the existing literature (Coromaldi & Zoli 2007; Sirven 2006; Wagle 2010; among others), we have initially hypothesised the following indicators as relevant measures of the economic wellbeing factor as dependent variable: *level of income received by the household head; level of its total expenditure; value of household asset; perception of household income adequacy reported by the head; the head's perception of welfare level based on own income; perception of welfare level relative to others; and changes in living standards over the previous years*. For discrete (qualitative) measures, a likert scale is used to programme responses such that the higher the scores or ratings on the scale the better the livelihood condition of the household on the measure (Amin & Ramayah 2010; Shah et al. 2005; Wagle 2010). (Annex 1 presents all hypothesised poverty measures and their definitions.)

The selection of independent variables involves two stages: The first hypothesises factor regressors (latent constructs) and the second hypothesises measures of each latent construct based on conceptual and empirical grounds (Hair et al. 2010). Thus, the factor regressors for the economic wellbeing model,  $X_i$ , and their measures are hypothesised as follows:



- FACTOR 1: EDUCATION ATTAINMENT (EDU):-The measures: highest grade level attained by the household head; household expenditure on child schooling; and whether household head ever went to school or not.
- FACTOR 2: OFF-FARM EMPLOYMENT (Off\_FaEM):-The measures: whether the household head engaged in off-farm employment as main source of income or not; whether household head worked for wage or not; whether household head engaged in business activity or not.
- FACTOR 3: MIGRATION (MIG):- The measures: whether household head ever migrated before for more than 12 months or not; whether household head ever migrated out of the country, within the country or not; and whether migrated before for various durations of time or not.
- FACTOR 4: DEMOGRAPHIC MANAGEMENT (DEMO):-The measures: size of household; number of children in the household; age of household head; sex of the household head; marital status of the head; and whether a woman interviewed in the household used family planning method or not.
- FACTOR 5: GEOGRAPHIC LOCATION (LOC):- The measures: whether the household resides in the west, south, east or northern region; whether located in a coastal district or not; and religious denomination of the household.
- FACTOR 6: PUBLIC SERVICE DELIVERY (PUB\_SERV):- The measures: local councils governance performance score; frequency of visits to communities by local councillors; local public knowledge of councillors; public perception of responsiveness to

community needs by councils; public satisfaction with local council budget spending; public level of trust in the operations of local councils; household participation in social and political associations; and whether the household receives assistance due to participation in social and political associations in hard times.

- **FACTOR 7: POST-CONFLICT MANAGEMENT (PC\_MGT):-** The measures: severity of household income losses during the civil war; length of period of interruption of household economic activities during the civil war; value of asset lost during the civil war; whether household experienced crime in the last five years; frequency of experiencing crime; perception of level of crime now compared to previous times; perception of level of violence in the community; perception of safety at night; and level of confidence in the state for protection.
- **FACTOR 8: AGRICULTURAL TRANSFORMATION (AGR\_TRA):-** The measures: size of land owned by the household head; types of land entitlement; whether household head has right to trade land in the market; whether household head hires labour on the farm; whether fertiliser and other farm chemicals are used; whether uses improved seeds; whether uses irrigation facilities; whether uses mechanical cultivation; whether uses storage facilities; and labour cost incurred in processing farm produce.
- **FACTOR 9: MACROECONOMIC SUPPORT (MACRO):-** The measures: central government allocations (transfers) to local councils towards agricultural development programmes; central government transfers to local councils towards education programmes; central government transfers to local councils towards health programmes;

amount of credit received by households; regional food price index; and regional nonfood price index. (See Annexes 1&2.)

The support literature for the choice of these determinants include Acemoglu and Robinson (2012); Carter and Barrett (2008); Collier (2007); Estudillo et al. (2009); GoSL (2005a; 2009; 2013a); Ostuka et al. (2009); Sachs (2005); Stichter (1985); World Bank (2008).

All nine factors are expected to positively impact on household economic wellbeing. Highly educated households (EDU) are expected to have higher chances of accessing off-farm jobs with higher factor returns than incomes earned from farming, and hence are expected to have better economic status in general. Off-farm employment (Off\_FaEM) is expected to positively impact on economic wellbeing in terms of expected differential effect between engaging in wage employment or other income generating activities and engaging in farming (Otsuka et al. 2009). With regard to demographic variable (DEMO), it is expected that well managed household demographics will increase the chances of households becoming economically healthy through reduced household density, having heads and breadwinners of age, and controlled fertility rates among other measures. The geographic location factor (LOC) is expected to positively impact on economic wellbeing because households located in regions with better socioeconomic services and natural resource endowment are expected to be better-off.

We expect that the public service delivery factor (PUB\_SERV) will positively impact on economic wellbeing; households in localities where public service delivery is rated high are expected to have improved economic status. The post-conflict management factor (PC\_MGT) is also crucial to explaining economic wellbeing; security matters for economic activity and improving one's economic status.

A successful agrarian transformation (AGR\_TRA) through intensified agriculture and reformation of land entitlements is expected to positively impact on economic wellbeing through



*not.* (See Otsuka et al. 2009, among others.)

We hypothesise nine independent factor variables as predictors of education status. These are: Economic Wellbeing; Off-farm Employment; Health Status; Demographic Management; Community Infrastructure; Mothers' Capacity; Public Service Delivery; Agricultural Transformation; and Macroeconomic Support. Five of these factors have been chosen as determinants of economic wellbeing, therefore have the same hypothesised factor measures here as above. These are: Off-farm Employment; Demographic Management; Public Service Delivery; Agricultural Transformation; and Macroeconomic Support. The measures of the economic wellbeing factor which is becoming a determinant of education here have also been hypothesised earlier and shall remain the same in the education regression. We therefore only present as follows the hypothesised measures of Health Status, Community Infrastructure, and Mothers' Capacity factors.

- FACTOR 7: HEALTH STATUS (HLTH):-The measures: household expenditure on healthcare; ratio of children alive to total number born to a respondent woman; whether pregnancies ever conceived by a woman ended in live birth or not; and number of pregnancies ending in live birth.
- FACTOR 8: COMMUNITY INFRASTRUCTURE (COM\_INF):-The measures: time taken by household to access primary school; time taken by household to access secondary school; time taken to access health clinic; time taken to access hospital; time taken to access all seasons roads; time taken to access public transport; time taken to access drinking water source; and time taken to access market.
- FACTOR 9: MOTHERS' CAPACITY (MOTH\_CAP):- The measures: marital age (age at first marriage); age at first pregnancy; age at first birth; whether spouse present in the

household or not; whether father was alive; whether mother was alive; whether mother was in the household; and mothers' level of education. (See Annexes 1&2.)

The support literature for the choice of these determinants include Banerjee and Duflo (2011); Binglong Li et al. (2009); Cherdchuchai et al. (2009); Cunguara and Kajisa (2009); Grossman (2000); Hossain et al. (2009); Moulton (2001); Mulkeen (2005); Otsuka et al. (2009); World Bank (2008).

All nine factors are expected to positively affect education status. Economic wellbeing (ECO\_W) (measured by income, level of expenditure, asset and others) demonstrates the degree of one's purchasing power and command over goods and services including educational commodities. The higher the scores on this factor the more the chances of attaining higher level of education. We expect off-farm employment factor to positively affect education along similar lines, in terms of increasing chances of yielding higher returns to factor input than earned from farming. This is expected to leave households with more resources to invest in key human capital sectors including education but on the presumption that households have minimum level of education and skills as prerequisites for active participation in the labour market.

The choice of health (HLTH) as determinant of education borrows especially from the human capital investment models discussed in Grossman (2000), among others. In the life cycle consumption theory, desired yield from education investment is expected to be reinforced by concomitant investment in health to increase the ability to acquire knowledge in school and participate on the labour market (see Chapter Five, Sections 5.2.2 & 5.3.8). The demographic management factor, as argued above, is critical to ensuring release of resources necessary to invest in child development and education through well managed household size and related measures. We expect the community infrastructure factor (COM\_INF) to positively impact on education through narrowing distance to school (increasing supply of school facilities) on the



our study, we have hypothesised health factor measures that reflect the health situation of all persons in the household irrespective of previous health status (Wagle 2010). We have therefore hypothesised the following measures of the health factor as a dependent variable: *annual expenditure on health; whether pregnancies of women interviewed ended in live birth or not; and ratio of children alive to those ever born per woman interviewed.*

We hypothesise seven independent factor variables as predictors of health status. These are: Economic Wellbeing; Education Status; Off-farm Employment; Demographic Management; Community Infrastructure; Public Service Delivery; and Macroeconomic Support. All seven factors have been chosen as determinants in the economic wellbeing and education regressions specified above; therefore they have the same hypothesised factor measures as above. The support literature for the choice of these determinants include Alderman et al. (2001); Garenne and Gakusi (2006); Kasirye et al. (2006); Kunst et al. (2005); Lindelow (2003); Mackinnon (1995); and Rutstein (2000).

The seven factors hypothesised are expected to positively affect health status. As noted earlier, economic wellbeing demonstrates the degree of purchasing power over goods and services including health commodities. Therefore, the higher the scores on the economic wellbeing factor the more the chances of achieving improved health status. The more educated an individual is, the more access to information on the value of health for welfare he or she is expected to have, and the more it is expected that they will spend more on healthcare. Moreover, education increases chances of accessing off-farm jobs with higher returns, and this is expected to scale up household purchasing power over goods and services including health inputs. This explains why off-farm employment factor is expected to directly and positively affect health on presumption that participants in off-farm sector have minimum education and skills.





Infrastructure; Housing and the Environment; Mothers' Capacity; Preventive Healthcare; Public Service Delivery; and Macroeconomic Support. Seven of these factors have been chosen as determinants in the economic wellbeing, education, and health regressions specified above, therefore they have the same hypothesised factor measures as above. We proceed next to hypothesising measures of the two new independent factor variables: Housing and the Environment; and Preventive Healthcare.

- **FACTOR 8: HOUSING AND THE ENVIRONMENT (HOS\_ENV):-**The hypothesised measures are: number of rooms in the household; whether one household shares room(s) with another; construction materials used for the outside walls; material used for floor; material used for roofing; source of cooking energy; source of energy for lighting; refuse disposal methods; source of drinking water; and types of toilet facility.
- **FACTOR 9: PREVENTIVE HEALTHCARE (PREV\_HLTH):-** The hypothesised measures are: whether water is treated before drinking; whether children under-five years in the household were vaccinated before or not; children having vaccination book; whether children received nutritional supplement and growth monitoring or not; and whether children received full course of vaccination. [See Annexes 1&2.]

The support literature for the choice of these determinants include Alderman et al. (2001); Garenne and Gakusi (2006); Howling et al. (2007); Kunst et al. (2005); Mackinnon (1995); Rutstein (2000); Sachs (2005); UNICEF (2004); and World Bank (2011).

All nine factors hypothesised are expected to positively affect nutrition. Increased economic wellbeing is expected to increase household purchasing power over goods and services including nutrition related commodities, such as micronutrients and balanced diet. Education and

mothers' capacity factors are pivotal to maintaining minimum nutritional standards in low-income communities in terms of exploring cost-effective dietary alternative as argued in Babu (2000). Mothers' capacity is critical here for childcare.

On similar lines as related to its effects on health and education, the demographic factor is crucial to releasing resources necessary to invest in child nutrition through containment of household size and related measures. We also expect the infrastructure factor to positively impact on nutrition through narrowing distance to health facilities, which are crucial to the supply of nutritional supplement, and distance to education facilities as source of information and knowledge on good nutritional and related behavioural practices for normal child growth and care, and overall nutritional status of the household. Other community infrastructural measures, such as improved access to water and good road network, are expected to integratively contribute to improving household nutritional standards.

Improved housing conditions and the environment (HOS\_ENV) through construction of appropriate dwelling structures with adequate sanitary facilities and sources of domestic energy are extremely crucial to the nutrition status of the household. Mud-floored and mud-walled houses generate large amount of dust, exposing inhabitants to respiratory infections such as bronchitis with children at the highest risk; related effects can be derived from excessive use of fuelwood for domestic energy. Improving preventive healthcare (PREV\_HLTH) is also essential for improved household nutrition in light of access to improved sources of portable water, immunisation services, and constant monitoring of child growth. And the last two factors—public service delivery and macroeconomic support—are expected to affect nutrition on similar lines as related to effects on economic wellbeing, education, and health through increased



Public Service Delivery; Post-Conflict Management; Agricultural Transformation; and Macroeconomic Support. These factors have all been hypothesised as determinants in at least one of the above specified models of economic wellbeing, education, health, and nutrition; therefore their measures remain the same as in the specifications above. The support literature for the choice of these determinants includes Bezabih et al. (2010); Collier (2007); Kuma et al. (2011); Matsumoto et al. 2009; Sachs (2005); Takahashi and Otsuka (2009); Wagle (2010); and World Bank (2008).

All seven factors hypothesised are expected to positively affect the employment factor. Households with high education are better placed to access nonfarm jobs with higher returns than farming could offer. Migration is also expected to provide reasonable latitude for accessing nonfarm jobs with higher returns than earned from farming on the presumption that migrants have minimum level of education and skills necessary to maximise nonfarm incomes.

Well managed demographics in terms of household size and related measures are expected to impact positively on employment. Among other things, this is expected to increase savings and investment in education and job search, leading to increased chances of better employment. The geographic factor is expected to positively impact on employment; opportunities for off-farm jobs are expected to be higher for households located in regions with better socioeconomic services and natural resource endowment, such as minerals.

The factors—public service delivery, agricultural transformation, and macroeconomic support—are expected to engender increased off-farm employment opportunity through increased development financing and stimulation of local economic activities. Post-conflict management factor is expected to positively impact on employment through consolidating peace



Management; Agricultural Transformation; and Macroeconomic Support. Two are expected to positively affect it: Education, and Off-Farm Employment. Especially in the short-run, we expect improved economic status of the household to halt or slow down migration decisions, more so if adequate support is provided towards agriculture and or households are located in regions with better socioeconomic services and natural endowments like minerals. This can be complemented by continued peace and security, general increase in development financing in the rural areas, and increased efficiency and accountability in the service delivery chain. Increased education status and off-farm employment opportunities are expected to induce rural households to migrate.

#### **6.3.4 Summary of OLS model specification, limitation and next level estimation**

It can be deduced from the specifications above that there are underlying reciprocal relationships among the hypothesised factors and measures across the six OLS models. The dependent variables—economic wellbeing, education, health, nutrition, employment and migration—appear to be predicting each other, besides effects coming from the exogenous factors. This means endogeneity is highly expected in the OLS estimates, and if present can affect reliability of parameter estimates. The specifications also depict cross-equation error correlations as another econometric problem. Such error relationships are common when estimating series of equations based on the same household data and can lead to inefficient estimates if present and not corrected (Cameron & Trivedi 2010; Zellner 1962).

To address the case of endogeneity, studies have employed two-stage least squares (2SLS) or instrumental variables (Dewenter & Westerman 2005; Grossman 2000; Kim 2009), but this is not known for addressing cross-equation error correlations. To correct for cross-equation error correlations a popularly employed framework is the seemingly unrelated

regression (SUR), which is an extended generalised least squares method (Cameron & Trivedi 2010; Pindyck & Rubinfeld 1998; Zellner 1962). But SUR is not known for correcting endogeneity either. So, to treat both deficits, some researchers have employed three-stage least squares (3SLS), combining 2SLS and SUR (Bangura & Kim 2013; Cameron & Tenedi 2010; Kim 2009; Pindyck & Rubinfeld 1998), while others applied structural equation modelling or SEM, which also includes attributes of 2SLS and SUR (Drukker 2011; Wagle 2010). The SEM has additional advantage in terms of capability to concurrently conduct factor analysis (having built-in latent variable measurement part) and simultaneous regression estimation (the structural part) (Drukker 2011; Hair et al. 2010; Wagle 2010).

Given the nature of our research, dealing with numerous poverty variables with noted problems of simultaneity and cross-equation error correlations, we have preferred the SEM for the next (second) level estimation to triangulate the analysis and complement the OLS estimations, to be conducted within a nonrecursive framework. Another decisive advantage of the SEM over other system estimation methods for our research is the relative ease with which it aids our postestimation policy analysis; it conveniently produces direct, indirect and total (net) effects of predictors and it checks for identification problem in the system automatically. As maximum likelihood estimation (MLE) method, a key challenge the SEM poses is getting initial values for the iteration process and reaching a convergence solution.<sup>30</sup> We shall estimate the SEM using STATA Econometric Package Version 12 and test its efficacy before conducting policy experiments and simulation as a preferred model.

Finally, we shall undertake a two-stage probit least squares (2SPLS) estimation to complement the SEM model in addressing key aspect of our research objectives. The 2SPLS is also (by default) nonrecursive, but it is limited to two-equation simultaneous equation modelling.

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<sup>30</sup> [http://www.ats.ucla.edu/stat/stata/faq/efa\\_cfa.htm](http://www.ats.ucla.edu/stat/stata/faq/efa_cfa.htm) (visited 30<sup>th</sup> May, 2013).



It is a partial maximum likelihood method with a binary probit dependent variable component and a continuous dependent variable component (Alvarez & Glasgow 2000; Keshk 2003). It permits us to directly predict the probabilities of reducing rural poverty headcount with a set of observed policy choice variables in a reciprocal causation system as in the SEM. It produces estimates of poverty headcount ratio and enables us predict the minimum financial investment needed to eradicate poverty and the investment needed in specific policy areas in the process. We will compare these estimates with investment needs predicted from the Foster-Greer-Thorbecke nonparametric approach. While we spare details on the application of the SEM and 2SPLS for Chapter Eight, we will briefly specify their compact forms in the next sections.

### **6.3.5 Specification of the structural equation model (SEM)**

Annex 2 holds the generally hypothesised structure of the SEM model, combining all factors and measures that have been specified in the six OLS equations above and described in Annex 1. Annex 2 clearly shows the interactions among all factors and measures across the six equations specified earlier. It reveals the interdependency among the poverty dimensions studied and the implication this has for policy at macro and micro level. Any change in one measure or factor in any sector is expected to affect the entire system (the six poverty equations) directly or indirectly. The six OLS equations above are re-specified in the equation system (6.15) below in a nonrecursive simultaneous equation framework, depicting the structural part of the SEM model in Annex 2.

$$\begin{aligned}
EW_i^h &= \alpha_i + \sum_i^n \beta_i X_i + \varepsilon_i \\
ED_i^h &= \theta_i + \sum_i^n \sigma_i \gamma_i + \epsilon_i \\
H_t^h &= \Delta_t + \sum_i^n \rho_i \Phi_i + \epsilon_i \\
N_i^h &= \pi_i + \sum_i^n \cap_i C_i + \tau_i \\
EM_i^h &= \theta_i + \sum_i^n \Pi_i L_i + \omega_i \\
M_i^h &= \Delta_i + \sum_i^n \Phi_i \Psi_i + v_i
\end{aligned}
\tag{6.15}$$

The variables  $EW_i^h$ ,  $ED_i^h$ ,  $H_t^h$ ,  $N_i^h$ ,  $EM_i^h$  and  $M_i^h$  are the dependent factor variables, respectively denoting household economic wellbeing; education; health; nutrition; employment; and migration. The terms  $X_i$ ,  $\gamma_i$ ,  $\Phi_i$ ,  $C_i$ ,  $L_i$  and  $\Psi_i$  are vectors of independent factor variables. Each equation in the system includes dependent variables from other equations as explanatory variables. Thus, the vectors of independent variables shall include both exogenous and endogenous regressors. It was clear in the separate equation specifications that, for instance, education was in the economic wellbeing equation and vice versa; health was in the education equation and vice versa; and so on (see Annex 2). The terms  $\varepsilon_i$ ,  $\epsilon_i$ ,  $\epsilon_i$ ,  $\tau_i$ ,  $\omega_i$  and  $v_i$  are errors. The rest of the other terms are coefficient parameters to be estimated. The final structural specification of this model shall be determined in Chapter Eight with the aid of factor analysis. Details on the identification of the system equations and policy simulation are also reserved for Chapter Eight.

### 6.3.6 Specification of the two-stage probit least squares (2SPLS) model

The general model is specified in equation system (6.16), where  $P_o^h$  is poverty headcount ratio to be predicted (the binary endogenous variable).  $C_i^h$  is continuous endogenous variable, a policy choice variable to be determined through the OLS and SEM estimation;  $C_i^h$  shall be a lead determinant of poverty headcount in addition to other choice (exogenous) variables,  $X_i$  and  $\gamma_i$ . In other words,  $X_i$  shall contain  $C_i^h$ , and  $\gamma_i$  shall contain  $P_o^h$ , making the system nonrecursive.

$$\begin{aligned} P_o^h &= \alpha_i + \sum_i^n \beta_i X_i + \varepsilon_i \\ C_i^h &= \theta_i + \sum_i^n \sigma_i \gamma_i + \epsilon_i \end{aligned} \quad 6.16$$

The terms  $\alpha_i$  and  $\theta_i$  are parameters to be estimated. The disturbance (error) terms are  $\varepsilon_i$  and  $\epsilon_i$  in the system.

## 6.4 Limitation of the analytical techniques

### Econometric estimations

We initially envisaged a range of estimation techniques including ordinary least squares (OLS); logit models; probit models; 2-stage least squares (2SLS); seemingly unrelated regression (SUR); 3-stage least squares (3SLS); structural (simultaneous) equation modelling (SEM); 2-stage probit least squares (2SPLS); panel data modelling; and computable general equilibrium (CGE) models. However, we have adopted (i) models that are consistent with the research questions and objectives; (ii) those that are robust to overcome obvious limitations in previous studies; and (iii) those for which data is available. We have discussed the limitation of most of these techniques above, except application of panel data analysis and CGE models. Panel data was initially envisaged to track time dynamics of policy effects based on the two living standards

surveys of 2003 and 2011. But we could not advise running panel regression because the two surveys were based on different sampling frames with long interval—the 2003 was based on 1985 census frame while the 2011 was based on 2004 frame. We shall however carry out descriptive analysis to gauge the time dimension of policy effects comparing changes in selected indicators between 2003 and 2011. The latest survey (2011) is used to undertake econometric analysis of determinants of rural poverty. Regarding CGE models, these could have been an essential tool in our research but there is data constraint for Sierra Leone on this approach: there are no input-output tables for the country to construct social accounting matrix for calibration of parameters and variables to run a CGE [see Hosoe, Gasawa & Hashimoto (2010)]. However, the SEM model we plan using will be enough to serve the function for which CGE models were envisaged.

#### General limitation of regression and factor analyses

Regression techniques have continued to remain significant tool in advising policy. Since our study involves estimation of cause-effect relationships among variables, a lead technique employed to carry this out is regression analysis. Descriptive analysis provides general panorama of patterns of behaviour among variables but can hardly establish precise sense of direction as to the source of variation among variables; regression has this advantage and is central to our research in terms of policy programming and targeting. But regression also has its limitations. Sometimes it reveals only superficial cause of effect, not the root cause. For instance, lack of education is a pivotal determinant of poverty but may not be the root cause of poverty. It is crucial to understand why there is lack of education for better policy [see related argument in World Bank (2005)]. This is where detailed contextual and descriptive analysis can serve huge complementary function as part of our methods. Simultaneous equation approach to regression

analysis can also enhance the understanding of cause and effect in data through determining direct, indirect and nets effects, and we shall also employ this approach.

Another weakness of regression is the inability to incorporate all relevant variables in the estimation, leaving the crucial challenge of choosing the most relevant ones. We will be able to reduce the estimation risks underlying this context through application of factor analysis that ensures both parsimony and incorporation of reasonable number of decision variables. But factor analysis has its limitation as well. We acknowledge that factor scores are the “best method for complete data reduction...[and] by default [are] orthogonal, and can avoid complications caused by multicollinearity” (Hair et al. 2010, p.128). However, the interpretation of the scores can be less appealing in terms of directing policies since factor variables are multiples (or composite) of sub (observed) variables; observed variables may present more distinct policy direction than the broad, general direction provided by factor variables [see Hair et al. (2010), for extended discussion]. However, the various loadings on factors can provide sufficient indication regarding observed variables that have the greatest influence on a factor variable involved in the regression analysis, and in this way, distinct policies can still be pinpointed.

## **6.5 Data sources**

The study utilises two main survey data sets: the Sierra Leone Integrated Household Surveys of 2003 and 2011 (SLIHS2003 & SLIHS2011). These surveys are the most comprehensive living standards measurement surveys feeding into the country’s development policy programming and monitoring of national poverty situation. They are conducted with external assistance especially from the World Bank and coordinated by the national statistics office, Statistics Sierra Leone (SSL). They enable comparison of living standards between Sierra Leone and other developing countries (Deaton & Zaidi 2002; World Bank 2005). They are 12-month cycle surveys to capture seasonal dynamics in household welfare. The SLIHS2003 was conducted between April 2003

and March 2004, while the SLIHS2011 was conducted between January and December 2011. The national sample of SLIHS2011 is 6,832 households, close to doubling the size of SLIHS2003 of 3,720 households. In 2011, a total of 4,351 rural households were enumerated compared to 2,400 in 2003. In the urban areas, 2,481 households were enumerated in 2011 compared to 1,320 households in 2003. Table 6.3 shows the distribution of the sample households by district and region. These surveys are comprehensive in the coverage of welfare topics, including the following modules: education; health; employment and time use; housing; energy; water; agriculture; income and expenditure; off-farm activities; remittances; savings and credit; asset; migration; nutrition; subjective poverty; participation; survival strategies; and postwar effects such as crimes, security and local conflicts. The comprehensiveness of scope of coverage is quite in response to the limitation of the traditional orthodoxy of understanding poverty only on the basis of income and expenditure. We cull additional data from other sources (including author's field interviews) to fill information gaps in these surveys. Additional secondary data are sourced from:

- Sierra Leone's Demographic and Health Survey 2008 (DHS 2008), funded by the United Nations Children's Fund (UNICEF) and other donors, and coordinated by the Ministry of Health and Sanitation and SSL;
- Sierra Leone's Multiple Indicator Cluster Survey 2010 (MICS4) funded by UNICEF and other donors, and coordinated by UNICEF and SSL;
- Sierra Leone's Comprehensive Local Government Performance Assessment Survey 2011 (GLOGPAS2011) and National Service Delivery Perception Survey 2010, funded by the World Bank, and coordinated by the Ministry of Local Government and Community Development;
- Annual Government Grant Allocation to Local Councils coordinated by the Ministry of Finance and Economic Development;

- Annual National Budget Accounts published by the Ministry of Finance and Economic Development; and
- Food Price Data collected by SSL.

These additional sources shall be elaborated on in the relevant empirical chapters ahead, where we shall discuss the questionnaire administered by the author to gauge expert perception on the rural poverty situation in Sierra Leone.

## **6.6 Summary of chapter**

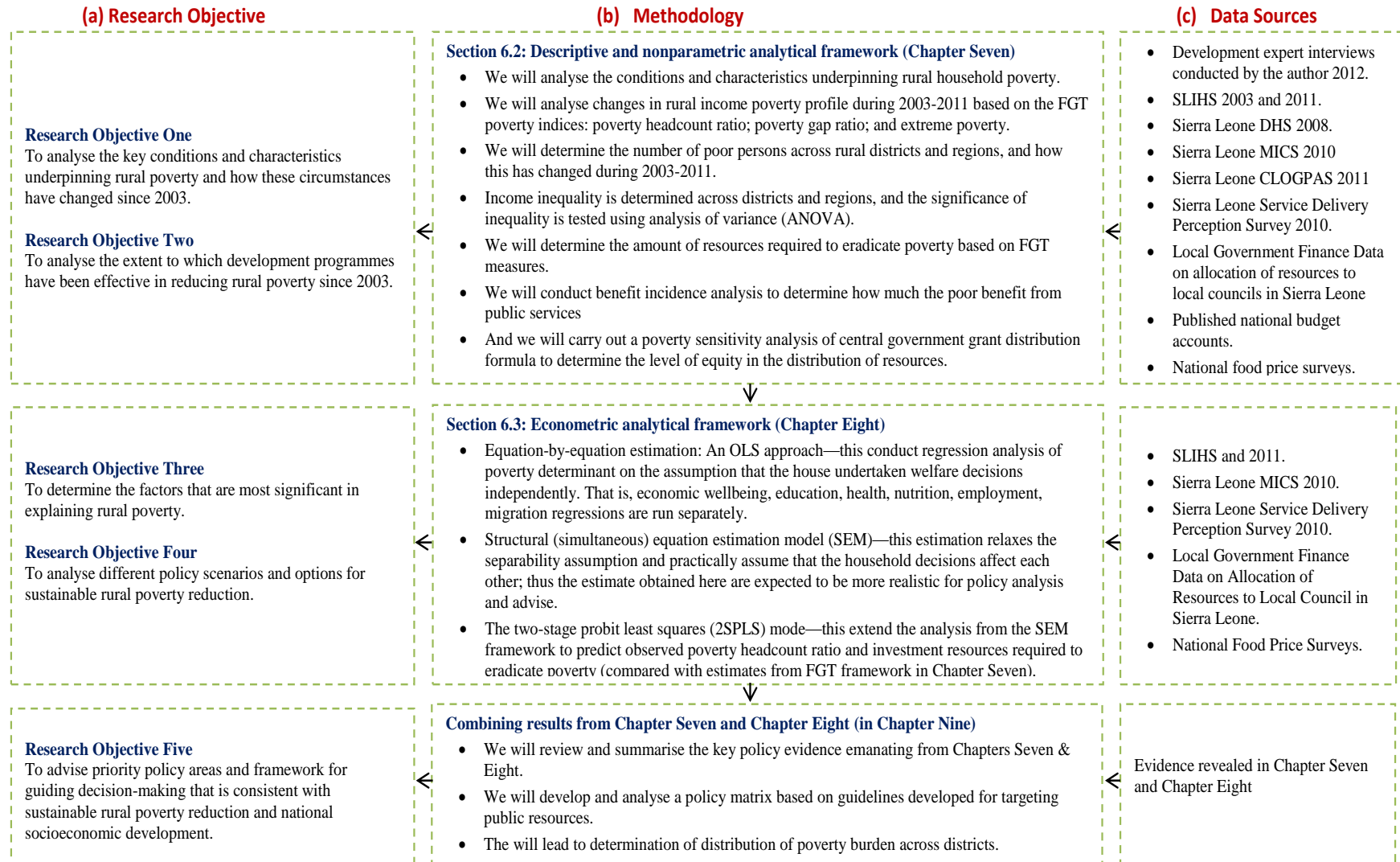
Our research approach has been informed by various theoretical foundations and previous empirical studies. It takes into consideration obvious shortcomings in the literature. For Sierra Leone, previous studies have conducted analyses on multi-topic poverty issues using parametric and nonparametric techniques, but none of those reviewed undertook simultaneous equation estimations to investigate the interaction among core household welfare decisions for better policy. Our research is unique in this respect, in that we will additionally undertake nonrecursive simultaneous equation estimation of rural welfare determinants, and conduct postestimation policy analysis. We will use both parametric and nonparametric techniques to predict resources that will be required to alleviate poverty. Furthermore, no other study is known to have critically undertaken an appraisal of government resource allocation formulas as a crucial dimension of poverty as this study has done. Poverty reduction is sensitive to spatial allocation of public resources vis-à-vis poverty differential needs. Figure 6.2 summarises the methodologies we have planned to use, showing their relationship with objectives of the research, and depicting various sources of data for the methods employed. We will now move on to the next chapter to commence the analysis.

**Table 6.3: Survey samples by district & region, SLIHS 2003 & 2011**

District	Region								Total	
	South		East		North		West			
	2003	2011	2003	2011	2003	2011	2003	2011	2003	2011
Bo	325	626	-	-	-	-	-	-	325	626
Bonthe	195	250	-	-	-	-	-	-	195	250
Moyamba	295	374	-	-	-	-	-	-	295	374
Pujehun	190	292	-	-	-	-	-	-	190	292
Kailahun	-	-	245	538	-	-	-	-	245	538
Kenema	-	-	385	734	-	-	-	-	385	734
Kono	-	-	355	489	-	-	-	-	355	489
Bombali	-	-	-	-	265	517	-	-	265	517
Kambia	-	-	-	-	190	306	-	-	190	306
Koinadugu	-	-	-	-	255	360	-	-	255	360
Port Loko	-	-	-	-	335	544	-	-	335	544
Tonkolili	-	-	-	-	220	435	-	-	220	435
West (Urban)	-	-	-	-	-	-	400	1,115	400	1,115
West (Rural)	-	-	-	-	-	-	65	252	65	252
<b>Total</b>	<b>1,005</b>	<b>1,542</b>	<b>985</b>	<b>1,760</b>	<b>1,265</b>	<b>2,162</b>	<b>465</b>	<b>1,367</b>	<b>3,720</b>	<b>6,832</b>
<b>Rural</b>									<b>2,400</b>	<b>4,351</b>
<b>Urban</b>									<b>1320</b>	<b>2,481</b>

*Source:* Sierra Leone Integrated Household Surveys 2003 & 2011.





**Figure 6.2: Summary of research methods, linked to objectives and data sources.**

## Chapter Seven

### **Household Conditions and Income Poverty in Rural Sierra Leone** *A Descriptive and Nonparametric Analysis*

This chapter is divided into two main parts. Part One analyses household conditions and characteristics hypothesised as critical factors leading to manifestation of poverty. It presents current situation as obtained from the 2011 integrated household survey, and compares this with the context obtained from the 2003 survey. Part Two presents rural income poverty profile and how this has changed since 2003. It looks at changes in income poverty incidence (headcount index), income poverty gap, extreme poverty, and distribution of these indices across districts and regions. It presents statistics on income inequality, benefit incidence of select policy areas and poverty sensitivity of government resource allocation across local councils. The first and second research objectives are mainly addressed in this chapter. Detailed interpretation of all results is done in Chapter Nine.

*Research Objective 1: To analyse the key conditions and characteristics underpinning rural poverty and how these have changed since 2003.*

*Research Objective 2: To analyse the extent to which development programmes have been effective in reducing rural poverty since 2003.*

#### **PART ONE: CONDITIONS AND CHARACTERISTICS OF THE RURAL HOUSEHOLD**

Specifically described here are statistics on household structure and social system; their economic and livelihood contexts; capability issues such as level of education attainment, healthcare, housing, infrastructure and nutrition; coping and survival strategies in hard times including migration; and effectiveness of public service delivery to the communities.

## **7.1 Current household structure and social system**

### **7.1.1 Household composition and size**

As revealed in the 2011 survey, rural households in Sierra Leone comprise some or all of the following membership: household head; spouse; own children; step children; grand children; siblings of head or spouse; nieces and nephews; brothers and sisters in-law; parents; and parents in-law (Table 7.1). The share of nuclear families where the household comprises only the head, spouse and own children is estimated at 52 percent, against 48 percent for extended family cases.<sup>31</sup> Marital status in the households is not only limited to the head, spouse or own children; in a proportion of cases, other members also exercise marital (nuptial) status under the same roof and headship; this signals concern about intensity of burden on the head and the negative implication it may have for members' welfare especially within income-poor households.

The average household size is 5.75 persons (Table 7.2). About 48 percent of sample cases have six or more persons. There are instances of household membership running up to 10-26 persons (8.65 percent). Single-person ones are estimated at 1.6 percent, while the age of the head in all cases ranges from 14 to 99 years.

The foregoing landscape suggests high probability of the average household becoming poor or poorer in light of the large membership revealed by the data. This is more challenging to the very low income households, which can be compelled to distribute resources thinly across members and may encounter underinvestment in key poverty reducing needs such as education and health.

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<sup>31</sup> From Table 7.1, we estimate the nuclear family rate by taking the sum of observations of the head, spouse and own children as a percentage of total observations recorded; and we estimate the extended family rate as 100 percent less the nuclear family rate.

**Table 7.1: Share of household members by membership type 2011**

Household Position	Member	Obs.		Nuptiality	
		#	%	#	%
1	Head	4,376	17.62	3,883	88.73
2	Spouse	4,308	17.35	4,053	94.08
3	Own Child	4,125	16.61	2,896	70.21
4	Step Child	3,661	14.74	2,053	56.08
5	Grand Child	2,962	11.93	1,389	46.89
6	Siblings of Head/Spouse	2,104	8.47	845	40.16
7	Niece, Nephew	1,403	5.65	539	38.42
8	Brother, Sister in Law	928	3.74	295	31.79
9	Parents	575	2.32	182	31.65
10	Parents in Law	387	1.56	121	31.27
Total		24,829	100.00	16,256	65.47
Ratio of nuclear family		52%			
Ratio of nuclear family		48%			

**Table 7.2: Share of households by size 2011**

Household Size	Obs.	%	Cumulative %
1	69	1.60	1.60
2	170	3.93	5.53
3	459	10.62	16.15
4	684	15.83	31.98
5	853	19.74	51.72
6	693	16.04	67.76
7	477	11.04	78.80
8	352	8.15	86.95
9	190	4.40	91.34
10-26	374	8.65	100.00
Mean size =5.75	4,321	100	-
Age range of head	14-99		

*Source:* Author's construct based on SLIHS2011.

### 7.1.2 Age, sex and dependency ratio

We have more persons in the lower age brackets than atop in the households (Table 7.3). Persons less than 15 years currently share 41.83 percent in the total sample. The working age (15-64 years) shares 53.49 percent, while the 65-and-above shares 4.68 percent in the sample. The

dependency ratio is very close to unity at 0.87 per economically active person. The share of females in the economically active cohort is estimated at 51 percent. A large share of children amidst low incomes and bloated household sizes would lead to poor child growth and development, restrict their effective participation in school, and increase chances of child labour.

**Table 7.3: Share of household members by age & sex, & dependency ratio 2011**

Age cohort	Sex				Total		Dependency Ratio
	Male		Female				
	#	%	#	%	#	%	
Below 15	5,481	44.79	4,906	38.96	10,387	41.83	0.87
15-64	6,148	50.24	7,133	56.64	13,281	53.49	
65 Above	608	4.97	554	4.40	1,162	4.68	
Total	12,237	100.00	12,593	100.00	24,830	100.00	

*Source:* Author's construct based on SLIHS2011.

### 7.1.3 Religion and marriage

The share of Muslim population in the rural sector is 79.0 percent compared to 18.0 percent for Christians, and 3.0 percent for other denominations (Table 7.4). The rates of monogamous marriages to Muslims and Christians are estimated at 75 and 85 percent, compared to 25 and 15 percent for polygamy, respectively. In absolute terms, these rates produce about 1,892 polygamous Muslims out of marital sample of 7,461 compared to 231 polygamous Christians out of sample of 1,587. This landscape can be considered as fertile for population multiplication and heightening of burden on breadwinners with children at the highest risk.

Early marriage is internationally proclaimed as a chief vector of poverty (UNFPA 2012), denying children opportunity to acquire the human capital necessary to live decent and well meaning lives at adulthood. We report the rate of early marriage in rural Sierra Leone based on the UNFPA definition: the percentage of women aged 20-24 that entered into marriage or related

union before age 18. This rate is calculated for rural Sierra Leone at 47 percent based on SLIHS2011 (Table 7.5), and it is worrying in regard to health and other poverty related hazards.

**Table 7.4: Share of household marriages by type and religion 2011**

Religion	Marriages					
	Type				Total	
	Monogamy		Polygyny			
	Obs.	%	Obs.	%	Obs.	%
Christians	1356	85.44	231	14.56	1587	17.54
Muslim	5,569	74.64	1,892	25.36	7461	82.46
Others	200	71.43	80	28.57	280	3.00
Total	6925	76.54	2123	23.46	9048	100.00

**Table 7.5: Marriage/related union age for women 20-24 years old 2011**

Age	Observation	%
Less 18	433	46.91
18 above	490	53.09
Total	923	100.00

*Source:* Author's construct based on SLIHS2011.

## 7.2 Household economic structure

### 7.2.1 Occupation

The share of households deriving most of their income from farming is currently estimated at 79 percent, and subsistence cropping, for which rice cultivation is dominant, is estimated at 55 percent (Table 7.6).<sup>32</sup> The mining sector plays a key role in the macroeconomy as the main export revenue earner for the state, but rural households appear generally less dependent on it.

The share of persons less than 15 years in farming (incidence of child labour) is currently

<sup>32</sup> Rice is the staple food of Sierra Leone with generally no close substitute; guinea corn, cassava and potatoes serve as moderate substitutes in some communities, and others only in hard economic times as survival strategy. This makes rice expensive and key in the country's balance of payment accounts and general macroeconomic stability (Bangura 2002; GoSL 2009a; 2012a).

14 percent; those in the age cohort 15-34 years in this sector are estimated at 53 percent, while older cohort (35 years and above) are estimated at 76 percent (Table 7.7). Most of the less than 15 years are currently mainly engaged in the nonfarm sector estimated at a rate of 86.10 percent, compared to 43 percent for the 15-34 year olds, and 24 percent for 35 years and above. The employed population is virtually equally distributed across these three age brackets—the three age brackets record employment sizes of 6905, 6927 and 6824, respectively. Both males and females have similar shares in farming as main source of livelihood at rates 48 and 49 percent, respectively; their shares are the same in the nonfarm sector at 51 percent. The employed female sample population is largest at 10,553 compared to the male population at 10,103.

**Table 7.6: Share of household heads by main occupation 2011**

Activity	Obs.	%
Farming	3,402	78.6
<i>O/w Subsistence Cropping*</i>	2,392	55.27
<i>O/w Others Activities</i>	1,010	23.34
Nonfarming	926	21.4
<i>O/w Mineral Mining</i>	53	1.22
<i>O/w Other Activities</i>	873	20.17
Total	4,328	100

\* Subsistence cropping is predominantly a rice farming activity in rural Sierra Leone. The food crops next in importance are cassava, sweet potatoes, and maize, but are not close substitutes to rice.

**Table 7.7: Share of all employed by household main occupation 2011**

Activity	Overall		Age						Sex			
			<15 years		15 to 34 years		>34 years		Male		Female	
	Obs.	%	Obs.	%	Obs.	%	Obs.	%	Obs.	%	Obs.	%
Farming	10,054	48.67	960	13.90	3926	56.68	5168	75.73	4871	48.21	5183	49.11
<i>O/w Subsistence Cropping</i>	6,847	33.15	649	9.40	2,656	38.34	3,542	51.91	3,299	32.65	3,548	33.62
<i>O/w Others Activities</i>	3,207	15.53	311	4.50	1,270	18.33	1,626	23.83	1,572	15.56	1,635	15.49
Nonfarming	10602	51.33	5945	86.10	3001	43.32	1656	24.27	5232	51.79	5370	50.89
<i>O/w Mineral Mining</i>	89	0.43	2	0.03	50	0.72	37	0.54	74	0.73	15	0.14
<i>O/w Other Activities</i>	10,513	50.90	5,943	86.07	2,951	42.60	1,619	23.73	5,158	51.05	5,355	50.74
Total	20,656	100.00	6,905	100.00	6,927	100.00	6,824	100.00	10,103	100.00	10,553	100.00

*Source:* Author's construct based on SLIHS2011.

## 7.2.2 Sources and size of household income

About 83.53 percent of the working population primarily earn direct income from self-employment, compared to 1.08 percent from wage, 4.41 percent from remittance, 0.09 percent from social security and 10.89 percent from other sources (Table 7.8). The per capita income from self-employment is estimated at Le 681,000 (US\$156), compared to Le326,000 (US\$74) from wage, Le386,000 (US\$88) from remittance, and Le 1 million (US\$228) from social security.<sup>33</sup> These incomes are all below the national per capita income of US\$ 501 in 2011, leaving the average rural person virtually poor.

The households also earn indirect income in the form of in-kind receipts and consumption of home produce (Table 7.8). Majority of the respondents receive indirect income through home produce consumption, while the highest of income is earned from in-kind remittances, mostly through food transfers.

**Table 7.8: Main sources of household income and size (Le) 2011**

Income Category		Obs	%	Mean Income (per capita)	Std. Dev.	Min	Max
<b>Direct Income Receipt</b>	Wage employment	242	1.08	325,801	724,436	111	11,100,000
	Income from self-employment	18,673	83.53	681,122	3,962,353	100	360,000,000
	Remittance in cash	986	4.41	385,967	804,250	2,000	14,000,000
	Social Security	20	0.09	1,005,000	1,407,142	10,000	2,000,000
	Other Income	2,435	10.89	391,900	1,230,773	1,000	42,000,000
<b>Sub-Totals</b>		<b>22,356</b>	<b>100.00</b>	-	-	-	-
<b>Indirect Income receipt</b>	Payments in-kind: wages	54	1.03	75,290	222,390	100	1,660,000
	Payment in kind: Self-employment	1,484	28.33	211,508	378,301	2,000	4,500,000
	Remittance in kind	864	16.49	229,608	351,847	5,000	3,500,000
	Home produced consumption	2,836	54.14	209,927	666,685	800	11,200,000
	<b>Sub-Totals</b>		<b>5,238</b>	<b>100.00</b>	-	-	-

*Source:* Author's construct based on SLIHS2011.

<sup>33</sup> Social security refers to pension schemes established to provide welfare benefit for wage employees at retirement. The low number of observations on this variable stems from the fact that most rural inhabitants are self-(informally) employed and are mostly not covered (SLLC 2011).



### 7.2.3 The land issue

About 61 percent of the enumerated farm holders obtain land through communal system with a mean acreage of 3.76 acres (Table 7.9). The rate of acquisition through title deeds is estimated at 32 percent, with a corresponding acreage of 5.57. The rate of landlessness<sup>34</sup> is estimated at 7.18 percent, with a corresponding acreage of 3.76. The share of members that can dispose land through the market, or use it for collateral, or both is estimated at 79 percent. This proportion suggests an availability of substantial incentives in the rural areas for attraction of private investment and increased opportunity to access credit from formal institutions.

**Table 7.9: Share of household members by land tenure & farm size 2011**

	Respondents		Mean Farm Size (Acres)	Acreage Range
	Obs.	%		
<b>Ownership of Land</b>				
With title deed	1857	32.20	5.75	1 to 371
Communal	3496	60.62	3.76	1 to 60
Landless	414	7.18	3.11	1 to 18
<b>Total</b>	<b>5767</b>	<b>100.00</b>	-	-
<b>Rights of Disposal of Land</b>				
Can Sell	795	14.99	5.15	1 to 70
Use as Collateral	955	18.00	3.35	1 to 65
Sell and use as collateral	2437	45.94	5.18	1 to 371
None of above	1118	21.07	3.39	1 to 60
<b>Total</b>	<b>5305</b>	<b>100.00</b>	-	-

*Source:* Author's construct based on SLIHS2011.

### 7.2.4 Labour, improved farm technology, and credit

A minimum of 63 percent of farmers within the households do not use any of the following inputs: hired labour, chemical inputs, improved seeds, irrigation, and machinery (Table 7.10). Irrigation is most underutilised at a rate of 99.83 percent, while the overall input underutilisation rate is estimated at 91 percent. Regarding credit, the data discover two types: formal and

<sup>34</sup> Landlessness is defined by those who cultivate but do not own land.

informal sources (Table 7.11). Formal sources include state banks/institutions, private banks, cooperatives, and non-governmental organisations. The informal sources include village money lenders, traders, farmers themselves, relatives and friends, and rotating savings and credit schemes (ROSCAS); the ROSCAS are commonly known as OSUSU in West Africa [see Kemple (2008), for details]. After adjusting for outliers in the credit amount provided, the current rate of sourcing credit from the informal sector is estimated at 87.72 percent, compared to 12.29 percent from the formal sector. The mean amount of funds loaned out in the informal sector is estimated at Le 331,000 (US\$76), compared to Le 1,130,000 (UD\$258) in the formal sector. Within the informal sector, OSUSU and village money lenders provide more loans, while the private sector does in the formal sector, followed by the state.

**Table 7.10: Use of improved technology by farmers 2011**

	Total Responses	Farmers Spending on/Using Input		Farmers not Spending on/Using Input	
		Obs.	%	Obs.	%
		Hired Labour	5813	2,137	36.76
Fertilizer	5813	206	3.54	5,607	96.46
Other Farm Chemical	5813	25	0.43	5,788	99.57
Improved Seeds	5813	693	11.92	5,120	88.08
Irrigation	5813	10	0.17	5,803	99.83
Mechanisation	5813	114	1.96	5,699	98.04
Average Utilisation Rate (%)		9.13		90.87	

**Table 7.11: Share of rural credit recipients by source 2011**

Source	Farmer Respondents		Mean Credit Le
	Obs.	%	
Commercial Banks	61	2.88	1,427,098
Co-operatives	60	2.84	483,333
Micro-Finance Institutions	109	5.15	999,202
<b>Formal</b> Government Agency	6	0.28	1,200,000
Non-governmental organisations	9	0.43	488,333
Business firms	12	0.57	4,406,000
Other formal	3	0.14	1,350,000
<b>Sub Total</b>	<b>260</b>	<b>12.29</b>	<b>1,128,781</b>
Money lenders	33	1.56	507,182
Traders	729	34.45	404,089
Framers	246	11.63	225,929
<b>Informal</b> Relative and friends	763	36.06	262,404
Rotating credit schemes	36	1.7	699,889
Oter informal sources	49	2.32	437,592
<b>Sub Total</b>	<b>1856</b>	<b>87.72</b>	<b>422,847</b>
<b>Overall Total</b>	<b>2116</b>	<b>100</b>	<b>780,000</b>

*Source:* Author's construct based on SLIHS 2011.

### 7.2.5 Personal savings and other assets

In the absence of adequate credit from formal institutions and an inability of the informal sector to compensate for this, it would be crucial to examine the nature and size of household personal savings and stock of other assets that can be cashed to purchase farm inputs. Besides land, other potential assets for rural livelihood are livestock and fisheries. The proportion of economically active household members with personal savings is estimated at 11.33 percent (Table 7.12). Savings rate in the informal institutions is estimated at 10.97 percent compared to 0.36 percent in the formal ones. After adjusting for outliers in the savings amount, the average savings per respondent per annum is Le 83,000 (US\$20), estimated at Le 60,000 (US\$13) in the informal sector and Le 770,000 (US\$180) in the formal sector per annum. These figures could tell the thinness of the rural economy.

**Table 7.12: Share of household members' level of saving 2011**

		<b>Economically active members</b>	<b>Those able to save</b>	<b>Savings in Informal Sector</b>	<b>Savings in Formal Sector</b>
Saving rate	Obs.	13751	1558	1508	50
	%	-	11.33	10.97	0.36
Mean amount saved	Le	-	83,000	60,000	770,000

*Source:* Author's construct based on SLIHS 2011.

Livestock bred in rural areas range from work oxen, cattle, goats, and sheep, to chicken and ducks (Table 7.13). Fishery is also undertaken. Cattle rearing yields the highest income with per capita mean value of Le1.7 million (US\$384). Majority of households rear chicken and goats, but with relatively low per capita revenue. The mean revenue from all livestock is Le242,000 (US\$55) per annum. Very little is earned from fishery on average, perhaps because the vast majority of the households are off the coast (see country map on Figure 3.1, Page 72).

**Table 7.13: Share of owners of livestock and fishery by item 2011**

	Holders of stock		Mean Value of Stock (Le)
	Obs.	%	
Work Oxen	-	-	-
Cattle	85	1.83	1,680,150
Horse	3	0.06	116,667
Sheep	779	16.77	190,387
Goats	1,022	22.00	132,913
Pigs	35	0.75	178,000
Rabbits	7	0.15	18,500
Chicken	2,257	48.58	11,562
Duck	200	4.30	5,000
Other poultry	6	0.13	-
Other livestock	5	0.11	9,750
Fish	247	5.32	71,412
Total	4,646	100.00	242,434

*Source:* Author's construct based on SLIHS 2011.

### 7.3 Household capability issues

The choice of the capability variables described here is influenced by Sen's *capability and functionings* conceptualisation (Sen 1993; 1999) and related literature (see Chapter Five, Section 5.2.2). *Capability* is regarded as a function of various factors affecting the growth of people's welfare and quality of life, including education, knowledge and skills, housing, biological energy and strength, and the physical environment necessary to produce the minimum *functionings* for a better life.

#### 7.3.1 Education

The share of uneducated farmers is estimated at 84 percent, compared to 42 percent for uneducated non-farmers; those of mothers and fathers that have not been to school are estimated at 50 percent each, while uneducated females and males stand at 69 and 60 percent, respectively (Table 7.14). Household members who have not been to school are generally estimated at 65

percent (Table 7.15). Persons of basic school age (those 3-14 years) not in school are about 46 percent, compared to 42 percent of high school and tertiary education age (15- 21 years). The proportion of persons with informal education is marginal.

**Table 7.14: Household literacy by sex/parentage/occupation 2011**

	Sex				Parents				Economic Activity			
	Male		Female		Fathers		Mothers		Farming		Non-farming	
	Obs.	%	Obs.	%	Obs.	%	Obs.	%	Obs.	%	Obs.	%
Formal School	4,735	38.6	3,729	29.5	4,173	47.7	4,527	47.6	1,642	16.4	6,108	57.6
Informal	173	1.4	169	1.3	243	2.8	255	2.7	264	0.0	9	0.1
Never Went to School	7,371	60.0	8,743	69.2	4,334	49.5	4,737	49.8	8,411	83.6	4,491	42.3
Total	12,279	100.0	12,641	100.0	8,750	100.0	9,519	100.0	10,317	100.0	10,608	100.0

**Table 7.15: Household literacy by age 2011**

	Total		Children of School Age			
			Less than 15 yrs		From 15 to 21 yrs	
	Obs.	%	Obs.	%	Obs.	%
Formal School	8,464	34.0	4,860	54.4	1,435	57.4
Informal	342	1.4	5	0.1	4	0.2
Never Went to School	16,114	64.7	4,074	45.6	1,059	42.4
Total	24,920	100.0	8,939	100.0	2,498	100.0

*Source:* Author's construct based on SLIHS 2011.

The share of household members with education that attained only primary level is 63 percent, compared to 26 percent for those attaining secondary education (Junior and Senior) and marginal percentage points for those attaining tertiary education (Table 7.16). Children from 80 percent of the households take 37 minutes or less to access primary school, compared to 27 percent to access junior secondary for the same time (Table 7.17). Those from 12 percent of the households take 120 minutes or more to access primary school, compared to 59 percent to access junior secondary for the same time. Generally, the average time taken to primary is 34.2 minutes,

compared to 102 minutes to access junior school (this will shortly be related to statistics on the mode of transport frequently used to go to school). It can be deduced from these indicators generally that rural education needs special policy attention. Illiteracy is still rife despite laudable state efforts, from both institutional and fiscal fronts (Chapter Four). While appearing that access to primary is much improved, access to school beyond this level is much problematic (implications to be discussed in detail in Chapter Nine).

**Table 7.16: Grade level attained by household members 2011**

<b>School Grade Attained</b>	<b>Obs.</b>	<b>%</b>
Informal	342	4.1
Nursery	441	5.2
Primary	5,308	63.1
Junior Secondary (JSS) 1-3	1608	19.1
Senior Secondary (SSS) 1-3	571	6.8
Technical and Vocational	58	0.7
Teacher Training College	64	0.8
Nursing	7	0.1
University	12	0.1
Islamic Education	-	-
<b>Total</b>	<b>8,411</b>	<b>100.0</b>

**Table 7.17: Average time taken to school 2011**

	<b>Primary</b>		<b>Junior Secondary</b>	
	<b>Obs.</b>	<b>%</b>	<b>Obs.</b>	<b>%</b>
Mean Time				
7 Minutes	1871	43.61	283	6.61
22 Minutes	849	19.79	366	8.55
37 Minutes	732	17.06	514	12.00
52 Minutes	334	7.79	605	14.13
120 Minutes	337	7.86	1,259	29.40
More than 180 Minutes	167	3.89	1,255	29.31
<b>Total</b>	<b>4,290</b>	<b>100</b>	<b>4,282</b>	<b>100</b>
<b>Average Time Taken (Minute)</b>	<b>34.2</b>		<b>102.17</b>	

*Source:* Author's construct based on SLIHS 2011.

### 7.3.2 Healthcare

About 15 percent of the respondents consult informal healthcare providers as first option upon falling sick, compared to 88 percent for formal care (Table 7.18). Those reported to have been vaccinated before are estimated at 98 percent; pregnant woman (15-49 years) receiving prenatal care in the last 12 months preceding the survey estimated at 82 percent; and women never having stillbirth estimated at 83 percent. Average number of children per woman is 4.5, while all deaths irrespective of age recorded per 1000 live births per respondent woman are 363. Health seekers from 48 percent of the households take 37 minutes or less to access primary care, compared to 17 percent to access secondary care (hospital) for the same time (Table 7.19). About 36 percent take 120 minutes or more to access primary care, compared to 71 percent to access secondary care for the same time. The average time taken to access primary care is 71 minutes, compared to 123 minutes to access secondary care. Further data disaggregation suggests that health seekers from 15 percent of the households would take more than 3 hrs to access primary care, while 45 percent take this same time to access hospital.

**Table 7.18: Health status based on selected indicators 2011**

Status Indicators		Obs.	%
Health provider visited, those falling Sick in the last 2 weeks preceding survey	Informal Provider	653	14.73
	Formal Provider	3,781	85.27
Whether ever been vaccinated	Yes	2,596	97.74
	No	60	2.26
Pregnant women (15-49 years) in the last 12 months preceding survey	Having prenatal care	286	81.95
	No prenatal care	63	18.05
Women ever having stillbirths	Never had one	3,811	82.78
	Had at least one	793	17.22
Fertility and mortality rate (all deaths per 1000 births)		(3364 women respondents)	
		Fertility rate	4.5 Children
	Mortality rate	363 Deaths	

*Source:* Author's construct based on SLIHS 2011.

**Table 7.19: Average time taken to visit health facility 2011**

	Primary Healthcare		Hospital	
	Obs.	%	Obs.	%
Mean Time				
7 Minutes	751	17.47	210	4.91
22 Minutes	581	13.51	207	4.84
37 Minutes	723	16.81	323	7.56
52 Minutes	699	16.26	485	11.35
120 Minutes	910	21.16	1,104	25.84
More than 180 Minutes	636	14.79	1,944	45.49
Total	4,300	100	4,273	100
Average Time Taken (Minute)	70.89		123	

*Source:* Author's construct based on SLIHS 2011.

From these health statistics, the status of some of the intermediate healthcare indicators is encouraging. However, of great concern are outcome indicators such as mortality rates, which suggests that a range of factors have to be looked into in responding to health needs of the population, distance to facilities being among them, coupled with the next areas we now turn to describe.

### **7.3.3 Housing, water, sanitation, energy and transport**

The share of households with only one bedroom is 11.42 percent, and the average household size in this category is estimated at about 4 persons; and only 1.5 percent have a mean household size less than the number of rooms occupied (Table 7.20). About 80.57 percent live in houses constructed with mud/earth wall; while those living in structures with mud/earth floors estimated at 77.46 percent, thatch/grass roofing 31.01 percent (Table 7.21). Those sourcing drinking water from rivers, lakes and streams estimate at 1.52 percent; fetching drinking water more than one km away, 15.58 percent; using bush, streams and rivers as toilet, 4.57 percent; disposing refuse through unauthorised dumping, 42.83 percent; and using firewood as main source of cooking energy remains unprecedentedly at 98 percent. To access public transport, 36 percent spend more



than 2hrs walking to public transport stops including waiting time; 21 percent spend more than 3 hrs. About the same proportions are estimated for those spending at least 2 and 3hrs to reach all seasons roads; and walking on foot has been the most frequently used vehicle to go to school and health centres compared to any other (better) transport means.

**Table 7.20: Share of households by number of rooms occupied 2011**

Number of rooms per household	Number of Households	%	Mean Household size
1	493	11.42	3.77
2	998	23.12	5.08
3	1,253	29.02	5.78
4	888	20.57	6.37
5	386	8.94	6.92
6	186	4.31	7.34
7	47	1.09	7.74
8	33	0.76	9.55
9	14	0.32	9.64
10 above	19	0.44	6.86
Total	4317	100.00	5.71

**Table 7.21: Housing, water, energy & infrastructure 2011**

Indicators	Obs.*	%
Living in houses with mud walls	3474/4312	80.57
Living in houses with mud floors	3343/4316	77.46
Living in houses with thatch roofing	1338/4315	31.01
Sourcing drinking water from rivers, lakes, and streams	37/2440	1.52
Fetching drinking water more than 1 km away	336/2157	15.58
Using bush, stream and river as toilet	111/2427	4.57
Disposal of refuse by unauthorized dump	1836/4287	42.83
Using firewood for cooking purposes	4172/4300	97.02
Taking at least 2hrs to access public transport	1547/4281	36.14
Taking at least 3hrs to access public transport	886/4281	20.7
Taking at least 2hr to reach all seasons roads	1525/4266	35.75
Taking at least 3hr to reach all seasons roads	920/4266	21.57
Foot as most frequent means of transport to primary school	4138/4289	96.48
Foot as most frequent means of transport to secondary school	2940/4248	69.21
Foot as most frequent of transport to primary healthcare	3409/4285	79.56
Foot as most frequent means of transport to hospital	1769/4244	41.68

\*The numerator denotes number of respondents to the affirmative; while the denominator denotes number total number of respondent including responses to the negative which are not shown explicitly

*Source:* Author's construct based on SLIHS 2011.

### **7.3.4 Nutrition**

Described here are anthropometric measures of stunting, underweight and wasting in the child growth process, and regional food price indices and changes in national currency exchange rate. The three anthropometric measures directly indicate the status of malnutrition, and are reported at rural level. We obtain these estimates from the National Multiple Indicator Cluster Survey 2010. We analyse food price indices because they have direct bearing on the purchasing power of households and their nutrition status overtime, and we obtain these statistics from monthly price surveys conducted by the national statistics office. Since the Sierra Leone economy is highly import dependent, even for the consumption of its staple food, rice, changes in currency exchange rate is also hypothesised to have direct impact on the purchasing power of households and nutrition status; and we obtain exchange rate estimates from published national annual budget accounts.

The proportion of rural stunting children is estimated at 45.6 percent (25.2 percent severely stunting and 20.5 percent moderately stunting); underweight at 22.3 percent (8.2 percent severely underweight and 14.1 moderately underweight); and wasting/thinning at 8.1 percent (3.1 percent severely wasting and 5.0 percent moderately wasting) (Table 7.22). These figures are alarming, especially stunting which measures chronic malnutrition (GoSL 2008a). From the same table, prices of basic food have dramatically increased since 2003 (an increase of more than 200 percent in the north and south, and more than 100 percent in the east and west). Exchange rate has increased by more than 60 percent since 2003. These regional and macroeconomic statistics may have negatively affected nutrition, health, and education status of households.

**Table 7.22: Malnutrition situation 2010-2011**

	Malnutrition Status 2010 <sup>a</sup>		Food Price Index 2011 <sup>b</sup>	Currency Exchange Rate Index 2011 <sup>c</sup>	
	Obs.	Severe Z < -3			Moderate -3 ≤ Z < -2
<b>Rural Level Malnutrition Indicators</b>					
Stunting: height-for-age	5620	25.2	20.5	-	-
Underweight: weight-for-age	5889	8.2	14.1	-	-
Wasting: weight-for-height	5816	3.1	5.0	-	-
<b>Regional Area Food prices</b>					
North	-	-	-	334%	-
East	-	-	-	224%	-
South	-	-	-	308%	-
West	-	-	-	215%	-
<b>Macroeconomic Implication of Prices</b>					
Leone/Dollar Exchange rate	-	-	-		162%

*Note on source:*

<sup>a</sup> Estimates obtained from Sierra Leone Multiple Indicator Cluster Survey 2010 (MICS4).

<sup>b</sup> Estimates are obtained from Monthly Price Surveys conducted by Statistics Sierra Leone Office taking 2004 as base year.

<sup>c</sup> Exchange rate estimates are obtained from Published National Budget Account; the 2011 exchange rate index is calculated taking 2004 as base year.

## 7.4 Coping strategies during crisis periods

Migration (focusing on the active age group 18-34 years and above) and other sources of livelihoods are presented here as coping mechanisms. About 21 percent of household respondents aged 18-34 years moved out of their places of origin for more than 12 months in the previous years preceding the survey; the 35 years and above moving out estimate at 30 percent. It indicates that rural out-migration by the youth is not currently as alarming (Table 7.23). Other coping sources enumerated are: assistance individuals receive through membership in associations within the community; assistance from religious bodies; professional assistance; political affiliation; and family support. Assistance through family relations is rated at 85

percent; community 75 percent; religious bodies 70 percent; political affiliation and professional relationships below 10 percent (Table 7.24).

**Table 7.23: Household members moving out for more than 12 months 2011**

Whether had moved out	Age			
	18 to 34		35 above	
	Obs.	%	Obs.	%
Yes	116	20.90	131	29.84
No	439	79.10	308	70.16
Total	555	100.00	439	100.00

**Table 7.24: Share of household survival methods 2011**

Where members received benefit from:	Response to the affirmative	
	Obs.	%
Community	3068/4153	73.87
Religious	2909/4148	70.13
Professional	373/4044	9.22
Political	401/4067	9.86
Family	3615/4259	84.88

*Source:* Author's construct based on SLIHS 2011.

## 7.5 Local governance and service delivery

The re-establishment of local councils in 2004 was an effort within government of Sierra Leone's poverty reduction programmes at the end of the civil war (See Chapter Four, Section 4.2.8). This was aimed at catalysing delivery of public services at community level through ensuring active participation of grassroots in the national development planning cycle. The welfare statistics presented above can be correlated to the status of service delivery by local councils. In this section, therefore, we have presented data on (i) performance scores of the country's thirteen rural district councils and (ii) level of interaction of the communities with local councillors as proxy for gauging the level of participation of the people in planning development priorities. We extract data from the "Comprehensive Local Government Performance

Assessment Survey (CLOGPAS),” and other service delivery surveys conducted by government with assistance from the World Bank. Areas of service delivery assessed include councils’ financial management performance and participation of the communities in district planning. Evidence suggests that none of the thirteen district/local councils scored the maximum performance mark of 65 based on the CLOGPAS of 2011. Five districts scored below the median mark of 46, with the Bonthe District performing the least with 30 marks, followed by Bombali District with 32 (Table 7.25). In terms of interaction with councillors during their four-year tenure, meeting with the people is rated below 40 percent in all districts but one, while visiting communities is rated below 50 percent in five districts.

**Table 7.25: Service delivery performance within district councils 2010-2011**

Regional Location	District Councils	CLOGPAS 2011	Interaction with Councillor 2010	
			% of Respondents meeting with Councillors	% of Communities visited by Councillors
East	Kailahun	33	23	64
	Kenema	36	20	64
	Kono	50	37	38
North	Bombali	32	19	29
	Koinadugu	46	31	59
	Kambia	48	26	82
	Tonkolili	40	44	62
	Port Loko	49	21	46
South	Bo	54	25	52
	Bonthe	30	37	55
	Moyamba	46	19	33
	Pujehun	49	25	49
West	West Rural	48	29	91
	<b>Max</b>	<b>65</b>	<b>Average=27</b>	<b>Average=56</b>
	<b>Median</b>	<b>46</b>		

*Source:* Author’s construct based on GLOGPAS2011 & service delivery survey2010.

We have presented the current rural household welfare situation as obtained from SLIHS2011. We shall move next to comparing current situation with what obtained eight years earlier as obtained from SLIHS2003 for select welfare areas.

## **7.6 Comparing current and previous household welfare conditions**

We look at changes in key policy choice areas for household development, comparing statistics from SLIHS2003 and SLIHS2011. The average household size slightly reduced from 6.18 in 2003, to 5.75 in 2011. The proportion of households with six or more persons also slightly reduced from 53 percent, to 48 percent (Table 7.26). But while the highest household membership size was 20 persons in 2003, this increased to 26 in 2011.

The share of households deriving their main livelihood from farming slightly decreased from 85 percent in 2003, to 79 percent in 2011 (Table 7.27). Those obtaining land through communal system decreased from 74 to 61 percent, accompanied by a slight increase in average acreage from 3.55 to 3.76 acres (Table 7.28). The rate of land acquisition through title deeds increased almost two-fold, from 17 to 32 percent, accompanied by an increase in acreage from 3.43 to 5.57 acres. The rate of landlessness decreased, but marginally, from 9.15 percent in 2003, to 7.18 percent in 2011, also accompanied by a marginal increase in acreage farmed, from 3.55 to 3.76 acres. The share of members that can dispose land through the market, or use it for collateral or both drastically increased from 45 percent in 2003, to 79 percent in 2011. The rate of underutilisation of improved technology has only decreased from 70 to 63 percent (Table 7.29). Irrigation was most underutilised in both surveys, its underutilisation rate in fact slightly increased from 99.71 to 99.83 percent.

Share of uneducated farmers estimated at 84 percent in 2011 as it were in 2003, while uneducated non-farmers decreased from 52 to 42 percent (Table 7.30). Uneducated females increased from 68 to 69, while uneducated males increased from 53 to 60 percent. Share of mothers that have not been to school increased from 41 to 50, while uneducated fathers increased from 38 to 50 percent. Generally, household members who have not been to school increased

from 60 percent in 2003, to 65 percent in 2011 (Table 7.31). Persons of basic school age (3-14 years) not in school increased from 32 to 46 percent in the same period, while those of high school and tertiary age (15-21 years) not in school decreased from 59 to 42 percent. From Table 7.32, the share of those with education that attained only primary level decreased from 71 percent in 2003, to 63 percent in 2011; those attaining secondary education (Junior and Senior) increased two fold from 13 percent, albeit not as encouraging. Tertiary graduates remained minimal during the period.

All rural deaths recorded per 1000 live births, irrespective of age, increased from 310 in 2003, to 363 in 2011 (Table 7.33). While key health outcome indicators deteriorate, improvement is recorded in some intermediate indicators: women reported having at least one stillbirth drastically decreased from 57 to 17 percent; respondents with no vaccination reduced from 6.0 to 2.0 percent; while pregnant women not receiving prenatal care decreased from 22 percent to 18. The realisation that outcome indicators such as mortality rates increased during study period is manifest of existence of several drivers of health episodes, malnutrition being crucial and still remaining among the worst in the world (Table 7.22).

In summary, there has been some policy improvement in the following indicators: increased acquisition of land through the market; reduction of landlessness; reduction in average rate of underutilisation of improved technology; improvement in some intermediate health indicators (vaccination, live births, and prenatal care); increase in nonfarm participation; and increase in the proportion of households with proclivity towards having nuclear family. However, the rates of improvement of these indicators have been generally marginal. The indicators that record deteriorating situation include illiteracy, mortality, and malnutrition *inter alia*. Caution should however be exercised in comparing the two survey data since the sample

size (number of households interviewed) in 2011 was nearly twice the sample in 2003; the 2003 survey was conducted just after the civil war (see Section 6.5, Page 222; & Table 6.3, Page 224 on data). We shall turn next to Part Two for descriptive analysis of rural income poverty.

**Table 7.26: Share of households by size, 2003 & 2011**

SLIHS2003				SLIHS2011			
<i>Household Size</i>	<i>Obs.</i>	<i>%</i>	<i>Cumulative %</i>	<i>Household Size</i>	<i>Obs.</i>	<i>%</i>	<i>Cumulative %</i>
1	21	0.88	0.88	1	69	1.60	1.60
2	57	2.38	3.25	2	170	3.93	5.53
3	204	8.50	11.75	3	459	10.62	16.15
4	369	15.38	27.13	4	684	15.83	31.98
5	473	19.71	46.83	5	853	19.74	51.72
6	377	15.71	62.54	6	693	16.04	67.76
7	296	12.33	74.88	7	477	11.04	78.80
8	205	8.54	83.42	8	352	8.15	86.95
9	119	4.96	88.38	9	190	4.40	91.34
10-20	279	11.61	100.00	10-26	374	8.65	100.00
<b>Total:</b> 6.18	2,400	100	-	5.75	4,321	100	-

**Table 7.27: Share of household heads by occupation, 2003 & 2011**

SLIHS2003				SLIHS2011			
<i>Activity</i>		<i>Obs.</i>	<i>%</i>	<i>Activity</i>		<i>Obs.</i>	<i>%</i>
Farming		2,037	84.88	Farming		3,402	78.60
	<i>O/w Rice cultivation*</i>	1,695	70.63		<i>O/w Subsistence Cropping*</i>	2,392	55.27
	<i>O/w Others Activities</i>	342	14.25		<i>O/w Others Activities</i>	1,010	23.34
Nonfarming		363	15.13	Nonfarming		926	21.40
	<i>O/w Mineral Mining</i>	30	1.25		<i>O/w Mineral Mining</i>	53	1.22
	<i>O/w Other Activities</i>	333	13.88		<i>O/w Other Activities</i>	873	20.17
Total		2,400	100.00	Total		4,328	100.00

\* Rice cultivation was not categorized in the employment module for SLIHS 2011, thus *subsistence farming* is reported here as comparable indicator in this survey to *rice farming* indicator in SLIHS 2003/04; subsistence cropping is predominantly a rice farming activity in rural Sierra Leone. The next food crops in importance are cassava, sweet potatoes, and maize, which are the available but not close substitutes to rice.

*Source:* Author's construct based on SLIHS2003 & 2011.



**Table 7.28: Share of household members by land tenure/farm size, 2003 & 2011**

	SLIHS2003				SLIHS2011			
	Respondents		Mean	Acreage	Respondents		Mean	Acreage
	Obs.	%	Farm Size (Acres)		Range	Obs.	%	
<b>Ownership of Land</b>								
With title deed	936	16.87	3.43	1 to 40	1857	32.20	5.75	1 to 371
Communal	4105	73.98	3.55	1 to 470	3496	60.62	3.76	1 to 60
Landless	508	9.15	3.77	1 to 210	414	7.18	3.11	1 to 18
<b>Total</b>	<b>5549</b>	<b>100.00</b>	-	-	<b>5767</b>	<b>100.00</b>	-	-
<b>Rights of Disposal of Land</b>								
Can Sell	466	9.23	3.30	1 to 470	795	14.99	5.15	1 to 70
Use as Collateral	370	7.33	2.88	1 to 28	955	18.00	3.35	1 to 65
Sell and use as collateral	1432	28.37	3.76	1 to 46	2437	45.94	5.18	1 to 371
None of above	2779	55.06	3.52	1 to 156	1118	21.07	3.39	1 to 60
<b>Total</b>	<b>5047</b>	<b>100.00</b>	-	-	<b>5305</b>	<b>100.00</b>	-	-

**Table 7.29: Use of improved technology by farmers, 2003 & 2011**

Input	Farm holders, SLIHS2003					Farm Holders, SLIHS2011				
	Total Responses	Farmers Spending on/Using Input		Farmers not Spending on/Using Input		Total Responses	Farmers Spending on/Using Input		Farmers not Spending on/Using Input	
		Obs.	%	Obs.	%		Obs.	%	Obs.	%
Hired Labour	5567	1,658	29.78	3,909	70.22	5813	2,137	36.76	3,676	63.24
Fertilizer	5567	147	2.64	5,420	97.36	5813	206	3.54	5,607	96.46
Other Farm Chemical	5567	24	0.43	5,543	99.57	5813	25	0.43	5,788	99.57
Improved Seeds	5567	1,264	22.71	4,303	77.29	5813	693	11.92	5,120	88.08
Irrigation	5567	16	0.29	5,551	99.71	5813	10	0.17	5,803	99.83
Mechanisation	5567	23	0.41	5,544	99.59	5813	114	1.96	5,699	98.04
Average Utilisation Rate (%)		9.38		90.62			9.13		90.87	

**Table 7.30: Household literacy by sex/parentage/occupation, 2003 & 2011**

a. SLIHS2003												
	Sex				Parents				Economic Activity			
	Male		Female		Fathers		Mothers		Farming		Non-farming	
	Obs.	%	Obs.	%	Obs.	%	Obs.	%	Obs.	%	Obs.	%
Formal School	2,505	41.2	1,792	26.7	2,544	51.9	2,851	49.9	341	15.5	110	47.6
Informal	341	5.6	344	5.1	492	10.0	526	9.2	10	0.5	2	0.9
Never Went to School	3,233	53.2	4,575	68.2	1,864	38.0	2,341	40.9	1,698	84.0	119	51.5
Total	6,079	100.0	6,711	100.0	4,900	100.0	5,718	100.0	2,049	100.0	231	100.0

Source: Author's construct based on SLIHS2003 & 2011.

**Table 7.30 (continued).**

<b>b. SLIHS2011</b>												
	<b>Sex</b>				<b>Parents</b>				<b>Economic Activity</b>			
	<b>Male</b>		<b>Female</b>		<b>Fathers</b>		<b>Mothers</b>		<b>Farming</b>		<b>Non-farming</b>	
	Obs.	%	Obs.	%	Obs.	%	Obs.	%	Obs.	%	Obs.	%
Formal School	4,735	38.6	3,729	29.5	4,173	47.7	4,527	47.6	1,642	16.4	6,108	57.6
Informal	173	1.4	169	1.3	243	2.8	255	2.7	264	0.0	9	0.1
Never Went to School	7,371	60.0	8,743	69.2	4,334	49.5	4,737	49.8	8,411	83.6	4,491	42.3
Total	12,279	100.0	12,641	100.0	8,750	100.0	9,519	100.0	10,317	100.0	10,608	100.0

**Table 7.31: Household literacy by age, 2003 & 2011**

	<b>SLIHS2003</b>						<b>SLIHS2011</b>					
	<b>Total</b>		<b>Children of School Age</b>				<b>Total</b>		<b>Children of School Age</b>			
			<b>Less than 15 yrs</b>		<b>From 15 to 21 yrs</b>				<b>Less than 15 yrs</b>		<b>From 15 to 21 yrs</b>	
	Obs.	%	Obs.	%	Obs.	%	Obs.	%	Obs.	%	Obs.	%
Formal School	4,297	33.6	2,540	53.8	583	40.8	8,464	34.0	4,860	54.4	1,435	57.4
Informal	685	5.4	656	13.9	6	0.4	342	1.4	5	0.1	4	0.2
Never Went to School	7,808	61.0	1,529	32.4	840	58.8	16,114	64.7	4,074	45.6	1,059	42.4
Total	12,790	100.0	4,725	100.0	1,429	100.0	24,920	100.0	8,939	100.0	2,498	100.0

**Table 7.32: Grade level attained by household members, 2003 & 2011**

<b>School Grade Attained</b>	<b>SLIHS2003</b>		<b>SLIHS2011</b>	
	Obs.	%	Obs.	%
Informal	685	13.8	342	4.1
Nursery	-	-	441	5.2
Primary	3501	70.5	5,308	63.1
Junior Secondary (JSS) 1-3	411	8.3	1608	19.1
Senior Secondary (SSS) 1-3	232	4.7	571	6.8
Technical and Vocational	51	1.0	58	0.7
Teacher Training College	-	-	64	0.8
Nursing	5	0.1	7	0.1
University	10	0.2	12	0.1
Islamic Education	74	1.5	-	-
Total	4,969	100.0	8,411	100.0

*Source:* Author's construct based on SLIHS2003 & 2011.

**Table 7.33: Health status based on selected indicators, 2003 & 2011**

Status Indicators		SLIHS2003		SLIHS2011	
		Obs.	%	Obs.	%
Health provider visited, those falling Sick in the last 2 weeks preceding survey	Informal Provider	147	11.57	653	14.73
	Formal Provider	1,124	88.43	3,781	85.27
Whether ever been vaccinated	Yes	1,571	94.02	2,596	97.74
	No	100	5.72	60	2.26
Pregnant women (15-49 years) in the last 12 months preceding survey	Having prenatal care	346	78.28	286	81.95
	No prenatal care	96	21.72	63	18.05
Women ever having stillbirths	Never had one	606	43.5	3,811	82.78
	Had at least one	787	56.5	793	17.22
Fertility and mortality rate (all deaths per 1000 births)	Fertility rate	(1359 women respondents) 5.0 children		(3364 women respondents) 4.5 Children	
	Mortality rate	310 Deaths		363 Deaths	

*Source:* Author's construct based on SLIHS2003 & 2011.

## **PART TWO: CHANGES IN RURAL INCOME POVERTY**

The foregoing analysis has principally presented non-money metric measures of status of rural poverty. In Part Two, we will focus on money metric measures to analyse rural poverty. Essentially, we will calculate changes in the average monetary wellbeing of households comparing the two living standards measurement surveys of 2003 and 2011.

The first sections will present indices depicting the amount of income poverty that has been reduced or increased since 2003, and how much is required in public investment to eradicate the current stock of poverty. This estimation is undertaken based on the Foster-Greer-Thorbecke poverty index estimator (see Sections 5.1.1 & 5.1.2 of Chapter Five). We obtain the FGT estimates using the SEPOV poverty programme embedded in the STATA econometric and statistical software, version 12. STATA is a popular poverty analytical tool that is widely used by the World Bank and other organisations to inform national and global development policies [see Deaton & Zaidi (2002); World Bank (2005)]. The indices we obtain reflect the minimum

expenditure (poverty line) necessary for an individual to live an acceptable quality of life, and to be able to function well, capturing both food and non-food expenditure requirement estimated in monetary terms per year/day.<sup>35</sup> In 2003, Sierra Leone's absolute poverty line was Le 786,204 (US\$290) per year, and the food poverty line was Le 365,835 (US\$135). The 2003 poverty lines have been adjusted for inflation to determine poverty lines for 2011, which are: Le1, 587,746 (US\$363) for absolute poverty; and Le 738,803.58 (US\$169) for food poverty line [see World Bank (2013a)].

The final sections present statistics to show how much the poor have benefited from public services.

## **7.7 National rural poverty, 2003 and 2011**

Rural poverty headcount reduced from 78.55 percent in 2003, to 68.21 percent in 2011, compared to a reduction of urban estimates from 47.02 to 35.40 percent, and national estimates from 66.37 to 54.1 percent (Table 7.34). The rural sector accounted for 75 percent of the national poor during this period. Its poverty gap index declined from 34.57 to 25.89 percent, while extreme poverty index declined from 18.75 to 13.53 percent.

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<sup>35</sup> See Section 5.1 of Chapter Five for theoretical literature on the money metric measures of poverty and determination of poverty levels based on the FGT poverty framework. We calculate income (or expenditure) poverty indices by aggregating consumption variables derived from both surveys. For 2003 survey, we adopt the aggregate consumption variable derived by the World Bank for Sierra Leone's poverty profile published in 2008 (World Bank 2008). Following the same methodology and computer syntax documented by the Bank on the 2003 data, we construct aggregate consumption variable for the 2011 survey. This enables us to compare the poverty situation between 2003 and 2011. We have utilised both SPSS statistical software and STATA software in the generation of the consumption aggregates. The construction of these aggregates simply involves the summation of food and non-food expenditures. Non-food expenditures capture spending on education, health, nutrition, agricultural activities, non-agricultural activities, and so on, including imputed estimates for auto- or own-produce consumption. These are all comprehensively captured in the two surveys we utilise, and they reflect economic strength of each household. [See Deaton & Zaidi (2002), for additional guidelines that we utilise.] While we had hoped to do so as an annex, we decline from presenting the *computer programmes* we prepared for generating the statistics since they are in hundreds of pages.

## **7.8 Rural poverty by district and region, 2003 and 2011**

To enhance appreciation of the income poverty statistics presented here, we will start by presenting key characteristics of the four regions of Sierra Leone (Figure 7.1). Each region is shown with districts located in it. The northern region has the largest number of districts, population size, and land area. The western region, where the capital of Freetown is situated, has the smallest number of districts, population size, and land area. The capital has much better literacy rate and less alarming child mortality incidence compared to other regions. The north, south and east are largely rural, recording child mortality rates in excess of 200 deaths per 1000 live births, with illiteracy rate of about 59 percent in each. Measuring the impact of the civil war in terms of percentage of dwellings destroyed during its course, the eastern regional districts of Kailahun, Kono and Kenema suffered far the most, with an average damage index of 82 percent, followed only by an index of 37 percent for the north and south; the west measured only two percent. The civil war started in the Kailahun District, and raged in the east considerably before spilling over to other parts of the country. These background statistics will form a strong basis for effective appreciation of the spatial poverty profile we now turn to present.

In 2003, the five poorest rural districts in headcount were Kailahun, Kenema, Bombali, Port Loko and Bonthe (Table 7.34). The top five in terms of poverty gap index were Kailahun, Kenema, Kono, Bombali and Bonthe. The top five in terms of extreme poverty were Kailahun, Kenema, Kono, Bombali and Koinadugu. And the top five contributing to overall national poverty headcount were Kailahun, Kenema, Bombali, Port Loko and Tonkolili.

The distribution substantially changed in 2011. The five poorest districts in terms of both poverty headcount and gap index have become Bombali, Kambia, Tonkolili, Bo and Moyamba. The top five in terms of extreme poverty have become Bombali, Port Loko, Bo, Moyamba, and Pujehun. And the top five contributing to national poverty have become Kailahun, Bombali, Port Loko, Tonkoli, and Bo.

The eastern and northern regions have remained the most impoverished on all three poverty indices ( $P_0$ ,  $P_1$  &  $ExP_0$ ) as they were in 2003 (Table 7.34).

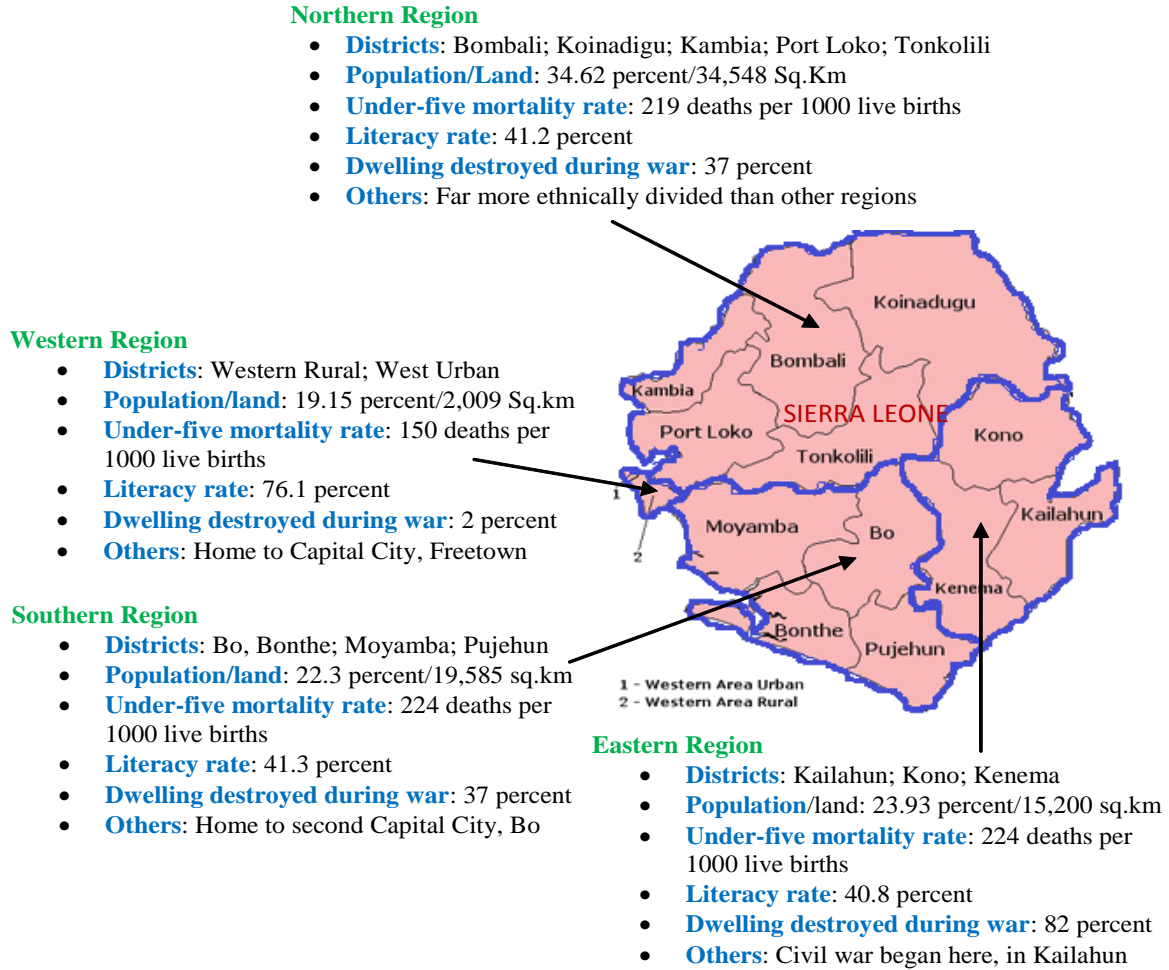


Figure 7.1: Relevant regional and district characteristics

Table 7.34: Changes in rural income poverty (percentage & real terms), 2003 & 2011

Geographic Location	SLIHS2003						SLIHS2011						Changes in the Poverty Indices, 2003-2011				
	Head count (%)	Pover-ty Gap (%)	Ext-reme Pover-ty (%)	Share of Popu-lation (%)	Contri-bution to Pover-ty (%)	Pover-ty num-bers (000)	Head count (%)	Pover-ty Gap (%)	Ext-reme Pover-ty (%)	Share of Popu-lation (%)	Contri-bution to Pover-ty (%)	Pover-ty num-bers (000)	Head count (%)	Pover-ty Gap (%)	Ext-reme Pover-ty (%)	Contri-bution to Pover-ty (%)	Pover-ty num-bers (000)
<i>A</i>	<i>B</i>	<i>C</i>	<i>D</i>	<i>E</i>	<i>F</i>	<i>G</i>	<i>H</i>	<i>I</i>	<i>J</i>	<i>K</i>	<i>L</i>	<i>M</i>	<i>N</i>	<i>O</i>	<i>P</i>	<i>Q</i>	<i>R</i>
<i>National</i>	66.37	27.53	14.43	100.00	100.00	3194.32	54.10	18.70	9.80	100.00	100.00	3123.74	-12.27	-8.83	-4.63	0.00	-70.58
Rural	78.55	34.57	18.75	61.34	72.61	2319.10	68.21	25.80	13.53	60.40	77.09	2382.26	-10.34	-8.77	-5.22	4.48	63.15
Urban	47.02	16.31	7.58	38.66	27.39	874.81	35.40	10.28	4.12	39.60	22.91	807.64	-11.62	-6.03	-3.46	-4.48	-67.17
<b>Rural Indices by Districts and Regions</b>																	
<i>Eastern Region</i>	90.74	44.43	42.39	22.94	26.50	614.66	73.17	27.82	14.59	46.52	48	592.15	-17.57	-16.61	-27.80	21.50	-22.51
Kailahun	91.70	48.49	48.42	8.91	10.40	241.26	63.07	20.79	7.96	10.40	9.68	227.00	-28.63	-27.70	-40.46	-0.72	-14.26
Kenema	94.81	50.00	43.50	9.28	11.21	259.88	67.03	24.78	14.78	7.85	7.61	186.40	-27.78	-25.22	-28.72	-3.60	-73.48
Kono	80.96	35.68	28.88	4.75	4.89	113.51	60.69	17.57	5.65	4.83	4.26	103.95	-20.27	-18.11	-23.23	-0.63	-9.56
<i>Northern Region</i>	83.10	36.44	29.22	47.48	50.23	1164.97	70.42	26.28	16.27	26.50	26.78	1143.27	-12.68	-10.16	-12.95	-23.45	-21.70
Bombali	92.45	55.04	65.90	9.72	11.44	265.38	73.57	35.57	32.21	9.22	9.43	234.54	-18.88	-19.47	-33.69	-2.01	-30.84
Kambia	73.87	24.09	9.40	7.59	7.13	165.44	75.67	25.67	8.01	7.11	7.72	186.16	1.80	1.58	-1.39	0.59	20.72
Koinadugu	76.65	34.42	29.94	6.54	6.38	147.89	54.53	16.55	4.54	7.95	6.19	156.57	-22.12	-17.87	-25.40	-0.19	8.68
Porto Loko	84.56	33.03	15.99	12.61	13.58	314.92	66.27	24.74	15.90	11.98	11.33	275.43	-18.29	-8.29	-0.09	-2.25	-39.49
Tonkolili	83.34	33.64	25.22	11.03	11.70	271.31	93.46	34.58	10.69	10.26	13.32	332.67	10.12	0.94	-14.53	1.62	61.36
<i>Southern Region</i>	64.79	24.78	16.94	26.54	21.89	507.63	63.92	26.36	9.78	23.09	21.55	591.12	-0.87	1.58	-7.16	-0.34	83.48
Bo	64.23	27.60	22.25	8.23	6.73	156.06	76.99	29.63	17.22	9.52	10.43	255.44	12.76	2.03	-5.03	3.70	99.38
Bonthe	83.85	37.11	26.33	3.64	3.89	90.15	62.76	18.52	5.70	3.41	3.09	73.97	-21.09	-18.59	-20.63	-0.80	-16.18
Moyamba	72.74	25.60	16.21	7.91	7.33	169.94	75.23	27.69	20.12	6.24	6.71	163.70	2.49	2.09	3.91	-0.62	-6.23
Pujehun	45.87	13.74	6.25	6.75	3.94	91.47	61.37	24.35	16.69	7.34	6.56	158.04	15.50	10.61	10.44	2.62	66.57
<i>Western Region</i>	35.69	17.10	13.92	3.03	1.38	31.96	67.82	26.36	4.34	3.89	3.67	91.55	32.13	9.26	-9.58	2.29	59.59
Western Rural	35.69	17.10	13.92	3.03	1.38	31.96	67.82	26.36	4.34	3.89	3.67	91.55	32.13	9.26	-9.58	2.29	59.59

Source: Author's construct based on SLIHS 2003 & 2011.

## **7.9 Changes in rural poverty comparing percentages and real numbers**

Two important policy concerns are investigated here: (i) while a set of districts may have accounted for the largest poverty pockets or size during the period under review, a different set may have experienced deteriorating indices; and (ii) a poverty reduction (or increase) in percentage terms does not necessarily imply a poverty reduction (or increase) in absolute/real number terms given population dynamics (see arguments in Chapter Five, Section 5.1.5). Checking for this in the data is critical so as not to mask the reality and misguide policy.

With regard to percentage changes, six districts out of the thirteen deteriorated in both poverty headcount and poverty gap index. These are Kambia, Tonkolili, Bo, Moyamba, Pujehun and Western Rural (Table 7.34 above). Two of these (Moyamba & Pujehun) experienced deteriorating extreme poverty index. Five of these (Kambia, Tonkolili, Bo, Pujehun & Western Rural) increased their contribution to national rural poverty headcount. Regionally, only the east increased its contribution to national poverty.

With regard to changes in real numbers, the rural poverty size has actually increased by 63,150 persons (Table 7.34 above, Column R)—an increase from 2,319,104 persons in 2003, to 2,382,260 persons in 2011, based on headcount index of 78.55 percent in 2003, and 68.21 percent in 2011; and rural population size of 2,952,392 in 2003, and 3,492,531 in 2011. Six districts out of the thirteen have had their poverty numbers increase: Kambia, Koinadugu, Tonkolili, Bo, Pujehun, and Western Rural District. Of these, Bo records the highest (99,380 persons), followed by Pujehun (66,570 persons), and Tonkolili (61,360 persons). Regionally, poverty numbers increased only in the southern and western region.



## 7.10 Changes in rural welfare inequalities

This section presents statistics on three aspects of poverty monitoring: (i) changes in total expenditure inequality among individuals within various analytical categories based on gini coefficient; (ii) changes in total expenditure inequality based on ratio of expenditure by the poorest 20 percent to expenditure by the richest 20 percent of the population; and (iii) changes in share of total spending on food by the poorest 20 percent, which checks for changes in engel coefficient.

The rural gini coefficient increased from 0.36 in 2003, to 0.39 in 2011, closely tracking urban and national estimates, which increased from 0.34 and 0.37, to 0.40 and 0.38, respectively (Table 7.35). The coefficient became distinguishably larger ( $\geq 0.45$ ) in the districts of Bombali, Koinadugu, Tokolili, Kono, and Kenema. It increased in all thirteen districts except Kailahun, Bo and Bonthe. The northern and eastern regions estimated the highest.

Total expenditure of the poorest one-fifth was 85 percent lower than the richest in 2003 in rural areas, closely tracking expenditure differentials in urban areas (Table 7.35, Column C). The differentials heightened in 2011—total expenditure of the poorest one-fifth fell 99 percent below the richest both in the rural and urban areas (Column G). The disparity between the income poor and the rich is also wide regarding expenditure on food—in the rural areas the poor spent about 77 percent less than the rich, compared to a disparity of 76 percent in urban areas in 2003 (Column D); this worsened again in 2011, the disparity increasing to 98 and 93 percent for rural and urban areas, respectively (Column H). These food-related indices suggest that the income poor are more exposed to malnutrition and health hazards than the rich.

No district had expenditure of its poorest population up to 25 percent of the richest in both surveys, and only in three districts (Kailahun, Bo and Bonthe) that this ratio improved during the period under review. They deteriorated in all four regions. The Engel proposition that the poor spend most of their income on food is confirmed in Table 7.35 for Sierra Leone, and is

Table 7.35: Changes in welfare inequalities during 2003-2011

Geographic Location	SLIHS2003				SLIHS2011				Changes in Inequality, 2003-2011				
	Gini coefficient	Absolute expenditure ratio of the poorest 20% to the richest 20% of the population	Food expenditure ratio of the poorest 20% to the richest 20% of the population	Share of absolute spending on food for the poorest 20% of the population	Gini coefficient	Absolute expenditure ratio of the poorest 20% to the richest 20% of the population	Food expenditure ratio of the poorest 20% to the richest 20% of the population	Share of absolute spending on food for the poorest 20% of the population	Gini coefficient	Absolute expenditure ratio of the poorest 20% to the richest 20% of the population	Food expenditure ratio of the poorest 20% to the richest 20% of the population	Food expenditure ratio of the poorest 20% to the richest 20% of the population	Share of absolute spending on food for the poorest 20% of the population
A	B	C	D	E	F	G	H	I	J	K	L	M	N
National	0.37	0.16	0.26	0.59	0.38	0.01	0.04	0.68	0.01	-0.14	-0.21	-0.21	0.09
<i>Rural</i>	0.36	0.15	0.23	0.61	0.39	0.01	0.02	0.69	0.03	-0.14	-0.21	-0.21	0.08
<i>Urban</i>	0.34	0.16	0.24	0.51	0.40	0.01	0.07	0.60	0.06	-0.15	-0.17	-0.17	0.10
<b>Rural Indices by Districts and Regions</b>													
<i>Eastern Region</i>	0.39	0.12	0.30	0.60	0.48	0.01	0.02	0.71	0.50	-0.12	-0.28	-0.28	0.11
Kailahun	0.40	0.08	0.39	0.59	0.28	0.18	0.16	0.64	-0.11	0.10	-0.23	-0.23	0.05
Kenema	0.26	0.20	0.24	0.60	0.52	0.00	0.01	0.71	0.26	-0.19	-0.24	-0.24	0.12
Kono	0.30	0.18	0.26	0.64	0.54	0.00	0.05	0.68	0.24	-0.18	-0.21	-0.21	0.04
<i>Northern Region</i>	0.33	0.16	0.23	0.61	0.50	0.13	0.11	0.66	0.17	-0.03	-0.12	-0.12	0.05
Bombali	0.31	0.18	0.17	0.59	0.49	0.01	0.01	0.75	0.18	-0.17	-0.16	-0.16	0.16
Kambia	0.23	0.24	0.32	0.60	0.43	0.02	0.01	0.71	0.20	-0.22	-0.30	-0.30	0.11
Koinadugu	0.29	0.21	0.27	0.67	0.47	0.01	0.18	0.72	0.18	-0.20	-0.08	-0.08	0.05
Porto Loko	0.31	0.13	0.19	0.56	0.41	0.03	0.05	0.70	0.10	-0.09	-0.14	-0.14	0.14
Tonkolili	0.28	0.14	0.36	0.64	0.56	0.00	0.02	0.69	0.28	-0.14	-0.33	-0.33	0.04
<i>Southern Region</i>	0.31	0.15	0.21	0.62	0.37	0.01	0.01	0.68	0.06	-0.14	-0.20	-0.20	0.06
Bo	0.52	0.10	0.18	0.62	0.29	0.17	0.13	0.64	-0.23	0.07	-0.05	-0.05	0.03
Bonthe	0.33	0.15	0.18	0.57	0.30	0.18	0.18	0.69	-0.03	0.03	0.00	0.00	0.12
Moyamba	0.30	0.18	0.25	0.63	0.31	0.15	0.13	0.69	0.00	-0.04	-0.11	-0.11	0.06
Pujehun	0.24	0.22	0.27	0.64	0.40	0.11	0.09	0.67	0.16	-0.11	-0.18	-0.18	0.02
<i>Western Rural</i>	0.30	0.20	0.29	0.56	0.34	0.19	0.15	0.67	0.03	-0.01	-0.14	-0.14	0.11
Western Rural	0.30	0.20	0.29	0.56	0.34	0.19	0.15	0.67	0.03	-0.01	-0.14	-0.14	0.11

Source: Author's construct based on SLIHS2003 & 2011.

about 10 percent more evident in rural areas than in urban areas in 2003 and 2011 (Columns E & D) . One could have expected over this PRSP period in the country that there would be a substantial shift in spending shares by the poor towards non-food items such as education. Instead, food shares of the poorest one-fifth increased for all analytical categories. From the statistics, the poor can be said to have become poorer: in all thirteen rural districts and four regions of the country the least food share by the poorest was not only high at 0.56 in 2003, but rose to 0.64 in 2011. The share by the richest on food (not reported in the tables for brevity) decreased from 0.40 in 2003, to 0.29 in 2011, suggesting the rich have become richer.

Table 7.36 presents results of an analysis of variance (ANOVA), testing for the significance of expenditure differentials among the thirteen rural districts based on the latest survey (SLIHS2011). In support of the inequality measures just discussed, the results show highly significant differences in mean total expenditure (normalised with logs) among households in the various districts. The significance level is 1.0 percent.

**Table 7.36: Expenditure differential amongst households in rural districts 2011**

a. Descriptive Statistics

District	N	Mean of Log of expenditure	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
					Lower Bound	Upper Bound		
Kailahun	359914	14.1339	.48097	.00080	14.1324	14.1355	13.24	15.98
Kenema	278084	14.1559	.92921	.00176	14.1525	14.1594	12.53	22.93
Kono	171277	14.2594	.73746	.00178	14.2559	14.2629	12.69	22.59
Bombali	318796	14.1644	1.44594	.00256	14.1594	14.1694	11.70	19.80
Kambia	246018	14.0456	.59275	.00120	14.0432	14.0479	13.07	19.50
Koinadugu	287120	14.3174	.70740	.00132	14.3148	14.3200	13.18	21.93
Port Loko	415615	14.0700	.62989	.00098	14.0681	14.0719	12.73	20.28
Tonkolili	355949	13.8905	.70395	.00118	13.8882	13.8928	13.21	22.47
Bo	331781	13.9559	.48038	.00083	13.9543	13.9576	13.03	16.01
Bonthe	117863	14.2064	.50251	.00146	14.2035	14.2092	13.29	16.00
Moyamba	217605	13.9412	.60917	.00131	13.9387	13.9438	12.12	15.94
Pujehun	257525	14.1833	.79367	.00156	14.1803	14.1864	12.14	18.12
Western Rural	134983	14.0692	.57107	.00155	14.0661	14.0722	12.11	18.16
Total	3492531	14.0957	.77553	.00041	14.0949	14.0965	11.70	22.93

**Table 7.36 (continued)**

**a. ANOVA Test**

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	52807.597	12	4400.633	7505.452	0.000
Within Groups	2047749.435	3492517	.586		
Total	2100557.033	3492529			

*Source:* Author's construct based on SLIHS2011.

### **7.11 Rural income poverty by selected household characteristics**

Table 7.37 presents a profile of rural poverty showing selected household characteristics by income poverty headcount, poverty gap index and expenditure differentials between the least quintile (the poorest one-fifth of the population) and the highest quintile (the richest one fifth of the population), comparing 2003 and 2011. Ahead of detailed analysis of determinants and predictors of rural poverty in Chapter Eight, this section provides initial pointers as to the degree of association of overall quality life with household characteristics.

#### **7.11.1 Household demographics and income poverty**

There have not been significant differences in poverty levels between male and female headed households in terms of headcount poverty index and poverty gap ratio (Table 7.37). Based on the expenditure quintiles, females appear to have higher chances of heading households among the rich than the poor and vice versa for males. There are also a few differences in poverty between households headed by persons less than 35 years and those headed by persons 35 years and above in both surveys, with higher likelihood that the former cohort would have more space to head households among the rich; the reverse is true for the poor in the case of older persons. It comes out more phenomenal that the larger the household size the higher the chances of

poverty—comparing those with less than six persons to those with six and more, the poorest one-fifth appears to be associated with larger numbers than the richest one-fifth throughout.

### **7.11.2 Economic activity, capabilities, and income poverty**

Differences in poverty between farm and nonfarm households have been substantial (Table 7.37). They were especially acute for headcount index in 2003, which tapered off somewhat in 2011. Both the poorest and richest one-fifths have disproportionately been dependent on farming compared to nonfarm activities.

Those who never went to school have been more impoverished than those who had some form of education in both surveys. The proportion of the uneducated has been substantial among both the poorest and richest one-fifth in rural areas; although, comparatively somewhat lesser in the latter. The shares of the educated are both small for the poorest and the richest; although, comparatively, the share is somewhat larger for the latter.

While households with informal healthcare provider as first option upon falling sick are more impoverished than those seeking formal healthcare, the differentials have not been wide between the poorest and richest one-fifth in the rural areas in terms of seeking both types of healthcare; although the richest group tends to seek formal care more than the poorest and vice versa for informal care.

Households dwelling in mud and earth floored houses have been more impoverished than those in concrete and better floored houses; the poorest one-fifth appears to have higher likelihood to live in poor housing condition than richest one-fifth. Those using rivers, streams, bush, common pit and bucket as toilet have been more impoverished than those using private toilet, VIP latrines and water closet (flush). However, the use of rivers, streams and bush does not seem to differ much between the poorest and richest. In 2003, the share of the poorest using common pit was much higher and vice versa on use of VIP latrine and flush, with differences

**Table 7.37: Rural income poverty by selected household characteristics 2003 & 2011**

Household characteristics		SLIHS2003					SLISH2011				
		Share of Population	Poverty Index		Population by Expenditure Quintile		Share of Population	Poverty Index		Population by Expenditure Quintile	
			Head count	Gap Index	Poorest 20%	Richest 20%		Head count	Gap Index	Poorest 20%	Richest 20%
<b>Households headed by</b>	Males	85.55	78.67	34.67	85.38	83.92	75.09	69.86	26.48	75.65	69.07
	Females	14.45	77.84	34.13	14.62	16.08	24.91	65.03	24.58	24.35	30.93
<b>Households with size</b>	Less than 6 persons	31.82	67.94	25.09	17.73	47.72	34.87	57.10	17.98	22.07	52.43
	Six persons and above	68.18	83.51	39.03	82.27	52.28	65.13	74.90	30.3	77.93	42.61
<b>Households headed by</b>	Less than 35 year olds	15.56	73.42	29.50	11.71	18.22	18.42	64.88	25.15	18.84	26.32
	35 years and above	84.44	79.49	35.53	88.29	81.78	81.58	69.51	26.2	81.16	73.68
<b>Main Economic Activity</b>	Farming	92.72	81.06	35.71	96.33	77.25	78.93	70.61	26.72	79.8	71.44
	Non-farming	7.28	44.99	20.11	3.67	22.75	21.02	61.34	23.32	20.2	28.56
<b>Education</b>	Head never attended school	78.61	80.85	36.27	86.26	70.88	81.64	69.87	26.78	85.59	76.48
	Head attended school	21.39	70.22	28.46	13.74	29.12	18.36	63.12	22.18	14.41	23.52
<b>First Option Healthcare Provider</b>	Formal	94.86	67.05	27.83	91.12	96.06	79.16	66.97	25.09	79.78	83.00
	Informal/traditional	5.14	77.20	37.89	8.88	3.94	20.84	72.85	27.12	20.2	17.00
<b>Living in houses with</b>	Mud/earth floor	82.69	79.77	35.00	84.46	74.05	77.63	69.17	25.99	80.02	74.46
	With concrete or better floor	17.31	72.59	32.62	15.54	25.95	22.37	64.28	23.18	19.98	25.54
<b>Toilet facilities</b>	Rivers, streams and bush	38.56	81.14	33.91	31.99	32.20	28.21	70.59	26.94	29.51	32.19
	Common pit and bucket	39.17	83.94	40.07	53.15	21.33	69.53	67.31	24.86	68.66	65.95
	Private toilet, VIP, flush	22.27	64.48	26.11	14.86	46.46	2.26	61.45	21.35	1.83	1.86
<b>Source of drinking water</b>	Rivers, lakes and streams	56.04	82.60	37.07	59.43	42.64	20.92	72.21	28.42	23.46	19.92
	Unprotected well	15.99	75.51	30.99	13.98	17.78	21.89	64.26	23.43	20.58	22.11
	Protected well and tap	27.97	72.10	31.68	26.59	39.58	57.20	68.09	25.01	55.96	57.97
<b>Energy for cooking</b>	Firewood	96.14	79.15	34.82	96.26	90.83	97.81	68.44	25.56	98.76	94.96
	Charcoal, kerosine, gas	3.86	63.03	28.85	3.74	9.17	2.19	55.30	16.48	1.24	5.04
<b>Access to public transport</b>	Less than 1 hour	-	-	-	-	-	63.33	68.44	10.36	62.99	60.09
	1 hour & above	-	-	-	-	-	36.67	68.09	10.97	37.01	39.91
<b>Households with:</b>	Women losing < 2 children	53.44	74.31	31.99	46.67	66.04	53.30	70.99	26.06	49.6	53.85
	Women losing >=2 children	46.56	83.40	36.44	53.33	33.96	46.70	69.88	27.4	50.4	46.15
<b>Households where head:</b>	Out-migrated before	91.10	88.93	41.12	90.14	82.39	38.57	51.77	23.37	46.04	57.82
	Did not out-migrate	8.90	81.29	38.97	9.86	17.61	61.43	67.11	24.32	53.96	42.18
<b>Households in District Councils with:</b>	Performance score >= median mark	53.75	82.05	36.37	57.97	44.47	69.28	70.78	26.85	62.28	67.74
	Performance score < median mark	46.25	74.49	32.52	42.03	55.53	30.72	80.16	33.86	37.72	32.26

*Source:* Author's construct based on SLIHS2003 & 2011.

drastically reducing in 2011. Households sourcing drinking water from rivers, lakes and streams have been more impoverished than those sourcing water from better sources such as protected wells<sup>36</sup> and tap. Differentials have not been wide between the richest and poorest one-fifth in regard to sourcing water from all sources. In terms of energy for cooking, the vast majority of households, as noted in earlier presentations, have remained far more dependent on firewood for cooking, and have been more poverty ridden than those using charcoal, kerosene and gas—no electricity use was reported in both surveys. Differentials between the poorest one-fifth and richest one-fifth on use of firewood have been insignificant. Notable differences are recorded on use of better energy sources between the two expenditure groups. And differences in time taken to access public transport do not appear to explain poverty differences between groups. Finally, households with women reporting two or more child deaths out of total live births have been more impoverished than those reporting fewer deaths. The share of the poorest one-fifth of the population falling in the former category has been larger than the richest one-fifth.

### **7.11.3 Migration, local governance, service delivery and income poverty**

In terms of migration, differences in poverty only became wide in 2011 between those who moved out for more than 12 months in previous years and those who did not, in favour of the former; the reverse is recorded for 2003 (Table 7.37 above). Expenditure quintiles indicate that there were more migrants among the poorest in 2003, and more among the richest in 2011. From the local governance front, it was revealed in 2011 that poverty was lower in districts where local authorities (district councils) were scored high for service delivery to communities. The reverse was recorded for 2003, perhaps because governance assessment had just begun.

To sum up, while the statistics generally suggest that the income poor are less served with appropriate socioeconomic conditions than the rich in the rural areas, differentials are not as

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<sup>36</sup> Protected wells are those that are treated against infections and unprotected wells are not.

wide for certain conditions. Conditions such as ‘the nature of toilet facilities used and water sources’ do not seem to differentiate between income poor and rich in some communities; both groups are nearly equally affected in some of these conditions. The narrow differentials in some cases suggest that, the high degree of remoteness of some of the communities does not effectively preclude any group from the undersupply of certain services. Bad geographic terrains among other factors can restrict supply of goods and services both by the state and private sector. In the nutshell, differences between the two income groups have not been pronounced in the following indicators: education level attained; access to healthcare; toilet facilities; access to portable drinking water; access to improved energy for domestic uses; and access to public transport. They were somewhat pronounced in the following indicators: household/family size; migration; and household location in districts with high performance score for service delivery. (Policy implications shall be discussed in detail in Chapter Nine.)

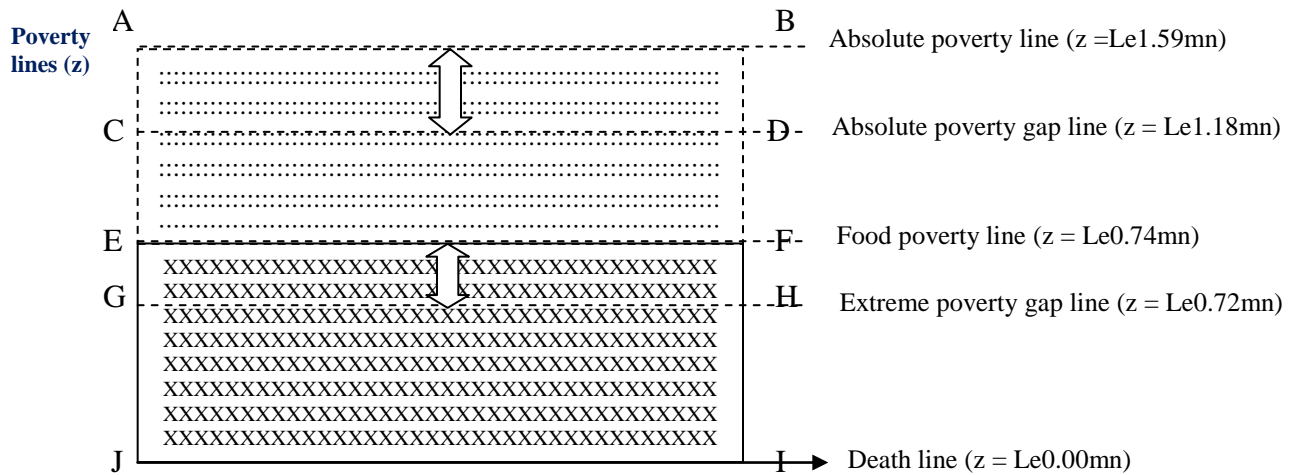
## **7.12 Calibrating financial resources required to eradicate poverty**

We will begin by clarifying the two welfare notions of extreme and absolute poverty gaps in the conceptual framework on Figure 7.2. Extreme poverty (shown by rectangle EFIJ in the figure and estimated based on the food poverty line Le786,204) is a measure of the utmost policy urgency to the state in light of the current stock of persons suffering from severe hunger, who, in the absence of immediate response, could starve to death or adopt problematic coping strategies including selling of productive asset, pulling children out of school and using child labour. Extreme poverty gap is shown by the rectangle EFHG in the figure with consumption line Le 720,000 below the food poverty line, indicating the minimum amount of financial resources required to eradicate extreme hunger.

Absolute poverty (shown by the sum of rectangles EFIJ and ABFE in the figure and estimated based on total expenditure line Le1,587,746) is a measure of the short to medium and



long term policy intervention needed to eradicate the entire poverty stock of the county—EFIJ being the extreme stock and ABFE the moderate poverty stock. The absolute poverty gap (shown by rectangle ABDC in the figure with consumption line Le 1,176,000 below the total poverty line) indicates the minimum amount of resources required to eradicate the full poverty stock.



**Figure 7.2: Delineating extreme and absolute poverty gaps**

*Source:* Author’s construct based on SLIHS2011.

From the poverty lines delineated in this figure, and the population estimates of the poor provided in Table 7.34, the minimum spending required to eradicate extreme rural poverty is estimated at US\$2.57 million based on 2011 survey, dropping from US\$5.93 million in 2003 (Columns J & S, in Table 7.38). The amount to eradicate the full stock of poverty is estimated at US\$224 million, dropping from US\$ 233 million in 2003 (Columns F & O, in the Table). The corresponding estimates for the urban sector are US\$ 100,000 for eradicating extreme poverty, dropping from US\$ 450,000 in 2003; and US\$30 million for eradicating full poverty stock, dropping from US\$42 million in 2003. These estimates further indicate that poverty is a rural phenomenon in Sierra Leone, and it tracks global poverty account. It suggests that the share of

Table 7.38: Determining extreme & total poverty gap resources, 2003 & 2011

Geographic Location	SLIHS2003								SLIHS2011									
	Population	Determining Poverty Gap Resources				Determining Extreme Poverty Gap Resources				Population	Determining Poverty Gap Resources				Determining Extreme Poverty Gap Resources			
		Poverty Head Count Based on Absolute Poverty Line		Gap Index (%)	Resources to Fill Gap (Mn'U SD)	Poverty Head Count Based on Food Poverty Line		Gap Index (%)	Resources to Fill Gap (Mn'U SD)		Poverty Head Count Based on Absolute Poverty Line		Gap Index (%)	Resources to Fill Gap (Mn'U SD)	Poverty Head Count Based on Food Poverty Line		Gap Index (%)	Resources to Fill Gap (Mn'U SD)
		Index (%)	Real Numbers			Index (%)	Real Numbers				Index (%)	Real Numbers			Index (%)	Real Numbers		
A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S
<i>National</i>	4812.90	66.37	3194.3	27.53	255.78	14.43	694.50	5.76	5.41	5774.00	54.10	3123.7	18.70	211.85	9.80	565.8	2.10	2.15
Rural	2952.39	78.55	2319.1	34.57	233.19	18.75	553.57	7.91	5.93	3492.53	68.21	2382.2	25.89	223.68	13.53	472.5	3.00	2.57
Urban	1860.51	47.02	874.81	16.31	41.50	7.58	141.03	2.34	0.45	2281.47	35.40	807.64	10.28	30.11	4.12	94.00	0.60	0.10
<b>Rural Indices by Districts and Regions</b>																		
<i>Eastern Region</i>	677.40	90.74	614.66	44.43	79.43	42.39	287.12	11.31	4.40	809.28	73.17	592.15	27.82	59.74	14.59	118.0	14.60	3.12
Kailahun	263.09	91.70	241.26	48.49	34.03	48.42	127.39	12.79	2.20	359.91	63.07	227.00	20.79	17.12	7.96	28.65	1.10	0.06
Kenema	274.10	94.81	259.88	50.00	37.79	43.50	119.24	10.90	1.76	278.08	67.03	186.40	24.78	16.75	14.78	41.10	2.90	0.22
Kono	140.20	80.96	113.51	35.68	11.78	28.88	40.49	9.35	0.51	171.28	60.69	103.95	17.57	6.62	5.65	9.68	0.70	0.01
<i>Northern Region</i>	1401.93	83.10	1164.9	36.44	123.48	29.22	409.67	8.31	4.61	1623.50	70.42	1143.2	26.28	108.96	16.27	264.1	16.20	7.75
Bombali	287.05	92.45	265.38	55.04	42.48	65.90	189.15	20.35	5.21	318.80	73.57	234.54	35.57	30.26	32.21	102.6	10.20	1.90
Kambia	223.96	73.87	165.44	24.09	11.59	9.40	21.06	1.30	0.04	246.02	75.67	186.16	25.67	17.33	8.01	19.71	1.20	0.04
Koinadugu	192.94	76.65	147.89	34.42	14.81	29.94	57.77	8.42	0.66	287.12	54.53	156.57	16.55	9.40	4.54	13.04	0.40	0.01
Porto Loko	372.42	84.56	314.92	33.03	30.26	15.99	59.57	4.70	0.38	415.62	66.27	275.43	24.74	24.71	15.9	66.08	3.30	0.39
Tonkolili	325.55	83.34	271.31	33.64	26.55	25.22	82.11	6.60	0.73	355.95	93.46	332.67	34.58	41.72	10.69	38.05	1.10	0.08
<i>Southern Region</i>	783.52	64.79	507.63	24.78	36.59	16.94	132.71	4.77	0.86	924.77	63.92	591.12	26.36	56.51	9.78	90.44	2.29	0.38
Bo	242.96	64.23	156.06	27.60	12.53	22.25	54.05	7.17	0.52	331.78	76.99	255.44	29.63	27.45	17.22	57.13	2.70	0.28
Bonthe	107.51	83.85	90.15	37.11	9.73	26.33	28.31	7.61	0.29	117.86	62.76	73.97	18.52	4.97	5.7	6.72	0.30	0.00
Moyamba	233.62	72.74	169.94	25.60	12.65	16.21	37.88	3.90	0.20	217.61	75.23	163.70	27.69	16.44	20.12	43.78	6.70	0.53
Pujehun	199.42	45.87	91.47	13.74	3.66	6.25	12.47	1.31	0.02	257.52	61.37	158.04	24.35	13.96	16.69	42.98	4.40	0.34
<i>Western Region</i>	89.55	35.69	31.96	17.10	1.59	13.92	12.47	3.46	0.06	134.98	67.82	91.55	26.36	8.75	4.34	5.86	1.70	0.02
Western Rural	89.55	35.69	31.96	17.10	1.59	13.92	12.47	3.46	0.06	134.98	67.82	91.55	26.36	8.75	21.2473	28.68	1.70	0.09

Source: Author's construct based on SLIHS2003 & 2011.

poverty resources targeted to rural areas should be the largest, and should be effectively tracked and monitored to reach the most deprived.

A striking message from Table 7.38 is the evidence that the amount of resources currently required to eradicate extreme poverty in Bombali District alone constitute more than 70 percent of projected amount for all thirteen districts; and the district is second (at 12 percent) to Tonkolili (at 17 percent) for resources required to eradicate the full stock of poverty. The next districts in need of extreme poverty financing, with equal degree of resource requirement, are Port Loko, Bo, Moyamba and Pujehun; they are Port Loko and Bo in need of full stock of poverty financing.

It should be noted that, these resource estimates are only minimum requirement. They are sensitive to changes in poverty lines and price situation. Also, the model used to come up with these estimates assumes perfect identification and targeting of the poor, and the same geographic conditions and stable prices in all locations, which is impractical. Furthermore, there are administrative and overhead costs of transferring these resources to the poor. Therefore, the actual amount required in each case can be far more than these projected thresholds, which are only meant for a guide. Also, the model is nonparametric. It has not captured any stochastic and random features that may underlie the estimates. Therefore, we will attempt to conduct parametric estimation of these resources in the next chapter based on an econometric model and compare results with the nonparametric estimates presented here.

### **7.13 Benefit incidence of public spending**

This section presents statistics regarding whether public spending on education and health has been pro-poor, comparing standard benefit incidence estimates (SBIEs) and adjusted SBIEs for 2011 and 2003 (Tables 7.39 & 7.40). The tables compare (i) public spending benefit to rural and

urban households at national level; (ii) spending benefit to the poorest and richest one-fifth of the population in rural areas; and (iii) spending benefit across the four regions of the east, north, south and west at rural level.

### Education spending

As commonly found in the poverty literature for LDCs (Demery 2000; World Bank 2008), the Sierra Leone standard benefit incidence estimates ( $\hat{e}_{ij}$ ) indicate that public spending on basic education is pro-rural and pro-poor (Table 7.39, Column C and J). For the 2003 fiscal year, the share of spending to rural areas is estimated at 58.42 percent, compared to 41.58 percent for the urban areas. The corresponding shares for 2011 are 52.54 and 47.46 percent. Benefit share to the poorest one-fifth was 28.52 percent in 2003, compared to 11.80 percent to the richest; the corresponding shares in 2011 estimated at 33.54 and 6.87 percent. And the share to the north was largest in 2003, while in 2011, the east benefited most, according to the SBIEs.

Empirics have, however, shown that standard benefit incidence estimates could be deceptive in advising fiscal decisions aimed at supporting the poor; that household surveys tend to overestimate benefit to the poor, in that the poor invariably have larger household size than the rich (ibid). Standard benefit incidence estimates therefore need to be adjusted; and we have adjusted them to reflect differences in both total and school age populations across groups (as noted in Chapter Five, Section 5.1.4), and the new results are as follows, with mixed picture:

- *Starting with per capita spending—estimated as ratio of public spending on basic education to basic school age population (6-14 years) in each analytical group ( Table 7.39, Columns D & K):* From these estimates, spending has turned out to be pro-urban and pro-rich. Share to rural areas has become more than two-fold less for 2003, and about 1.4-fold less for 2011 compared to urban areas; they also show that shares to the poorest one-fifth of the rural population have been less than the richest one-fifth for both surveys.

The western region has instead turned out to have benefited more than the rest for both surveys.

- *Adjusting SBIEs for differences in group shares in total population (Table 7.39, Columns G & N)—that is, estimating ratios of share of educating spending to share of total population across analytical groups:* Here, the adjusted estimates partially support the standard estimates that spending on education has been pro-poor, but not pro-rural. In 2003, the share to the poorest one-fifth is estimated at 32 percent more than the whole population (average share) while the richest one-fifth was 48 percent less; the corresponding estimates for 2011 are such that both the poorest and the richest had shares smaller than the whole population but the poorest was better-off 30.4 percentage points than the rich. For 2003, the share to rural areas turns out to be 2.72 percent smaller than the entire population, and 12.44 percent less for 2011; estimates for urban areas turn out to be 4.08 and 18.66 percent higher than the population average for both surveys. Regionally, the adjusted shares to the north and south estimate larger than the entire population at 25.84 and 35.45 percent for 2003, respectively; for 2011, only share to the east is estimated larger than population average at 29.33 percent.
- *Adjusting SBIEs for differences in group shares in school age population (Table 7.39, Columns H & O)—that is, estimating ratios of share of education spending to share of school age population across analytical groups:* Here, the adjusted estimates also partially support the standard estimates. For 2003, the adjusted share to the poorest one-fifth is estimated at 29.62 percent larger than the whole population, and 20.55 percent larger for 2011, while the richest one-fifth is 20 percent smaller for both surveys. For 2003, the share to rural areas is estimated at 22.36 percent smaller than the entire

Table 7.39: Benefit incidence of public education spending, 2003 & 2011

Group Categories	SLIHS2003							SLIHS2011						
	Standard Benefit Incidence Estimates (SBIE)		Standard BIE Adjusted for Difference in Group Population Size and Population of School Age Children					Standard Benefit Incidence Estimates (SBIE)		Standard BIE Adjusted for Difference in Group Population Size and Population of School Age Children				
	Group Enrolment (Eij)	Share of Total Subsidy (eij)	Per Capita Spending	Total Population Share	Share of school going age Population	BIE Adjusted for Population (C/E)	BIE Adjusted for School going age (C/F)	Group Enrolment (Eij)	Share of Total Subsidy (eij)	Per Capita Spending	Total Population Share	Share of School going age	BIE Adjusted for Population (J/L)	BIE Adjusted for School going age (J/M)
A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
	Obs.	%	Leones	%	%	%	%	Obs.	%	Leones	%	%	%	%
<i>National</i>														
Rural Households	4229	58.42	3768.44	60.05	75.15	97.28	77.74	6864	52.54	4003.95	60.00	75.15	87.56	69.92
Urban Households	3010	41.58	7916.03	39.95	24.85	104.08	167.30	6201	47.46	5467.15	40.00	24.85	118.66	190.96
Total Households	7239	100.00	4799.31	100.00	100.00	100.00	100.00	13066	100.00	4367.63	100.00	100.00	100.00	100.00
<i>Rural Households</i>														
The poorest 20%	1206	28.52	3350.58	21.65	22.00	131.72	129.62	2302	33.54	2020.30	37.43	27.82	89.61	120.55
The richest 20%	499	11.80	4388.49	18.93	16.00	62.33	73.75	472	6.87	2056.95	11.61	23.95	59.20	28.70
Total (All quintiles)	4229	100.00	3806.37	100.00	100.00	100.00	100.00	6864	100.00	2004.74	100.00	100.00	100.00	100.00
<i>Rural Households</i>														
East Region	897	21.21	1733.48	22.48	28.43	94.35	74.60	3208	46.74	3018.16	20.38	28.43	229.33	164.39
North Region	1977	46.75	4487.78	37.15	41.12	125.84	113.70	1862	27.12	4381.27	48.85	41.12	55.52	65.97
South Region	1223	28.92	3607.10	21.35	25.36	135.45	114.02	1590	23.16	4285.18	26.42	25.36	87.66	91.31
West Region	132	3.12	10128.4	19.02	5.09	16.41	61.32	205	2.98	5060.94	4.35	5.09	68.52	58.56
Total Households	4229	100.00	3768.44	100.00	100.00	100.00	100.00	6864	100.00	4003.95	100.00	100.00	100.00	100.00

Source: Author's construct based on SLIHS2003 & 2011.

population; and 30.18 percent smaller for 2011. Urban shares are estimated at 67.30 and 90.96 percent larger. Again, adjusted shares to the north and south have become larger than the entire population for 2003, while only that of the east is larger than the population average for 2011.

### Health spending

Benefit incidence estimates for health sector spending (Table 7.40) follow the same lines of analysis as the education sector. For the health sector, the SBIEs are adjusted for differences in the shares of total population and population of women and under-five children across groups. Adjusting for population of women and under-five children is particularly decisive since government has implemented a Free Healthcare Programme focusing on this social group (see Chapter Four, Section 4.2.5). For 2003, the estimates indicate that health spending was pro-rural, but not pro-poor on account of both standard benefit estimates and adjusted estimates, and the share to the south was largest on all measures. The results are somewhat mixed for 2011. Spending remained pro-rural on all accounts. It became pro-poor based on standards estimates ( $\hat{e}_{ij}$ ), but pro-rich when adjusted for shares of total population and population of women and children, and the share to the north the largest.

An interim conclusion on the above benefit incidence analysis is that education sector was generally pro-poor within the local communities (although not pro-rural relative to urban shares), and more pro-poor than spending in the health sector. Detailed interpretation and policy discussion are done in Chapter Nine.

### **7.14 Checking poverty sensitivity of resource allocation**

Table 7.41 presents fiscal simulations to evaluate the degree of poverty sensitivity of Sierra Leone's resource distribution formula. We attempt to gauge the extent of equity in resource distribution to all nineteen local councils of the country focusing on allocation differentials

Table 7.40: Benefit incidence of public healthcare spending, 2003 & 2011

Group Categories	SLIHS2003						SLIHS2011					
	Standard Benefit Incidence Estimates (SBIE)		Standard BIE Adjusted for Difference in Group Population Size and Population of Child Bearing Women and Under-Five Children				Standard Benefit Incidence Estimates (SBIE)		Standard BIE Adjusted for Difference in Group Population Size and Population of Child Bearing Women and Under-Five Children			
	Group Health care Attendance (Eij)	Share of Total Spending (eij)	Share of Total Population	Share of Women & Under-Five Children Population	BIE Adjusted for All Population	BIE Adjusted for Women & Children Population	Group Health care Attendance (Eij)	Share of Total Spending (eij)	Share of Total Population	Share of Women & Under-Five Children Population	BIE Adjusted for All Population	BIE Adjusted for Women & Children Population
A	B	C	D	E	F	G	H	I	J	K	L	M
	Obs.	%	%	%	%	%	Obs.	%	%	%	%	%
<b>National</b>												
Rural Households	818	64.32	60.05	62.92	107.12	102.24	2744	68.12	60.00	61.56	113.54	110.67
Urban Households	454	35.68	39.95	37.08	89.30	96.20	1284	31.88	40.00	38.44	79.69	82.91
Total Households	1272	100.00	100.00	100.00	100.00	100.00	4028	100.00	100.00	100.00	100.00	100.00
<b>Rural Households</b>												
The poorest 20%	67	8.23	21.65	29.36	38.03	28.04	838	30.61	37.43	33.88	81.79	90.35
The richest 20%	335	40.92	18.93	11.78	216.18	347.28	277	10.13	11.61	8.11	87.22	124.86
Total (All quintiles)	818	100.00	100.00	100.00	100.00	100.00	2738	100.00	100.00	100.00	100.00	100.00
<b>Rural Households</b>												
East	98	11.98	22.48	22.57	53.27	53.06	495	18.12	20.38	23.14	88.91	78.32
North	172	21.04	37.15	44.68	56.65	47.10	1438	52.69	48.85	45.58	107.86	115.59
South	534	65.32	21.35	30.59	305.95	213.57	770	28.19	26.42	28.65	106.71	98.40
West	14	1.71	19.02	2.17	9.00	78.97	27	1.00	4.35	2.63	22.92	37.90
Total (Ei)	818	100.00	100.00	100.00	100.00	100.00	2730	100.00	100.00	100.00	100.00	100.00

Source: Author's construct based on SLIHS2003 & 2011.



between rural and urban councils, using education as case study. A different allocation scenario is looked at through developing alternative formula *the simulator* (see Chapter Six, Section 6.2.4). To briefly recap, the simulator considers differentials in school age population (SAP), school enrolment (SE) and poverty gap resource needs (GRN) as an alternative education resource distribution scenario (SAP+SE+GRN) on a 2005<sup>37</sup> and 2011 fiscal data. The simulated estimates are then compared with actual government disbursements during these two fiscal years—government basing allocation only on school enrolment (SE). The simulated estimates indicate what the resource distribution should ideally be, and their variance with government allocation (Table 7.41).

The simulations suggest for both 2005 and 2011 that urban local councils have been receiving more resources than could otherwise have been the case if the formula was adjusted for school age population and poverty gap needs, while the rural areas receiving less (Columns E & F for 2005 and K & L for 2011). We further derive a sensitivity index (SI) through dividing actual spending by simulated spending, and it suggests that in 2005 urban councils received 29.08 percent more and rural councils 10.88 percent less in resources than they possibly would receive if school age population and poverty gap differentials were captured (Columns G). The disparity even widened in 2011, the urban councils receiving 47.60 percent more while rural councils receiving 11.73 percent less (Column M). It suggests, therefore, that equity and allocative efficiency can be enhanced for the poor if both needs and utilisation rates are captured in the resource distribution formulas. Detail discussion of the results is undertaken in Chapter Nine.

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<sup>37</sup> Fiscal data for 2005 were combined with SLIHS2003 to come up with simulation estimates for 2005. Allocation figures are not available for 2003.

**Table 7.41: Simulated fiscal allocation scenario for education sector, 2005 & 2011**

	Actual & Simulated Grant Allocation 2005						Actual & Simulated Grant Allocation 2011					
	Allocator Instruments			Actual Education Spending (based on SE only) (000'\$)	Simulated (SAP+SE+GRN Based) (000'USD)	Sensitivity Index (SI) (%)	Allocator Instruments			Actual Education Spending (based on SE only) (000'\$)	Simulated Education Spending (SAP+SE+GRN Based) (000'USD)	Sensitivity Index (SI) (%)
	School Age Population (SAP)	School Enrolment (SE)	Gap Resource Needs (GRN) (000'USD)				School Age Population (SAP)	School Enrolment (SE)	Gap Resources (000'USD)			
<b>A</b>	<b>B</b>	<b>C</b>	<b>D</b>	<b>E</b>	<b>F</b>	<b>G</b>	<b>H</b>	<b>I</b>	<b>J</b>	<b>K</b>	<b>L</b>	<b>M</b>
<b>Urban Local Council</b>				<b>173.46</b>	<b>108.11</b>	<b>129.08</b>				<b>66.93</b>	<b>44.50</b>	<b>247.60</b>
Bo Town	34521	49312	3,670	140.63	87.78	160.20	39113	62587	5,740	62.41	40.04	155.88
Bonthe Town	2174	1545	2,360	10.07	10.63	94.77	2463	2519	604	16.15	2.45	659.71
Kenema Town	26463	39727	21,040	125.91	126.10	99.84	29983	63346	10,255	54.21	43.77	123.86
Koidu Town	18670	9762	5,410	20.42	41.43	49.28	21153	33133	3,749	38.65	22.37	172.77
Makeni Town	22640	37030	3,910	114.52	66.91	171.17	25651	24620	2,051	45.46	18.86	240.99
Freetown	179370	156991	5,600	629.22	315.83	199.23	203228	210273	6,266	184.72	139.53	132.38
<b>Rural Local Council</b>				<b>129.91</b>	<b>160.07</b>	<b>89.12</b>				<b>68.40</b>	<b>81.66</b>	<b>88.27</b>
Bo District	69849	58737	12,528	139.00	152.92	90.90	79140	89369	33,933	65.00	102.20	63.60
Bombali District	66297	41537	42,484	118.33	226.59	52.22	75115	86222	35,658	76.72	102.42	74.91
Bonthe District	34698	31567	9,731	73.61	89.28	82.45	39313	40788	6,624	44.04	34.87	126.31
Kailahun District	79822	37593	34,027	88.84	207.05	42.91	90439	71593	22,881	69.05	84.63	81.59
Kambia District	62334	41390	11,592	144.74	126.84	114.12	70625	90045	22,376	66.28	82.83	80.02
Kenema District	92230	47342	37,794	102.32	238.35	42.93	104498	87414	20,887	72.01	91.15	79.01
Koinadugu District	44946	29109	14,806	84.61	110.86	76.33	50924	72808	12,039	62.55	56.15	111.40
Kono District	71927	27251	11,780	55.05	121.07	45.47	81494	64468	8,622	49.50	58.87	84.09
Moyamba District	55209	72085	12,654	155.87	154.86	100.65	62552	91108	20,897	79.43	78.32	101.42
Port Loko District	106852	90689	30,255	293.84	269.38	109.08	121065	120929	31,140	103.61	121.53	85.26
Pujehun District	57901	32425	3,656	77.78	89.65	86.76	65603	55602	17,750	52.91	64.16	82.47
Tonkolili District	72406	72882	26,547	159.77	212.73	75.11	82037	102495	50,934	90.90	131.72	69.01
Western Rural District	43679	42060	1,590	195.11	81.41	239.68	49489	69673	10,671	57.20	52.75	108.44

*Source:* Author's construct based on SLIHS2003 & 2011.

### **7.15. Summary of chapter**

We have extensively described the conditions underpinning Sierra Leone's rural wellbeing status, ranging from household compositions and size, to socioeconomic contexts and status of service delivery to the communities. These conditions constitute structures that poverty policies should mainly target for rural transformation to ensure sustainable and long term poverty reduction and macroeconomic development. We deduce that these conditions (their implications discussed in detail in Chapter Nine) have not generally been transformed to desired degree to support effective reduction of rural income poverty. The analysis of fiscal programming (done through examining benefit incidence estimates and poverty sensitivity of resource allocation) also indicates that rural poverty would have reduced more than has been realised if additional parameters were considered in policy decision processes. Finally, this chapter has generally led us to forming a substantial initial impression of what the key determinants of rural poverty in Sierra Leone are, an investigation that will preoccupy us in the next chapter we now turn to.

## **Chapter Eight**

### **Regression Analysis of Determinants of Rural Poverty in Sierra Leone**

Six dimensions of rural welfare have been econometrically analysed in this chapter with the objective of determining key predictors of rural poverty based on the latest living standards survey, SLIHS2011. We divide the chapter into two parts. Part One undertakes an OLS, equation-by-equation, estimation of the six welfare (poverty) dimensions: household economic wellbeing; education status; health status; nutrition status; participation in nonfarm activities (employment); and migration (see Chapter Six for the analytical framework). Two stages are involved in each equation estimation process. Stage one undertakes a factor analysis of numerous hypothesised observed predictors/measures of deprivation to reveal the underlying structure (latent factors) of the determinants and to reduce the bulk of variables to parsimonious set for regression analysis. Stage two runs regression equations and assesses the significance of factor predictors of each poverty dimension. Each estimation process is performed independently among the six functions with the initial assumption that the six poverty decisions studied are mutually exclusive in the household.

Part Two relaxes this assumption on a more practical ground and undertakes a nonrecursive simultaneous equation estimation to determine interactively and more robustly the key predictors of poverty using a structural equation modelling (SEM) framework and a two-stage probit least squares (2SPLS), comparing their estimates with OLS output. We undertake a SEM in view of the practical situation that households with low income generally encounter, having to reach series of decisions concurrently and in a complex way. Decisions such as related to the six poverty dimensions studied are hypothesised to affect each other. We conduct

postestimation analyses after estimating the SEM to (i) determine the various weights of the six poverty dimensions in an estimated *total rural welfare value/score*, and (ii) to conduct policy simulation and experimentation to examine and weigh various policy options for rural poverty reduction.

The 2SPLS is an extension of the SEM. It conducts a two-equation nonrecursive simultaneous system estimation of “poverty headcount” and “years of schooling of the household head.” Education has been determined in Part One and SEM analysis as lead predictor of rural welfare among the six poverty dimensions studied. Thus the main focus in the 2SPLS is to predict poverty reduction (in headcount) with education and other significantly loading policy choice variables. We also use this model to predict minimum public financial resources required to eradicate poverty and amount needed to invest in education and other policy areas in the process. The model provides complementary analysis to the benefit incidence analysis conducted in Chapter Seven by running both rural and urban sector regressions, comparing their predicted marginal effects and poverty elasticities. The third and fourth research objectives are mainly addressed in this chapter:

***Research Objective 3:** To determine the most significant factors in explaining rural poverty.*

***Research Objective 4:** To analyse different policy scenarios for rural poverty reduction in the years to come.*

## **PART ONE: EQUATION-BY-EQUATION ANALYSIS OF POVERTY DETERMINANTS**

As mentioned above, we employ two-stage analysis here: we conduct a factor analysis in stage one to feed into the regression analysis in stage two (Amin & Ramayah 2010; Coromaldi & Zoli 2007; Shah et al. 2005; Sahn & Stifel 2003; Sirven 2006; Ssewanyana et al. 2007; Wagle 2010). All variables included in the regression stage are latent factors, extracted in the first stage using

the factor analysis module in SPSS statistical package, version 20.0 based on the principal component method and varimax/kaiser normalisation rotation method; rotation is performed until the eigen value of each latent factor is at least 1 (Amin & Ramayah 2010; Sahn & Stifel 2003). The varimax rotation maximises the variance of factor loadings, ensuring that high loadings become higher and low loadings lower so that highly significant factors can clearly be highlighted from less significant ones (Rummel 1967; Shah et al. 2005). Other rotation methods include quartimax, direct oblimin, equamax and promax [see Amin & Ramaya (2010); SPSS version 20].

Only factor measures with significant loadings/communalities are reported in this analysis and are the basis for extracting latent variables using factor scores (Amin & Ramaya 2010; Hair et al. 2010). In the literature, loadings 0.30 and above have practical significance for samples of size 350 and above which is consistent with our study sample. Any sample size below this threshold requires loadings above 0.30 for factor measures to be significant; otherwise an associated measure can be dropped off the list as insignificant in forming a factor (Hair et al. 2010, pp.117-118). Annex 1 presents a description of all factors and factor measures initially considered for the analysis. Annex 2 shows the hypothesised relationships among these factors, purposely meant to elaborate the structural equation model to be estimated in Section 8.8. Annex 3 presents summary statistics of the factors extracted for both Part One and Two estimations.

Table 8.1 presents a summary of hypothesised independent factor variables showing their direction of expected effects on all six poverty dimensions studied as discussed in Chapter Six. It shows expected signs/direction of effect of hypothesised variables entering either the OSL or the SEM or both.

**Table 8.1: Summary of hypothesised factor variables/direction of effect, OLS/SEM**

Independent Variables	Dependent Variables					
	Economic Wellbeing	Education	Health	Nutrition	Employment	Migration
Economic wellbeing (ECO-W)	+	+	+	+	+	-
Education (EDU)	+	+	+	+	+	+
Health (HLTH)	+	+	+	+	+	-
Nutrition (NUTR)	+	+	+	+	+	-
Employment (Off-FaEM)	+	+	+	+	+	+
Migration (MIG)	+	+	+	+	+	+
Demographic Management (DEMO)	+	+	+	+	+	-
Geographic Location (LOC)	+	+	+	+	+	-
Community Infrastructure (COM-INF)	+	+	+	+	+	-
Housing and Environment (HOS-ENV)	+	+	+	+	+	-
Mothers' Capacity (MOTH-CAP)	+	+	+	+	+	-
Preventive Healthcare (PREV-HLTH)	+	+	+	+	+	-
Public Service Delivery (PUB-SERV)	+	+	+	+	+	-
Post Conflict Management (PC-MGT)	+	+	+	+	+	-
Agriculture (AGR_TRA)	+	+	+	+	+	-
Macro Policy (MACRO)	+	+	+	+	+	-

*Source:* Author's construct based on hypothesised factor variables as discussed in Chapter Six & captured in Annex 2.

## 8.1 Determinants of rural household economic wellbeing

### Extraction of dependent variable

Table 8.2 presents standardised loadings on the economic wellbeing dimension extracted as latent factor and entered as dependent composite variable in the regression model. From this table, the measures of the *economic wellbeing factor* found with significant loadings are: household level of expenditure (normalised using logs); whether the household is categorised as poor or nonpoor on the basis of the national poverty line; and the household level of income. Other measures such as asset (or wealth measure) and relative poverty indicators were included in the model but not revealed with significant loadings. The value of the Kaiser-Meyer-Olkin of 0.518 (greater than 0.5) indicates that the sample was adequate for the conduct of factor analysis to extract the dependent variable, and the appropriateness of the analysis is confirmed by the Bartlett's Test of Sphericity with significant chi-square value at 2328.764 with p-value=0.00.

**Table 8.2: Standardised loadings of economic wellbeing dependent factor variable**

Observable measures (Poverty Indicators)	Economic Wellbeing
Log of household heads' consumption	0.898
Heads' aggregate expenditure classed as poor or nonpoor	0.874
Log of household income	0.391
KMO measure of sampling adequacy	0.518
Bartlett's Test of Sphericity: Chi-Square (P-value)	2328.764 (0.00)

*Source:* Author's construct based on SPSS statistical package version 20.0 and SLIHS2011.

### Extraction of independent variables

Table 8.3 presents standardised factor loadings on five extracted independent variables as final hypothesised predictors of economic wellbeing. These are labelled sequentially as: Public Service Delivery by District Councils; Migration; Education; Agricultural Transformation; and Post-Conflict Management.

- The measures found significantly loading on the *Service Delivery Factor* are: community satisfaction with local council budget spending; their perception of the degree of responsiveness of councils to community needs; the extent of community knowledge of their councillors; non-food price situation; government allocation to councils towards education programmes; and amount of credit secured by households.
- The measures found significantly loading on the *Migration Factor* are: moving out of the household for more than 12 months in previous years; whether moving out before irrespective of time duration; and whether moved within the country, out of the country, or not.
- The measures found significantly loading on the *Education Factor* are: level of schooling attained by household head; amount of expenditure on child schooling;



household size; whether head ever went to school; and government allocation towards district health programmes.

- Indicators loading significantly on the *Agricultural Transformation Factor* are: rights of trading land through the market; types of land entitlement; whether received assistance due to membership in a development (social/political/etc) organisation; whether generally participated in any organisational activity; whether utilised hired labour for farming; and central government transfers towards district agricultural programmes.

**Table 8.3: Standardised loadings of independent factor variables**

Observable measures (Poverty Indicators)	Standardized Factor Loadings				
	Public Service Delivery	Migration	Education	Agric Transformation	Security
Public satisfaction with local council budget spending	.870				
Public perception of responsiveness to community needs by councils	.791				
Public knowledge of their local councillors	.763				
Frequency of visits to communities by local councillors	.529				
Regional non-food price index	-.383				
Central government transfers to councils toward education programme	-.369				
Log of credit amount to households	-.306				
Whether household head ever migrated for more than 12 months		.934			
Whether head ever migrated out of country or within the country		.933			
Whether ever migrated for various durations of time		.727			
Highest class attained in school by household head			.868		
Log of household spending on child schooling			.829		
Household size			-.501		
Whether household head ever attended school			.477		
Central government transfers to councils towards health programme			.371		
Whether head has rights to trade land in the market				.680	
Types of entitlement to land				.650	
Whether head receives assistance due to membership in organisations				.614	
Whether head is member or participate in organisations				.591	
Whether head uses hired labour for farming				.405	
Central transfers to councils towards agriculture programme				.369	
Public perception of safety at night					.809
Public confidence in state for protection					.789
Public perception of levels of violence in the communities					.698
Governance performance rating of local councils					-.356
KMO measure of sampling adequacy			0.51		
Bartlett's Test of Sphericity: Chi-Square (P-value)			46866.527 (0.000)		

*Source:* Author's construct based on SPSS statistical package version 20.0 and SLIHS2011.

- The measures significantly forming the final factor, *Post-Conflict Management*, are: perception of the community about safety at night; confidence of the community in the state's capacity for protecting them; perception of level of violence in the community; and district council governance performance score.

The values of the Kaiser-Meyer-Olkin of 0.510 and Bertlett's Tests of 46866.527 (p-value=0.00) support the need for and adequacy of factor analysis to extract these independent latent variables (Table 8.3).

#### Final regression model and results for economic wellbeing

Following the factor extractions, the final regression model of economic wellbeing is specified in Eq. (8.1), where ECON\_W is household economic wellbeing as dependent variable.

$$ECON\_W = \alpha_1 + \alpha_2PUB\_SERV + \alpha_3MIG + \alpha_4EDU + \alpha_5AGR\_TRA + \alpha_6PC\_MGT + \varepsilon \text{ --- 8.1}$$

The independent variables are PUB\_SERV, status of public service delivery by local councils; MIG, migration; EDU, level of schooling attained by household head; AGR\_TRA, agricultural transformation; and PC\_MGT, post-conflict management. The terms  $\alpha$ 's are parameters to be estimated;  $\varepsilon$  is error term. A-priori, all five regressors are expected to positively impact on economic wellbeing. The justification and literature supporting the hypothesised direction of effects were discussed in the general methodological chapter (Chapter Six, Sections 6.1.1 & 6.3.4; and see Table 8.1 above for summary of hypothesised variables and direction of effects). As noted earlier, a negative impact of migration on economic wellbeing could not be unexpected given that migrants from rural areas are mostly with little or no education.

### ***Estimation results***

All five predictors but one (post-conflict management) are found to be significant in influencing household economic status (see Table 8.14, based on a total number of observations of 3454 rural households; for comparison, this table brings together regression results of economic wellbeing and the other five poverty dimensions estimated below).

The migration factor coefficient (0.034) suggests that moving out in search of better economic opportunities increases chances of improving household economic wellbeing. Education also appears with positive impact as expected, with larger factor coefficient (0.126) among all significant regressors in explaining economic wellbeing. That is, high education status increases chances of accessing nonfarm jobs, leads to better know-how in the application of farm methods, better decisions in the households, and hence rising purchasing power.

The results suggest that public service delivery by local councils has not been satisfactory, and not conducted in ways that will improve economic wellbeing of the average household, with a negative coefficient of -0.041. Scoring local councils high for public service delivery under the current assessment framework does not appear to necessarily imply increased economic wellbeing overall, suggesting the need for better framework to assess service delivery performance. Another implication, however, is that the initial (short run) effort of public service delivery might not have been *pareto improving*<sup>38</sup> although the welfare of some segments of the population increasing. If a decline in the wellbeing of the (possibly) left out population segments in services outweighs the positive effect these services may have on other segments, a net decline in the overall economic wellbeing will occur (see Chapter Nine for detailed discussion).

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<sup>38</sup> In the theory of welfare economics (discussed in most standard microeconomic texts) pareto improvement is a desired outcome in distribution of resources. An allocation/reallocation of resources is a desired one or pareto improving “if it allows more of something to be produced without the sacrifice of something else” (see <http://pages.uoregon.edu/cjellis/441/441notes.pdf>, visited 20<sup>th</sup> November, 2013).

However, caution should be exercised with regard to the nature of the data on this variable, for which we are checking the robustness of this evidence with the simultaneous equations below.

The agricultural transformation factor also unexpectedly shows negative impact on economic wellbeing with a coefficient of -0.080, perhaps only a short run phenomenon (to be investigated more robustly in a different estimation framework below). The lead measure of this factor in terms of loading is *the right to trade land in the market* and the immediate suggestion based on this measure is that *just* trading rural lands may not guarantee the economic wellbeing of peasants in the absence of proper negotiations of land deals on their behalf noting that most of the landowners lack education. Moreover, wellbeing cannot be guaranteed if proceeds from land sales are not put into proper use.

The F-test suggests the model is significant overall (Table 8.14). The value of the variance inflating factor (VIF) is far below the threshold of 10 and shows absence of serious case of multicollinearity, a common econometric defect in regressions run on many observed and scale variables (Amin & Ramaya 2010). This lends further credence to the need for regression on latent factor constructs as remedial measure of multicollinearity. Robust coefficients are reported to correct for any heteroscedasticity which is common in household survey data. However, the significance of the Ramsey RESET F-test at 1.0 percent suggests the presence of endogeneity in the economic wellbeing OLS estimates, which is not surprising as discussed in Chapter Six, and it is a key reason for running simultaneous equation model below.

## **8.2 Determinants of rural household education status**

### Extraction of dependent variable

Table 8.4 presents standardised loadings on the education poverty dimension extracted as latent factor and entered as dependent composite variable in the education regression. From Table 8.4,

the measures found significantly loading on education are: highest level of schooling attained by the household head (also serving as proxy for parental education); whether the household head ever went to school or not; and the level of spending on child schooling (normalised with logs). The values of the Kaiser-Meyer-Olkin (0.512) and Bertlett’s Test of Sphericity (3029.155 at p-value=0.00) support the need for and adequacy of factor analysis to extract the dependent latent variable.

**Table 8.4: Standardised loadings of education status dependent factor variable**

Observable measures (Poverty Indicators)	Education
Highest school grade attained by household head	0.928
Log of expenditure on child schooling	0.843
Whether head ever attended school or not	0.583
KMO measure of sampling adequacy	0.512
Bartlett's Test of Sphericity: Chi-Square (P-value)	3029.155 (0.00)

*Source:* Author’s construct based on SPSS statistical package version 20.0 and SLIHS2011.

### Extraction of independent variables

Table 8.5 presents standardised factor loadings on five extracted independent variables as final hypothesised predictors of household education status. These are labelled sequentially as: Community Infrastructure; Public Service Delivery; Migration; Economic Wellbeing; and Mothers’ Capacity.

- The measures found with significant loadings in forming the ***Community Infrastructure Factor*** are: time taken to access secondary school; time taken to access public transport; time taken to visit hospital; time taken to go to clinic; time taken to access all weather or seasons roads; time taken to access primary school; and time taken to source drinking water.
- The measures of ***Public Service Delivery Factor*** found with significant loadings are: local public satisfaction with budget spending by local councils; public perception of the

responsiveness of councils to community needs; level of local public knowledge of their councillors; public trust in the operations of local councils; rate of visiting communities by local councillors; central transfers to councils towards health pending; and regional location of households.

- Measures significantly grouping to form the *Migration Factor* are: moving out of the household for more than 12 months in previous years; whether moving out of country or within country; moving out for various durations of time; central government transfers to councils towards education programmes; and transfers to councils towards agriculture programmes.
- Measures significantly loading on the *Economic Wellbeing Factor* are: perception of one's welfare level based on own income; perception of one's welfare relative to others; perception of income situation; perceived changes in living standards over the previous years; and household size.
- The measures found significantly loading on the final extracted factor, *Mothers' Capacity*, are: whether father was in the household; sex of the household head; marital status of household head; whether spouse was in the household; whether father was alive; and whether mother was in the household.

The values of the Kaiser-Meyer-Olkin of 0.533 and Bartlett's Tests of 53344.76 (p-value=0.00) suggest the need for and adequacy of factor analysis to extract these exogenous factors to explain level of rural education attainment (Table 8.5).

**Table 8.5: Standardised loadings of independent factor variables**

Measures	Standardized Factor Loadings				
	Communi- nity Infras- tructure	Public Service Delivery	Mig- ration	Eco- nomic Well- being	Mother's Capacity
Time taken to access secondary school	.764				
Time taken to access public transport	.732				
Time taken to visit hospital	.717				
Time taken to access clinic	.709				
Time taken to food market	.694				
Time taken to access all seasons roads	.593				
Time taken to access primary school	.527				
Time taken to access source of drinking water	.324				
Public satisfaction with local council budget spending		.868			
Public perception of responsiveness to community needs by councils		.817			
Public knowledge of their local councillors		.801			
Public trust in the operations of councils		.539			
Frequency of visits to communities by local councillors		.437			
Central government transfers to councils toward health programme		-.318			
Geographic (regional) location of household		.304			
Whether household head ever migrated for more than 12 months			.916		
Whether head ever migrated out of country or within the country			.916		
Whether ever migrated for various durations of time			.708		
Central transfers to councils towards education programmes			-.381		
Central transfers to councils towards agriculture programmes			-.347		
Perception of welfare level by head based on own income				.852	
Perception of welfare level by head relative to others				.840	
Perception of income situation by head				.620	
Changes in living standards over the previous year				.460	
Household size				-.319	
Whether father in the household					.721
Sex of household head					.702
Marital status of household head					.579
Spouse present in the household					.529
Whether father is alive					.486
Whether mother in the household					.477
KMO measure of sampling adequacy			0.533		
Bartlett's Test of Sphericity: Chi-Square (P-value)			53344.76 (0.000)		

*Source:* Author's construct based on SPSS statistical package version 20.0 and SLIHS2011.

### Final regression model and results for education

Following the factor extractions, the final model for education regression estimation using OLS is specified in Eq.8.2; where the variable EDU is education as dependent variable.

$$EDU = \beta_1 + \beta_2 COM\_INF + \beta_3 PUB\_SERV + \beta_4 MIG + \beta_5 ECON\_W + \beta_6 PAR\_COH + \epsilon \quad \text{--- 8.2}$$

The independent variables are: COM\_INF, community infrastructure; PUB\_SERV, status of service delivery by local councils; MIG, migration; ECON\_W, economic wellbeing; MOTH\_CAP, mothers' capacity. The  $\beta$ 's are parameters to be estimated;  $\epsilon$  is error term. A-priori, all five regressors are expected to positively impact on education status. The justification and literature supporting the hypothesised direction of effects were discussed in the methodological chapter (Chapter Six, Section 6.1.2).

### *Estimation results*

Table 8.14 presents the regression results based on a total number of observations of 2866 rural households. Community infrastructure significantly and positively affects household education with impact coefficient of 0.220. It can be expected that improved supply of education, health and water services and good road condition will have an integrated effect on education. Again, public service delivery appears not supporting rural education as expected; it rather appears to negatively affect education aspirations of some households (to be further investigated in the estimations below).

Migration positively affects rural education with a coefficient of 0.030, suggesting that moving out for greener pastures may increase earnings of rural households and would come with other opportunities including exposure to development information and awareness that may positively impact on education. As obviously expected, household economic wellbeing is found to have significant and positive effect on education with a coefficient of 0.220. Mothers' capacity is also found positively and significantly affecting education. The role of mothers is increasingly argued as crucial to household development in LDCs, particularly for children, grounds for growing global advocacy to prioritise girl child education (UNFPA 2012). Given the measures that load on it, the significance of the mothers' capacity factor suggests a need to strengthen



parental cohesion; the presence of fathers and mothers in households with good health condition and regularised unions is pivotal to the promotion of household stability and education status, more so for coordinated support for child schooling.

The F-test suggests the model is significant overall (Table 8.14). The variance inflating factor (VIF) shows absence of serious case of multicollinearity at a VIF value of less than 10. Robust coefficients are reported to correct for heteroscedasticity (Table 8.14). But again, the significance of the Ramsey RESET F-test suggests the presence of endogeneity in the education status OLS estimates, and it is part of the reason for running simultaneous equation model below.

### **8.3 Determinants of rural household health status**

#### Extraction of dependent variable

Table 8.6 presents standardised loadings on the health poverty dimension extracted as latent factor and entered as dependent composite variable in the health status regression. The measures found significantly loading on this dimension are: number of pregnancies reportedly ending in live births per woman interviewed; ratio of children alive to total births reported; and normalised household expenditure on health goods and services. The values of the Kaiser-Meyer-Olkin (0.516) and Bertlett's Test of Sphericity (2612.29 at p-value=0.00) indicate that there was need for and appropriateness of factor analysis to extract the dependent variable.

**Table 8.6: Standardised loadings of health status dependent factor variable**

Observable measures (Poverty Indicators)	Health
Pregnancy of women interviewed ended in live birth or not	0.691
Ratio of children alive to those ever born per woman interviewed	0.671
Log of aggregate expenditure on health by the household	-0.413
KMO measure of sampling adequacy	0.516
Bartlett's Test of Sphericity: Chi-Square (P-value)	2612.3 (0.00)

*Source:* Author's construct based on SPSS statistical package version 20.0 and SLIHS2011.

### Extraction of independent variables

Table 8.7 presents standardised factor loadings on four extracted independent variables as final hypothesised predictors of household health status. These are labelled sequentially as: Community Infrastructure; Migration; Economic Wellbeing; and Public Service Delivery.

- The measures found with significant loadings in forming the ***Community Infrastructure Factor*** are: time taken to access secondary school; time taken to access public transport; time taken to visit hospital; time taken to go to clinic; time taken to go to food market; time taken to access all weather/seasons roads; time taken to access primary school; highest level of schooling attained by head; normalised expenditure on child schooling; and time taken to source drinking water.
- The measures found significantly grouping to form the ***Migration Factor*** are: moving out of the household for more than 12 months in previous years; whether moving out of country or within country; and moving out for various durations of time.
- Measures significantly loading on the ***Economic Wellbeing Factor*** are: perception of one's welfare level based on own income; perception of one's welfare relative to others; perception of income situation; perceived changes in living standards over the previous years; whether received assistance due to membership in development

(social/political/etc) organisation; and whether generally participated in such development organisations.

- Measures significantly forming the final factor, *Public Service Delivery*, are: public satisfaction with budget spending by local councils; level of public knowledge of their councillors; public perception of responsiveness of councils to community needs; and rate of visiting communities by local councillors.

**Table 8.7: Standardised loadings of independent factor variables**

Measures	Standardised Factor Loadings			
	Community Infrast- ructure	Mig- ration	Eco- nomic Well- being	Public Service delivery
Time taken to access secondary school	.767			
Time taken to access public transport	.719			
Time taken to visit hospital	.705			
Time taken to access clinic	.705			
Time taken to food market	.669			
Time taken to access all seasons roads	.551			
Time taken to access primary school	.541			
Highest class attained in school by household head	.430			
Log of household spending on child schooling	.386			
Time taken to access source of drinking water	.310			
Whether household head ever migrated for more than 12 months		.956		
Whether head ever migrated out of country or within the country		.956		
Whether ever migrated for various durations of time		.745		
Perception of welfare level by head based on own income			.827	
Perception of welfare level by head relative to others			.819	
Perception of income situation by head			.644	
Changes in living standards over the previous year			.398	
Whether head receives assistance as member in organisations			.377	
Whether head is member or participate in organisations			.363	
Public satisfaction with local council budget spending				.873
Public knowledge of their local councillors				.808
Public perception of responsiveness to community needs by councils				.779
Frequency of visits to communities by local councillors				.451
KMO measure of sampling adequacy		0.651		
Bartlett's Test of Sphericity: Chi-Square (P-value)		41235.76		

*Source:* Author's construct based on SPSS statistical package version 20.0 and SLIHS2011.

The values of the Kaiser-Meyer-Olkin of 0.651 and Bertlett's Tests of 4123.76 (p-value=0.00) suggest the need for and adequacy of factor analysis to extract these exogenous factors to explain the level of household health status (Table 8.7 above).

#### Final regression model and results for health

Following the factor extractions, the final model for education regression estimation using OLS is specified in Eq.8.3; where HLTH is health status as dependent variable.

$$HLTH = \theta_1 + \theta_2 COM\_INF + \theta_3 MIG + \theta_4 ECON\_W + \theta_5 PUB\_SERV + \tau \quad \text{--- 8.3}$$

The independent variables are: COM\_INF, denoting community infrastructure; MIG, migration; ECON\_W, economic wellbeing; PUB\_SERV, status of public service delivery. The terms  $\theta$ 's are parameters to be estimated; and  $\tau$  is error term. A-priori, all four regressors are expected to positively impact on health status. The justification and literature supporting the hypothesised direction of effects were discussed in the methodological chapter (Chapter Six, Section 6.1.3).

#### ***Estimation results***

Table 8.14 presents the regression results based on a total number of observations of 2866 rural households. Migration positively and significantly affects rural health status with impact coefficient of 0.032. As suggested by its effect on education, moving out for greener pastures may increase earnings and opportunities including exposure to development information and awareness that can support investment in healthcare along the *productive* and *allocative efficiency* thinking in Grossman (2000) and related arguments (Banerjee & Duflo 2011; Mackinnon 1995; among others). Contradictorily, however, the economic wellbeing factor comes out with negative coefficient for health (-0.0125). This suggests a negative substitution

effect between household needs noting that the average rural household has income below the national poverty line (Chapter Seven). Thus increased spending on one need may imply reduction in spending on another (to be investigated more robustly in the system estimation below).

Community infrastructure positively affects rural health status as expected, with estimated impact of 0.0195. Indeed, improved supply of social services such as health, education and water amenities and good road condition can have an integrated effect on health. The coefficient of public service delivery factor comes out insignificant in affecting health status.

The F-test suggests the model is significant overall (Table 8.14). The variance inflating factor (VIF) shows absence of serious case of multicollinearity at a VIF value of less than 10. Robust coefficients are reported to correct for heteroscedasticity (Table 8.14). Here, the Ramsey RESET F-test is insignificant, and does not suggest presence of endogeneity in the health status OLS estimates

## **8.4 Determinants of rural household nutrition status**

### Extraction of dependent variable

Table 8.8 presents standardised loadings on the nutrition poverty dimension extracted as latent factor and entered as dependent composite variable in the nutrition status regression. The measures found significantly loading on this dimension are: regional food price index; child growth measured by underweight z-scores; child growth measured by wasting z-score; and growth measured by stunting z-scores. The values of the Kaiser-Meyer-Olkin (0.507) and Bertlett's Test of Sphericity (1567.99 at p-value=0.00) indicate that there was need for and appropriateness of factor analysis to extract the nutrition endogenous factor.

**Table 8.8: Standardised loadings of nutrition status dependent factor variable**

Observable measures (Poverty Indicators)	Nutrition
Log of household heads consumption	
Regional food price index	0.957
Child underweight z-score measure	0.946
Child wasting z-score measure	0.808
Child stunting z-score measure	0.765
KMO measure of sampling adequacy	0.507
Bartlett's Test of Sphericity: Chi-Square (P-value)	1568.0 (0.00)

*Source:* Author's construct based on SPSS statistical package version 20.0 and SLIHS2011.

### Extraction of independent variables

Table 8.9 presents standardised factor loadings on five extracted independent variables as final hypothesised predictors of nutrition status. These are labelled sequentially as: Community Infrastructure; Public Service Delivery; Mothers Capacity; Migration; and Economic Wellbeing.

- The measures found with significant loadings in forming the ***Community Infrastructure Factor*** are: time taken to access secondary school; time taken to access clinic; time taken to access food market; time taken to access public transport; time taken to access hospital; time taken to access primary school; time taken to access all weather/seasons roads; source of drinking water; and time taken to source drinking water.
- The measures found significant in forming the ***Public Service Delivery Factor*** are: public satisfaction with budget spending; level of public knowledge of their councillors; public perception of responsiveness of councils to community needs; level of public trust in councils; and rate of visiting communities by local councillors.
- The measures found significant in forming the ***Mothers' Capacity Factor*** are: age at first pregnancy; mothers' level of education; age at first child birth; and marital age.

- The measures found significant in forming the *Migration Factor* are: moving out of the household for more than 12 months in previous years; whether moving out of country or within country; and moving out for various durations of time.
- The final factor, *Economic Wellbeing*, is significantly formed by the following measures: perception of one's welfare level based on own income; perception of one's welfare relative to others; perception of income situation; highest level of schooling attained by head; and whether head ever went to school.

**Table 8.9: Standardised loadings of independent factor variables**

Measures	Standardised factor loadings				
	Community Infras- tructure	Public Service Delivery	Mothers' Capacity	Mig- ration	Eco- nomic Well- being
Time taken to access secondary school	.760				
Time taken to clinic	.723				
Time taken to food market	.717				
Time taken to access public transport	.717				
Time taken to visit hospital	.670				
Time taken to primary school	.587				
Time taken to all seasons roads	.541				
Source of drinking water	.467				
Time taken to access drinking water source	.307				
Public satisfaction with local council budget spending		.841			
Public knowledge of their local councillors		.804			
Perception of responsiveness to community needs by		.789			
Public trust in the operations of councils		.614			
Frequency of visits to communities by local councillors		.376			
Mothers' age at first pregnancy			.940		
Mothers' level of education			.935		
Mothers' age at first birth			.934		
Marital age			.753		
Whether household head ever migrated for more than 12 months				.959	
Whether head ever migrated out of country or within the country				.959	
Whether ever migrated for various durations of time				.700	
Perception of welfare level by head based on own income					.853
Perception of welfare level by head relative to others					.841
Perception of income situation by head					.612
Highest class attained by household in school	.351				.397
Whether household ever attended school or not					.374
KMO measure of sampling adequacy				0.751	
Bartlett's Test of Sphericity: Chi-Square (P-value)				3126.76	

*Source:* Author's construct based on SPSS statistical package version 20.0 and SLIHS2011.

The values of the Kaiser-Meyer-Olkin of 0.751 and Bertlett's Tests of 3126.76 (p-value=0.00) suggest the need for and adequacy of factor analysis to extract these exogenous factors to explain levels of household nutrition status (Table 8.5).

#### Final regression model and results for nutrition

Following the factor extractions, the final model for nutrition regression estimation using OLS is specified in Eq.8.4; where NUTR is nutrition status as dependent variable.

$$NUTR = \phi_1 + \phi_2 COM\_INF + \phi_3 PUB\_SERV + \phi_4 MOTH\_CAP + \phi_5 MIG + \phi_6 ECON\_W + \pi - 8.4$$

The independent variables are: COM\_INF, denoting community infrastructure; PUB\_SERV, public service delivery status; MOTH\_CAP, mothers' capacity; MIG, migration; ECON\_W, economic wellbeing. The terms  $\phi$ 's are parameters to be estimated; and  $\pi$  is error term. A-priori, all five regressors are expected to positively impact on nutrition status. The justification and literature supporting the hypothesised direction of effects have been discussed in the methodological chapter (Chapter Six, Section 6.1.4).

#### ***Estimation results***

Table 8.14 presents the regression results based on a total number of observations of 1575 rural households. Community infrastructure and public service delivery are not found significant in explaining nutrition. The mothers' capacity factor comes out significant with the expected positive sign with impact coefficient of 0.081. Among the measures of this factor is *years of schooling of mothers*, which is expected to improve child nutrition and status of overall household. Besides economic chances that could also be associated with it, the positive informational implication of schooling for child growth can be tremendous (Mackinon 1995; among others). The other measures that significantly contribute to constructing this factor are



*mothers' age at marriage, first pregnancy, and first childbirth.* These measures are such that, the older mothers were at these conjugal occasions, the greater the chances of normal child growth are expected to be. Migration is significant and positive at explaining nutrition. As in education and health, moving out for greener pastures could increase earnings of the household and may come with other opportunities including exposure to development information and awareness that may support investment in child nutrition and growth.

Strangely again, the economic wellbeing factor is found significant but has negative effect on nutrition, as on health above. This could partly be explained alongside implications of income substitution effect for low income households aforementioned. The evidence particularly suggests that the vast majority of rural households are caught in low-level equilibrium trap or below the micawber threshold. In these poverty traps, marginal increases in savings or income will not be enough for people to break out of poverty without huge and sustained external assistance; to survive on their own implies to choose even among necessities, sacrificing some to satisfy the others. Marginal increases in income might only imply withdrawal of more resources from one need to be able to fulfil the other as if some of the needs are *inferior* or *giffen*, when in reality it is abject poverty that is actually at play. It suggests families may have to reduce food rations or sacrifice some amount of required diet so as to be able to send children to school, and/or to be able to meet other needs, noting that about 68 percent of rural households live below US\$ 1.25 a day on account of both food and non-food needs. It is not weird in the general literature that other factors can be more important in explaining nutrition than economic measures such as income (Alderman 2001; Bangura 2013b; 2012c; Mackinnon 1995). Nonetheless, the evidence may have as well pointed to some data and modelling issues, and we shall test the robustness of these results with simultaneous equation estimation below. This is important since the Ramsey RESET test is significant, and suggests the presence of endogeneity in the nutrition OLS estimates. Meanwhile, the F-test suggests the nutrition model is significant

overall (Table 8.14); and the variance inflating factor (VIF) shows absence of serious case of multicollinearity at VIF value less than 10. Robust coefficients are also reported to correct for heteroscedasticity.

## 8.5 Determinants of off-farm labour participation (employment)

### Extraction of dependent variable

Table 8.10 presents standardised loadings on off-farm employment poverty dimension extracted as latent factor and entered as dependent composite variable in the employment status regression. The measures found significantly loading on this dimension are: whether the household head worked for wages or not; and whether engaged in farming as main source of income or the main source of income is through off-farm activity. The values of the Kaiser-Meyer-Olkin (0.553) and Bartlett's Test of Sphericity (30201.059 at p-value=0.00) indicate that there was need for and appropriateness of factor analysis to extract the off-farm employment endogenous factor.

**Table 8.10: Standardised loadings of off-farm employment dependent factor variable**

Observable measures (Poverty Indicators)	Employment
Whether household head working for wage or not	0.789
Head derives income mainly from nonfarm sector or farm sector	0.78
KMO measure of sampling adequacy	0.553
Bartlett's Test of Sphericity: Chi-Square (P-value)	30201.1 (0.00)

*Source:* Author's construct based on SPSS statistical package version 20.0 and SLIHS2011.

### Extraction of independent variables

Table 8.11 presents standardised factor loadings on five extracted independent variables as final hypothesised predictors of employment status. These are labelled sequentially as: Community Infrastructure; Migration; Public Service Delivery; Economic Wellbeing; and Education.

- The measures found with significant loadings in forming the *Community Infrastructure Factor* are: time taken to access secondary school; time taken to access clinic; time taken to access public transport; time taken to visit hospital; time taken to access food market; time taken to access all weather/seasons roads; time taken to access primary school; and time taken to source drinking water.
- The measures found significant in forming the *Migration Factor* are: whether household head moved out for more than 12 months in previous years; whether moved out of country, within country, or not; and whether moved out irrespective of duration or not.
- The measures found significant in forming the *Service Delivery Factor* are: public satisfaction with budget spending; public perception of responsiveness of councils to community needs; level of public knowledge of their councillors; rate of visiting communities by local councillors; non-food price situation; and level of public trust in councils.
- Measures significantly found loading on the *Economic Wellbeing Factor* are: perception of one's welfare level based on own income; perception of one's welfare relative to others; perception of income situation; and perception of changes in one's welfare over the previous years.

**Table 8.11: Standardised loadings of independent factor variables**

Measures	Standardised factor loadings				
	Communi- ty Infrastr- ucture	Mig- ration	Public Service Delivery	Eco- nomic Well- being	Edu- cation
Time take to access secondary school	.771				
Time taken to access clinic	.729				
Time take to access public transport	.722				
Time taken to food market	.710				
Time taken to access hospital	.696				
Time taken to access all seasons roads	.567				
Time taken to access primary school	.546				
Time taken to access source of drinking water source	.347				
Whether household head ever migrated for more than 12		.962			
Whether head ever migrated out of country or within the		.961			
Whether ever migrated for various durations of time		.761			
Public satisfaction with local council budget spending			.885		
Perception of responsiveness to community needs by			.805		
Public knowledge of local councillor			.801		
Frequency of visits to communities by local councillors			.496		
Household head respondent perception of livelihood based				.882	
Household standard of living relative to others				.852	
Household perception of income situation				.700	
Change in living standards				.477	
Highest school class attained by household head					.871
Log of household spending on child schooling					.860
Household size					-.589
Whether household ever attended school or not					.419
KMO measure of sampling adequacy					0.567
Bartlett's Test of Sphericity: Chi-Square (P-value)					34281.26

*Source:* Author's construct based on SPSS statistical package version 20.0 and SLIHS2011.

- The measures found significant in forming the final factor, **Education**, are: level of schooling attained by the household; normalised current expenditure on child schooling; and whether household ever went to school or not.

The values of the Kaiser-Meyer-Olkin of 0.567 and Bartlett's Tests of 34281.26 (p-value=0.00) suggest the need for and adequacy of factor analysis to extract these exogenous factors to explain the off-farm employment factor (Table 8.11 above).

### Final regression model and results for off-farm employment

Following the factor extractions, the final model for off-farm employment regression estimation using OLS is specified in Eq.(8.5); where OFF\_FaEM is off-farm employment as dependent variable.

$$OFF\_FaEM = \varphi_1 + \varphi_2 COM\_INF + \varphi_3 MIG + \varphi_4 PUB\_SERV + \varphi_5 ECON\_W + \varphi_6 EDU + \mu \quad \text{--- 8.5}$$

The independent variables are: COM\_INF, community infrastructure; MIG, migration; PUB\_SERV, public service delivery; ECON\_W, economic wellbeing; EDU, education. The terms  $\varphi$ 's are parameters to be estimated;  $\mu$  is error term. A-priori, all independent variables are expected to positively influence off-farm employment. The justification and literature supporting the hypothesised direction of effects were discussed in the methodological chapter (Chapter Six, Section 6.1.5).

#### ***Estimation results***

Table 8.14 presents the regression results based on a total number of observations of 3454 rural households. All five variables are found significant in influencing off-farm employment and with the expected signs except for public service delivery. The results suggest that improved community infrastructure will increase chances of securing off-farm jobs with a coefficient of 0.074. It can be expected that improved supply of social services such as health, education, water amenities and road condition can attract private sector investment in the rural areas; foster backward and forward linkages between large firms and producers of local raw materials; improve value chain; and promote transfer of entrepreneurship and business skills to local businesses. This will stimulate local economic growth and enhance household wellbeing. Evidence suggests that migration fosters rural off-farm employment with an impact coefficient of

0.168. Securing jobs off-farm is theoretically the lead driver of outmigration with the expectation of accruing more returns to factor input relative to on-farm employment. With a coefficient of -0.029, it appears that improved public service delivery has propensity to retain rural labour on the farm than expected to cause disproportionate factor shift towards nonfarm sector. This suggests that the average rural household is rational and realistic of its non-competitiveness on the wage market in view of its limited education; it may prefer to remain on the farm where it can do better with current capabilities once it receives effective support from the state.

Economic wellbeing increases the chances of engaging in off-farm employment with a coefficient of 0.102. Its effect on acquiring off-farm jobs may especially occur from a long term perspective through increased investment in education (Bangura 2013a; Otsuka et al. 2009). This implication is supported by the fact that the data reveal positive effect of education on off-farm employment with a coefficient of 0.094.

The F-test suggests the model is significant overall (Table 8.14). The variance inflating factor (VIF) shows absence of serious case of multicollinearity at VIF value less than 10. Robust coefficients are reported to correct for heteroscedasticity. However, the significance of the Ramsey RESET test suggests presence of endogeneity in the employment OLS estimates, and it is part of the reason for considering simultaneous equation estimation in the second stage.

## **8.6 Determinants of migration**

### Extraction of dependent variable

Table 8.12 presents standardised loadings on the migration poverty dimension extracted as latent factor and entered as dependent composite variable in the migration regression. From the table, the measures found significantly loading on migration are: whether the household head moved out of the household for more than 12 months in previous years; whether moved out of the

country, within country or not; and whether moved out irrespective of the duration or not. The values of the Kaiser-Meyer-Olkin (0.623) and Bartlett's Test of Sphericity (20901.059 at p-value=0.00) indicate that there was need for and appropriateness of factor analysis to extract the migration endogenous factor.

**Table 8.12: Standardised loadings of migration dependent factor variable**

Observable measures (Poverty Indicators)	Migration
Head migrated out of the country, within the country or not	0.966
Whether migrated before for various durations of time of not	0.761
KMO measure of sampling adequacy	0.623
Bartlett's Test of Sphericity: Chi-Square (P-value)	20901.1

*Source:* Author's construct based on SPSS statistical package version 20.0 and SLIHS2011.

#### Extraction of independent variables

Table 8.13 presents standardised factor loadings on four extracted independent variables as final hypothesised predictors of migration status. These are labelled sequentially as: Community Infrastructure; Public Service Delivery; Economic Wellbeing; and Post-Conflict Management.

- The measures found with significant loadings in forming the *Community Infrastructure Factor* are: time taken to access secondary school; time taken to access public transport; time taken to access clinic; time taken to visit hospital; time taken to access food market; time taken to access all weather/seasons roads; time taken to access primary school; highest level of schooling attained by household head; and time taken to source drinking water.
- The measures found significant in forming the *Service Delivery Factor* are: public satisfaction with budget spending by councils; public perception of responsiveness of

**Table 8.13: Standardised loadings of independent factor variables**

Measures	Standardized factor loadings			
	Community Infrastructure	Public Service Delivery	Economic Wellbeing	Post Conflict Management
Time taken to access secondary school	.779			
Time taken to access public transport	.727			
Time taken to access clinic	.718			
Time taken to access hospital	.710			
Time taken to access food market	.684			
Time taken to access all seasons roads	.565			
Time taken to access primary school	.537			
Highest school grade attained by household head	.361			
Time taken to access source of drinking water	.315			
Public satisfaction with local council budget spending		.892		
Perception of responsiveness to community needs by		.798		
Public knowledge of their local councillors		.743		
Frequency of visits to communities by local councillors		.464		
Regional nonfood price index		-.455		
Log of credit disbursed to households		-.313		
Household head respondent perception of livelihood			.816	
Household standard of living relative to others			.808	
Household perception of income situation			.646	
Household size			-.384	
Change in Living standards			.381	
Receipt of assistance due to participation in organisations			.359	
Participation in social and political associations			.348	
Public perception of safety at night				.814
Level of confidence in the state for protection				.792
Level of violence in the community				.672
Whether household is rated poor and nonpoor based				-.353
Log of aggregate consumption				-.343
KMO measure of sampling adequacy				0.647
Bartlett's Test of Sphericity: Chi-Square (P-value)	34280.562			34280.56

*Source:* Author's construct based on SPSS statistical package version 20.0 and SLIHS2011.

councils to community needs; level of public knowledge of their councillors; rate of visiting communities by local councillors; non-food price situation; and level of public trust in councils.

- Measures significantly found loading on the *Economic Wellbeing Factor* are: perception of one's welfare level based on income; perception of one's welfare relative to others; perception of income situation; household size; perception of changes in one's welfare



over the previous years; and whether received assistance due to participation in development (social/political/etc) organisations.

- The measures found significant in forming the final factor, *Post-Conflict Management*, are: perception of safety at night; level of confidence in the state for protection; level of violence; whether the head is categorised as poor or not based on poverty line; and normalised consumption expenditure of the household head.

The values of the Kaiser-Meyer-Olkin of 0.647 and Bertlett's Test of 34280.56 (p-value=0.00) suggest the need for and adequacy of factor analysis to extract these exogenous factors to explain the migration factor (Table 8.13 above).

#### Final regression model and results for migration

Following the factor extractions, the final model for migration regression estimation using OLS is specified in Eq.(8.6); where MIG is migration status as dependent variable.

$$MIG = \gamma_1 + \gamma_2 COM\_INF + \gamma_3 PUB\_SERV + \gamma_4 ECON\_W + \gamma_5 PC\_MGT + \delta \quad \text{--- 8.6}$$

The independent variables are: COM\_INF, community infrastructure; PUB\_SERV, public service delivery; ECON\_W, economic wellbeing; PC\_MGT, post-conflict management. The terms  $\gamma$ 's are parameters to be estimated; and  $\delta$  is the error term. A-priori, all four regressors are expected to negatively impact on migration. That is, improved factor scores on these variables is expect to halt or attenuate outmigration in rural areas. The justification and literature supporting the hypothesised direction of effects were discussed in detail in the methodological chapter (Chapter Six, Section 6.1.6).

### ***Estimation results***

Table 8.14 presents the regression results based on a total number of observations of 3454 rural households. The community infrastructure factor is not significant in influencing migration decisions. The service delivery factor comes out negative with a coefficient of -0.034, suggesting that an improved delivery of services to local communities will increase likelihood of discouraging households from migrating. Economic wellbeing is significant but suggests that the more a household is economically empowered such as with increased income, the more likely that they would move out, which is not as counterintuitive. Households may generally consider migration as a source of increased economic opportunities (to be investigated more robustly in later estimations). Post-conflict management does not come out significant as in the economic wellbeing equation. With more than ten years since the end of the civil war, it appears that rural communities are no longer in violence or criminal activities at rates that could seriously cause migration.

The F-test suggests the model is significant overall (Table 8.14). The variance inflating factor (VIF) shows absence of serious case of multicollinearity at VIF value less than 10; and robust coefficients are reported to correct for heteroscedasticity. But again, the significance of the Ramsey RESET test suggests the presence of endogeneity in the migration OLS estimates, as in the economic, education, nutrition and employment regressions discussed above.

### **8.7 Summary of OLS results, shortcoming and next level estimation**

We have analysed OLS estimates for the six rural household welfare decisions (poverty dimensions): Economic Wellbeing; Education; Health; Nutrition; Off-Farm Employment; and Migration. The factors found significant are as follows (direction of effect enclosed in parentheses): (i) ***economic wellbeing determinants***:- migration (+); education (+); public service

delivery (-); agricultural transformation (-); (ii) **education determinants**:- migration (+); economic wellbeing (+); community infrastructure (+); public service delivery (-); mothers' capacity (+); (iii) **health determinants**:- migration (+); economic wellbeing (-); community infrastructure (+); (iv) **nutrition determinants**:- migration (+); economic wellbeing (-); mothers' capacity (+); (v) **employment determinants**:- community infrastructure (+); migration (+); public service delivery (-); economic wellbeing (+); education (+); and (vi) **migration determinants**:- public service Delivery (-); economic wellbeing (+).

**Table 8.14: Standardised/robust OLS regression estimates**

Independent Variables	OLS Regression Equations					
	Economic wellbeing (ECO_W)	Education (EDU)	Health (HLTH)	Nutrition (NUTR)	Employment (Off_FaEM)	Migration (MIG)
Economic wellbeing (ECO_W)		0.191** (0.018)	-0.012** (0.019)	-0.197** (0.025)	0.102** (0.015)	0.058* (0.017)
Education (EDU)	0.126** (0.018)				0.095** (0.020)	
Migration (MIG)	0.034* (0.016)	0.030* (0.018)	0.032* (0.016)	0.065** (0.024)	0.168** (0.025)	
Mothers' Capacity (MOTH_CAP)		0.032* (0.017)		0.081** (0.026)		
Community Infrastructure (COM_IFM)		0.220** (0.018)	0.020* (0.023)	-0.010 (0.028)	0.074** (0.014)	-0.015 (0.017)
Post Conflict Management (PC_MGT)	-0.026 (0.017)					-0.017 (0.016)
Public Service Delivery (PUB_SERV)	-0.041** (0.015)	-0.028* (0.016)	-0.003 (0.018)	0.011 (0.025)	-0.029* (0.016)	-0.034* (0.014)
Agric. Transformation (AGR_TRA)	-0.080** (0.017)					
Constants	0.345* (0.234)	0.545* (0.321)	0.09 (0.008)	0.120** (0.876)	0.321** (0.560)	0.213 (0.09)
N	3454	2866	2866	1575	3454	3454
R-Square	0.027	0.081	0.5	0.051	0.052	0.005
Overall significance, F-Test	18.6**	50.95**	1.45**	18.92**	20.44**	7.23**
VIF	1.01	1.345	3.66	1.01	1.5	1.2
RAMSEY RESET F-Test	5.59**	3.09*	1.41	12.52**	17.12**	2.30*

\*\*Significance at 1 percent; \*Significance of 5 & 10 percent; standard errors are in Parenthesis.

**Source:** Author's construct based on STATA econometric package version 12.0 and SLIHS2011.

While the OLS estimates have suggested various factors as significant predictors of rural poverty these results should be treated with caution since they are predicated on the implicit theoretical assumption of separability of household socioeconomic decisions. Practically, the decisions we have analysed are commonly concurrently undertaken by one economic agent (such as the household) in LDCs [see Sadoulet & de Janry (1995), among others]. The Ramsey RESET

tests in Table 8.14 depict this fact, suggesting that there is presence of endogeneity in the OLS estimates—only in the health regression the test was not found statistically significant. The presence of endogeneity can make the estimate inconsistent and undermine the reliability of parameter estimates. Employing instrumental variables (IV) method could have been an option to control for endogeneity, but the Breusch-Pagan LR test (Table 8.19) suggests the presence of cross-equation error correlation among the six OLS equations, and the IV cannot correct for this. Therefore, to complement the OLS estimations, and correcting for endogeneity and cross-equation error correlations, we are running in the next section a nonrecursive structural (simultaneous) equation modelling system that embeds a seemingly unrelated regression specification. The other advantages of the SEM were discussed in Chapter Six, Pages 215 to 217.

## **PART TWO: SIMULTANEOUS EQUATION ANALYSIS OF POVERTY DETERMINANTS**

### **8.8 Structural equation model (SEM)**

The structural part of the SEM is formally specified in the system equation (8.7). The dependent variables are: *ECON\_W*, economic wellbeing; *EDU*, education level attained; *HLTH*, health status; *NUTR*, nutrition status; *OFF\_FaEM*, off-farm employment; and *MIG*, migration. These variables determine one another, thus have also entered as predictors in the system.

$$\begin{aligned}
 \text{ECON\_W} &= \alpha_1 + \alpha_2 \text{EDU} + \alpha_3 \text{MIG} + \alpha_4 \text{AGRIC\_TRA} + \alpha_5 \text{MACRO} + \varepsilon \\
 \text{EDU} &= \beta_1 + \beta_2 \text{ECON\_W} + \beta_3 \text{HLTH} + \beta_4 \text{OFF\_FaEM} + \beta_5 \text{COM\_INF} + \epsilon \\
 \text{HLTH} &= \theta_1 + \theta_2 \text{ECON\_W} + \theta_3 \text{EDU} + \theta_4 \text{NUTR} + \theta_5 \text{DEMO} + \tau \\
 \text{NUTR} &= \phi_1 + \phi_2 \text{ECON\_W} + \phi_3 \text{MOTH\_CAP} + \pi \\
 \text{OFF\_FaEM} &= \varphi_1 + \varphi_2 \text{EDU} + \varphi_3 \text{PUB\_SERV} + \varphi_4 \text{MIG} + \mu \\
 \text{MIG} &= \gamma_1 + \gamma_2 \text{ECON\_W} + \gamma_3 \text{EDU} + \delta
 \end{aligned}
 \tag{8.7}$$

The exogenous independent variables are: *AGRIC\_TRA*, agricultural transformation; *MACRO*, macroeconomic support; *COM\_INF*, community infrastructure; *DEMO*, demographic

management; MOTH\_CAP, mothers' capacity; and PUB\_SERV, public service delivery. The terms  $\alpha$ 's,  $\beta$ 's,  $\theta$ 's,  $\phi$ 's,  $\varphi$ 's, and  $\gamma$ 's are parameters to be estimated, while  $\varepsilon$ ,  $\epsilon$ ,  $\tau$ ,  $\pi$ ,  $\mu$ , and  $\delta$  are errors terms. To ensure the identification of each equation, the independent variables are not exactly the same across the equations, but all of them are hypothesised to affect all dependent variables directly or indirectly—a change in a variable in one equation is expected to affect all dependent variables in the rest of the system consistent with the simultaneous decisions households encounter. Equally, a change in one observed indicator/measure of an independent variable will affect all dependent variables as elaborated in the hypothesised SEM framework in Annex 2, drawn from Annex 1—this is the basis for the policy simulation and experiment ahead. A-priori, all regressors are expected to positively explain the economic wellbeing function, education function, health function, nutrition function, and employment function. Negative effects are expected for migration decision function, except for migration itself, and education and employment factors.

The system estimation approach enables us report three types of effects of policy importance. These are: direct effects, indirect effect and net (total) effect. These effects are distinguished in Drukker (2011, p.28) as follows: (i) The direct effect (DE) of an independent variable  $x$  on a dependent variable  $y$  is the coefficient on  $x$  in the equation for  $y$ ; that is the "...change in  $y$  attributable to a unit change in  $x$ , conditional on all other variables in the equation....This effect ignores any simultaneous effects;" (ii) the total (net) effect (TE) of an independent variable  $x$  is the change in a dependent variable  $y$  resulting from a unit change in  $x$  after accounting for all the simultaneous effect in the system; such that (iii) the indirect effect (IE) of an independent variable is simply "...the total effect minus the direct effect." That is: Total Effect (TE) = Direct Effect (DE) + Indirect Effect (IE). As in the OLS estimation, we report standardised coefficients for the SEM estimation to enable us compare effects between

variables. The total or net effects are particularly crucial to identifying the most important predictors for policy prioritisation.

#### Extracting dependent variables

Since we base the estimation of the SEM on STATA econometric package, the factors extracted here are from STATA instead of SPSS in Part One. Table 8.15 presents standardised factor loadings of measures found significant in forming the six latent endogenous variables listed as follows:

- The measures found significant in forming the *Economic Wellbeing Factor* are: log of household income; log of household consumption; and log of household asset value—asset has become significant here unlike in the single equation factor extraction process above.
- The measures found significant in forming the *Education Factor* are: highest school grade attained by household head; log of expenditure on child schooling; and whether head ever attended school or not.
- The measures found significant in forming the *Health Factor* are: log of expenditure on health goods and services; and ratio of children alive to all births recorded per woman interviewed.
- The measures found significant in forming the *Nutrition Factor* are: underweight z-score (weight-for-age); wasting z-scores (weight-for-height); and regional food price index.
- The measures found significant in forming the *Off-Farm Employment Factor* are: whether off-farm is main source of employment or not; and whether household head is engaged in wage employment or not.

- The measures found significant in forming the *Migration Factor* are: whether household head moved out for various time durations or not; and whether heads moved out for more than 12 months or not.

**Table 8.15: structural equation model: extraction of dependent variables**

Measures	Standardized Factor Loading*					
	Economic Well-being	Edu-cation	Health	Nut-rition	Employ-ment	Mig-ration
Log of household income	0.960 (0.002)					
Log of household consumption	0.367 (0.054)					
Log of asset value	0.148 (0.059)					
Highest school grade attained by household head		0.998 (0.000)				
Log of expenditure on child schooling		0.933 (0.004)				
Whether head ever attended school or not		0.114 (0.052)				
Log of expenditure on health goods & services			0.898 (0.036)			
Ratio of child alive to all births recorded per woman			0.118 (0.047)			
Child underweight z-scores (weight-for-age)				0.719 (0.009)		
Child wasting z-scores (weight-for-height)				0.734 (0.019)		
Regional food price index				0.630 (0.104)		
Whether off-farm is main source of income or not for household					1.000 (0.000)	
Whether main source of income is wage employment or not					0.002 (0.029)	
Whether head moved out for various time durations or not						0.953 (0.005)
Whether head moved out for more than 12 months before or not						0.042 (0.063)

\*The SEM reports standard errors of factor loadings and are in parenthesis; only significant loadings are reported.  
**Source:** Author's construct based on STATA econometric package version 12.0 and SLIHS2011.

The extraction of variables (both dependent and independent variables) is embedded in the simultaneous estimation process of the six poverty equations. Thus, goodness of fit of the SEM explains fitness of the model for the factor analysis component (measurement part) as well as the

regression component (structural part). Fitness statistics are presented below after presenting system regression results. We will turn next to extracting the independent variables.

### Extracting independent variables

Table 8.16 presents standardised factor loadings of measures found significant in forming the latent independent variables listed as follows:

- The measures found significant in forming the *Agricultural Transformation Factor* are: whether household head possesses right of trading land through the market; whether the household uses improved seeds or not; types of entitlement to land; and whether the household head hires labour or not.
- The measures found significant in forming the *Community Infrastructure Factor* are: time taken to access secondary school; time taken to access public transport; time taken to access clinic; time taken to access hospital; time taken to access market; time taken to access primary school; time taken to source drinking water; housing material used for outside wall; and types of toilet facilities used.
- The measures found significant in forming the *Public Service Delivery Factor* are: community satisfaction with local councils' budget management; the extent of community knowledge of their councillors; central government transfers (allocation) to councils towards health programmes; perception of degree of responsiveness of councils to community needs.
- The measures found significant in forming the *Mothers' Capacity Factor* are: mothers' age at first pregnancy; mothers' age at first childbirth; mothers' level of education; and age at first marriage.



**Table 8.16: Structural equation model: extraction of independent variables**

Measures	Standardised Factor Loading*					
	Agricultural Development	Community Infrastructure	Public Service delivery	Mothers Capacity	Macro-economic Support	Demographic Mgt
Right of trading land in the market	0.840					
Whether farmers used improved seeds	0.004					
Type of entitlements to land	0.587					
Whether farmers hired labour or not	0.024					
	0.895					
	0.011					
	0.922					
	0.004					
Time taken to access secondary school		0.795				
Time taken to access public transport		0.017				
Time taken to access clinic		0.650				
Time taken to access hospital		0.019				
Time taken to access market		0.676				
Time taken to access all seasons road		0.019				
Time taken to access primary school		0.670				
Time taken to access source drinking water		0.019				
Housing material used for outside wall		0.639				
Types of toilet facility used		0.019				
		0.414				
		0.022				
		0.439				
		0.022				
		0.259				
		0.022				
		0.236				
		0.022				
		0.837				
		0.011				
Public satisfaction with local council budget spending			0.984			
Public knowledge of their local councillors			0.014			
Central transfers to councils towards health programmes			0.695			
Responsiveness to community needs by councils			0.020			
			-0.494			
			0.008			
			0.020			
			0.000			
Mothers' age at first pregnancy				0.967		
Mothers' age at first childbirth				0.004		
Mothers' level of education				0.950		
Mothers' age at first marriage				0.003		
				0.061		
				0.016		
				0.795		
				0.005		

Continued...

Table 8.16: (Continued)

Measures	Standardised Factor Loading*					
	Agricultural Development	Community Infrastructure	Public Service delivery	Mothers Capacity	Macroeconomic Support	Demographic Mgt
Central transfers to councils towards education programmes					0.899 (0.056)	
Central transfers to councils towards Agriculture programmes					0.666 (0.014)	
Log of credit to households					0.157 (0.031)	
Household size						0.896 (0.001)
Age of head						-0.092 (0.282)
Sex of head						-0.184 (0.308)
Whether head married or not						0.998 (0.000)

\*The SEM reports standard errors of factor loadings, and are in parenthesis; only significant loadings are reported.  
*Source:* Author's construct based on STATA econometric package version 12.0 and SLIHS2011.

- The measures found significant in forming the *Macroeconomic Support Factor* are: central government transfers to local councils towards education programmes; central government transfers to councils towards agriculture programmes; and log of credit disbursed to households.
- The measures found significant in forming the *Demographic Management Factor* are: household size; age of household head; sex of household head; and whether the head is married or not.

An advantage of STATA SEM factor extraction method over SPSS for OLS is that, the SEM produces standard errors for factor loadings and level of significance of measures than basing significance on rule of thumb.

### ***Estimation results***

The SEM estimates are presented in Table 8.17 for direct effects; and in Table 8.18 for net effects. The estimates are automatically generated by the SEM command in the STATA software, and their display in Tables 8.17 and 8.18 is similar to presentation format in Wagle (2010, p.93-94; 100) analysing determinants of household poverty in urban Nepal and USA using SEM. The estimates are based on a total number of observations of 4,109 rural households. As expected, the six dependent variables (the poverty dimensions studied) are found significant in affecting each other, which are at the same time significantly affected by all exogenous variables.

Economic wellbeing (ECO\_W) directly and significantly affects education (EDU), health (HLTH), and migration decisions (MIG) (Table 8.17). Unexpectedly, again, economic wellbeing affects health negatively in support of OLS findings. Health status drops by 1.89 points for a unit increase in the economic wellbeing factor score, suggesting that there is *substitution effect* between spending on one commodity and the other, which can be practical for a poor household. In low income circumstances, one can be compelled to inadvertently spend more on a particular need at the expense of the other, at least in the short-run, and possibly as long as income remains low. Table 8.17 depicts the evidence of income substitution effect, that whereas the economic wellbeing factor has negatively affected health status, its effects on education and migration have been positive. In the same token, therefore, we may have some households that allocate and/or reallocate resources in reverse order towards healthcare. Tight budget constraints are suggested by the substitution evidence, and it is corroborated by statistics in Chapter Seven, which provides evidence that about 68 percent of the rural population are below national poverty line with an average annual income expenditure of US\$245.

However, the education factor, which is directly enhanced by economic status, is found

directly and positively affecting health status with a coefficient of 1.574, which suggests that the direct negative effect of economic wellbeing on health can only be transient. The long-run income effect on health can be positive as depicted by the net effects in Table 8.18: (i) although the net effect of economic wellbeing on health is also negative at -0.634, it is lower than the direct effect (-1.892) by 66 percent, implying that the economic wellbeing factor has indirect positive effect on health;<sup>39</sup> and (ii) we have seen that all decisions that are directly and positively affected by economic wellbeing such as education, employment and migration (Table 8.17) have positive and significant net effect on health (Table 8.18).

As expected in reverse, education has direct and positive feedback effect on economic wellbeing with a coefficient of 0.346, and it increases household chances of securing off-farm employment and investing in migration with coefficients of 0.285 and 0.1, respectively (Table 8.17). And having examined the impact of education on health, we are also examining the impact of health on education borrowing especially from discussions of the human capital investment models in Grossman (2000) (see Chapter Five). The health factor is found to have significant but negative direct effect on education with a coefficient of -0.196, suggesting along aforementioned highlights that the two can be substitutes depending on the circumstances confronting the household, such as having to undertake concurrent investment decisions with low income. Again, whereas the net effect of health on education is negative, it is smaller than its direct effect, suggesting that health has a positive indirect effect on education through other factors. Such factors could not have been specified in the SEM model, like increased ability to go to school that is engendered through better healthcare (ibid). The indirect effect may be the result of other factors outside the system because the net effects of the health factor on economic

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<sup>39</sup> Calculation of indirect effect of the economic wellbeing factor on health, as an illustration: From Table 8.17, the direct effect of "the economic wellbeing factor" on "education status" is 0.799, and that of "education status" on "health status" is 1.574. Therefore, the indirect effect of economic wellbeing on health is:  $0.799 \times 1.574 = 1.258$ .

wellbeing, nutrition, off-farm employment, and migration, through which health could have indirectly affected education are also negative, reinforcing the suggestion that the average household is challenged by conditions compelling it to enforce trade-offs among its competing welfare needs—an income substitution problem [see Fin et al. (2000), on rural China].

The nutrition factor (NUTR), measured by food price and child growth indicators, is found to have positive and significant direct effect on health status. The mothers' capacity factor (MOTH\_CAP) is also depicted to have positive but indirect effect on health. Evidence on mothers' capacity suggests that, a key transmission channel for its indirect effect on health is nutrition, which the mothers' capacity factor directly and significantly impacts upon. That is, although the net effect of the mothers' capacity factor on health is very small at 0.001 (Table 8.18), its direct and net positive effects on nutrition are relatively sizeable, with coefficients of 0.089 (Table 8.17) and 0.088 (Table 8.18).

Off-farm employment (Off\_FaEM) has infinitesimal direct and net effects on all poverty dimensions, with coefficients ranging from 0.000 to 0.002, even though it is suggested that the public service delivery factor (PUB\_SERV) (measuring effectiveness of local council operations) relatively has sizeable direct and net positive impact on generating off-farm jobs with coefficients of 0.061 and 0.060, respectively. Unlike OLS estimates, where service delivery factor was unexpectedly found negatively influencing employment, it is found positive here as expected. It cannot be unexpected since we already warned earlier about possible simultaneous equation bias associated with OLS specifications that the SEM is able to handle among other modelling risks highlighted before (see Page 215-217; 307-308). Nonetheless, the fact that the service delivery coefficient on employment is small in the SEM, and its net effect on other welfare dimensions is positive but negligible, it still lends credence that those who may have significantly benefitted from public services are in the far minority.

The relationship between off-farm employment and rural education has been particularly estimated following efforts by Otsuka et al. (2009) at explaining reasons for income differential between rural Asian communities and Sub-Saharan African communities in favour of the Asian's. They explain the differential vis-à-vis the relative importance of farm and nonfarm sectors in boosting household income in the two regions, and the role of education in explaining it. Education, as a key factor in promoting development, is said to yield more earnings from nonfarm sector as nations advance. And as a result of the relatively high literacy in the Asian rural communities, they have been able to earn higher incomes from the nonfarm sector than those in SSA, who derive most of their income from farming (ibid). In support of Otsuka et al., my estimations have also depicted that rural Sierra Leone (in SSA) is also still dependent on farming as in Uganda, Kenya, Ethiopia and Mozambique in their SSA case study. The nonfarm sector is more important in the Philippines, Thailand, Indonesia and Bangladesh in their Asian case study, and the Asian communities have recorded higher incomes than the SSA communities. Turning to the migration factor (MIG), it appears that this factor significantly increases chances of households securing off-farm employment directly and indirectly (Tables 8.17 & 8.18), but it shows direct negative impact on economic wellbeing (Table 8.17). In net terms, it shows negative effect on economic wellbeing and education, and very small positive effect on health and nutrition. The SEM estimates considerably oppose findings from OLS, where migration comes out with positive effects in all five non-migration equations (Table 8.8). This hints on the general expectation that migration and participation in the labour market might not produce desired effect for migrants from rural sector who lack education and requisite skills (see descriptive statistics in Chapter Seven).

The results suggest that improved demographic management (DEMO) has positive and significant direct and net effect on health status as expected (Tables 8.17 & 8.18). That is, there

are high chances of increasing health status through decongested households, and ensuring that heads are of age among other measures. The demographic net effects on economic wellbeing, education and employment are however negative. Perhaps in the short run, reduced household size (the lead measure of the demographic factor in terms of loadings) may imply reduced farm labour and other economies of large household size; this may reduce income and other economic benefits, thereby possibly negatively impacting on education spending and off-farm employment (see theoretical arguments in Section 2.4.1 of Chapter Two).

Improved community infrastructure (COM\_INF), measured by several indicators including time taken to access health and educational services, markets, and good roads, has positive and significant direct and net effect on education attainment. It also positively and significantly affects economic wellbeing, health status, employment, and migration decisions in net terms.

Supporting rural agricultural transformation (AGR\_TRA) measured by indicators such as possessing right to trade land in the market, use of improved farm inputs, types of entitlement to land, and hiring of labour, is found with significant and positive direct effect on economic wellbeing. Economic wellbeing is also significantly and directly affected by macroeconomic support (MACRO) measured by indicators such as central allocations to local councils towards implementing public projects; these projects are expected to create job opportunities and income. Unexpectedly, however, the direct coefficients of the agricultural factor and macro factor are somewhat small at 0.089 and 0.052, respectively. In net terms, the two factors positively affect economic wellbeing, education, employment, and migration, but they are found to have reducing effect on health.

**Table 8.17: Structural equation model: standardised regression coefficients (direct effects)**

Independent Variables	SEM Regression Equations					
	Economic wellbeing	Education	Health	Nutrition	Employment	Migration
Economic wellbeing (ECO_W)		0.799** (0.023)	-1.892** (0.176)	0.128 (0.202)		0.756** (0.148)
Education (EDU)	0.346** (0.015)		1.574** (0.244)		0.285** (0.052)	0.100** (0.169)
Health (HLTH)		-0.196* (0.051)				
Nutrition (NUTR)			0.015** (0.003)			
Employment (Off_FaEM)		0.002* (0.000)				
Migration (MIG)	0.000* (0.000)				0.007* (0.000)	
Demographic Mgt (DEMO)			0.872** (0.229)			
Community Infr. (COM_INF)		0.108** (0.011)				
Mothers' Capacity (MOTH_CAP)				0.089** (0.020)		
Public Serv. Del. (PUB_SERV)					0.061* (0.016)	
Agriculture (AGR_TRA)	0.089* (0.015)					
Macro Policy (MACRO)	0.052* (0.013)					

N= 4109

\*\*Significance at 1 percent; \*Significance of 5 & 10 percent; standard errors in parenthesis

**Table 8.18: Structural equation model: standardised regression coefficient (net effects)**

Independent Variables	Dependent/welfare variables							Total	Contribution to Welfare
	Economic wellbeing	Education	Health	Nutrition	Employment	Migration			
<b>A</b>	<b>B</b>	<b>C</b>	<b>D</b>	<b>E</b>	<b>F</b>	<b>G</b>	<b>H</b>	<b>I</b>	<b>J</b>
<b>Endogenous Regressors</b>	Economic wellbeing	0.367**	1.294**	-0.634**	0.185	0.377**	1.010**	2.41	42.35%
	Education	0.383**	0.107**	1.018**	0.049**	0.318**	0.401**	2.28	40.07%
	Health	-0.030*	-0.100*	0.300*	-0.010*	-0.062*	-0.078*	0.02	0.35%
	Nutrition	-0.001*	-0.003**	0.012*	0.000*	-0.001*	-0.001*	0.01	0.18%
	Employment	0.001**	0.002*	0.002**	0.000*	0.000*	0.001*	0.01	0.18%
	Migration	-0.001*	-0.001*	0.000*	0.000**	0.006**	0.000*	0.01	0.18%
<b>Exogenous Regressor</b>	Demographic Management	-0.065**	-0.189*	0.698**	-0.008	-0.054**	-0.068	0.39	6.85%
	Community Infrastructure	0.041*	0.120**	0.110*	0.005	0.034*	0.043**	0.35	6.15%
	Mothers' Capacity	0.000**	0.000*	0.001**	0.088**	0.000**	0.000*	0.09	1.58%
	Public Service Delivery	0.000*	0.000*	0.000**	0.000*	0.061**	0.000*	0.06	1.05%
	Agriculture	0.129*	0.116**	-0.300*	0.017	0.034*	0.050*	0.03	0.53%
	Macro Policy	0.076*	0.068**	-0.200**	0.010	0.020**	0.064**	0.03	0.53%
<b>Total</b>		0.920	1.413	1.007	0.128	0.733	1.489	<b>5.69</b>	100.00%
<b>Welfare Impact Distribution</b>		16%	25%	18%	2%	13%	26%	100%	

\*\*Significance at 1 percent; \*Significance of 5 & 10 percent

Estimated total rural welfare score or value

Source: STATA econometric package version 12.0 based on SLIHS2011.



Breusch-Pagan LR Test for Error Independence (Chi-Sq.)	221.785 (p=0.00)
Coefficient of Determination (CD)	0.90
Standardized Root Mean Square Residual (SRMR)	0.04
Model Stability Index	0.51503

*Source:* Run based on model in Table 8.18.

## 8.9 Most important policy choice predictors

We will highlight in this section policy areas to prioritise for rural poverty alleviation based on the results of the foregoing structural equation modelling. We conduct this postestimation analysis borrowing logic mainly from Wagle (2010, pp.90-129). We will identify priority policy areas among the six poverty dimensions studied (economic wellbeing, education, health, nutrition, employment, and migration) and the six exogenous factors analysed (demographic management, community infrastructure, mothers' capacity, public service delivery, agricultural transformation, and macroeconomic support). The process involves summing net effects of each of the twelve explanatory variables across the six nonrecursive simultaneous equations (see row summation in Table 8.18 above). And then we will calculate a summary value we will refer to as *total household welfare score* by summing total net effects contributed by all regressors (see last two column summation in Table 8.18). The twelve regressors in this table are determinants of the aggregate welfare of the average rural household in Sierra Leone. We have estimated the aggregate welfare value of this household to be 5.69 in the same table.

Out of the twelve determinants analysed, economic wellbeing and education contribute the largest to poverty reduction—the contributions of these two factors to total welfare value are estimated at 42.35 and 40.07 percent, respectively (Table 8.18, Column J). From the six poverty dimensions studied (the endogenous regressors), the health factor has the next largest contribution after economic wellbeing and education, although its share is incomparably small at 0.35 percent. The contribution of nutrition, off-farm employment, and migration are much

smaller, at 0.18 percent each. Two implications are quickly derived from the distribution of these shares: (i) while there is vast difference in contribution to aggregate welfare, policy attention should be paid to all six factors since all six have positive effect on welfare; and (ii) the largest shares from education and economic wellbeing factors suggest that, prioritising these two factors for policy can have knock on effects on other development dimensions such as health, nutrition, off-farm employment opportunities, and increasing chances of earning high returns from migration, all of which will lead to increased household welfare.

Among the six exogenous factors, demographic management and community infrastructure contribute to total welfare the highest, at 6.85 and 6.15 percent, respectively, followed by mothers' capacity at 1.58 percent, and public service delivery at 1.05 percent (Table 8.18, Column J). Agricultural transformation and macroeconomic support contribute the least, at 0.53 percent each.

Since all twelve regressors are interdependent in determining poverty, and have positive contributions to welfare, it is decisive to ensure that there is fine balance in targeting policies. Needs should be carefully weighed against this backdrop, as some covariates might be confounders of others.

The last row in Table 8.18 presents differential impacts on the six poverty dimensions studied. It suggests from the table that the average rural household has greater tendency to invest in education and migration when their overall welfare improves than invest in other sources of welfare. Total impact of the twelve regressors on migration is 26 percent of aggregate welfare value of 5.69, followed by education (25 percent). Total impacts on economic wellbeing and health are 16 and 18 percent, respectively, followed by off-farm employment (13 percent) and nutrition (2 percent).

We will extend the foregoing analysis to policy simulation and experiment in the next section.

## **8.10 Policy simulation and experiment based on the SEM model**

The main essence of econometric models is to enable researchers undertake forecasting after regression estimation so that meaningful policies can be advised through gauging dynamics of parameter estimates. We are therefore conducting policy experiments in this section to examine and interpret behaviour of the SEM multipliers. From Table 8.19, the SEM model stability index is estimated at 0.515, and all the eigen values lie inside the unit circle, suggesting that the SEM satisfies the stability condition and any policy experiment and projections are admissible (STATA econometric package, version 12). The overall fitness of the model on account of the coefficient of determination ( $CD=0.90$ ) and standardised root mean square residuals ( $SRMR=0.04$ ) suggests that the SEM is reliable in terms of explanatory power. We borrow techniques from various expositions to conduct simulations [including Alderman et al. (2001); Cameron & Trivedi (2010); Pindyck & Rubinfeld (1998); Ssewanyana et al. (2007); and Wagle (2010)]. The elaborated SEM model in Annex 2, related to Annex 1, provides a clear guide on the logic of our simulations.

### Recap of country development policy

Government of Sierra Leone has formulated a range of policies to improve the welfare of Sierra Leoneans with a substantial focus on reducing rural poverty. These have been implemented within the overall framework of the national development strategy, the poverty reduction strategy paper (PSRP), currently dubbed the Agenda for Prosperity (2013-2018). This plan is baseline for measuring progress towards achieving Vision 2035 (see Chapter Four). We are experimenting with select policy choice variables simulated to determine their impact on the net sample welfare score of 5.69 obtained in Table 8.18.

### Promoting education for all

Sierra Leone is a signatory to various international development frameworks aimed at promoting literacy globally such as the Education For All (EFA) and Universal Primary Education (UPE) that are central to the achievement of UN Millennium Development Goals (MDGs). Therefore, under education, we carry out the following policy experiments.

***Experiment 1: All household heads attained at least a primary education.*** In the sample of 4123 rural household heads modelled from SLIHS2011, about 30 percent either never went to school or attempted schooling but never completed primary level. Let us project that this proportion (the 30 percent) has now attained at least a primary level. On this projection, the SEM suggests that there will be a gain of 2.0 percent in overall rural welfare above the sample estimate. (All simulated effects are reported in Table 8.20.)

***Experiment 2: All household heads attained at least a junior secondary school grade:*** Currently, 66 percent of the sample heads either never went to school or attempted schooling but never went beyond primary. We simulate the effect that this proportion (66 percent) attained at least junior secondary. On this projection, the model suggests that there will be rural welfare increase of 8.0 percent above sample estimate.

### Promoting social protection for the poor

A key challenge of government within its current social protection policy framework is to eradicate extreme income poverty to ease suffering among those whose lives have been threatened by hunger. Without effective policy response this group would adopt coping methods that could only reinforce poverty such as pulling their children out of school (see Chapter Four). Of the current national rural population of 3.50 million, 13.53 percent are estimated to be in extreme poverty and hunger based on the Foster-Greer-Thorbeck estimator (see estimates in

Chapter Seven, Table 7.34 Column J). Thus we carry out the following experiments.

***Experiment 3: Extreme poverty is eradicated***—that is, the 13.53 percent in hunger are at most only moderately poor. At the household sample level, this is approximated by 14.07 percent of the 4123 heads modelled in the SEM. Bailing this lot out of extreme poverty (about 580 households) is simulated to yield a gain of 3.0 percent in rural welfare above the sample score. This is a direct income effect.

#### Improving health status

***Experiment 4: At least 50 percent of all children per woman have been alive.*** Currently, the average woman in 30 percent of the 4123 households analysed has less than half of her children alive. If each woman had at least 50 percent of her children alive, the simulated net rural welfare increase will be 2 percent.

#### Empowerment of women

Empowering women has been empirically proven as fundamental to fighting poverty especially with respect to addressing child malnutrition and mortality, aside from their critical role in farm production (Bangura 2012c; 2013b; Howling 2007; among others). This is a key basis for modelling the *mothers' capacity factor* in the SEM, which is found directly significant in supporting child nutrition. We therefore conduct the following experiments.

***Experiment 5: All women attained at least a primary education.*** The average mother in 78 percent of the sample households either never went to school or attempted schooling but never completed primary grade. The net increase in rural welfare if this lot were to have attained at least a primary level is estimated by the SEM model at 5 percent.

***Experiment 6: All women attained at least a junior secondary education.*** Currently about 92 percent of the households modelled have mothers that either never went to school or

attained a grade below junior secondary. If this lot (the 92 percent) were to attain at least a junior secondary school, the projected gain in rural welfare will be 6 percent above the sample estimate.

***Experiment 7: Marital and pregnancy age is delayed to at least 20 years.*** With this, the net gain in rural welfare is estimated by the model at 3 percent above sample score.

### Land reform

Government has recently undertaken a land reform aimed at encouraging private investment and boosting agricultural productivity in rural areas and the country as a whole. Right to trade land in the market is one of the measures found significantly loading on the *agricultural transformation factor* modelled in the SEM. We therefore carry out the following experiment.

***Experiment 8: All households trade land in the market.*** Currently only 50 percent in the sample have such rights—most lands in rural areas are operated under family or communal system with some members having right to trade portions farmed or allocated, while others not. The simulated rural welfare increase is 5.0 percent above the sample score on the assumption that all households have right to dispose of land through market.

### Promoting off-farm employment

***Experiment 9: All household heads have off-farm employment as main source of income.*** Creating nonfarm jobs is critical to rural poverty alleviation. Currently, 81 percent of the sample households have their income mainstay in farming. The simulated effect produced here is however counterintuitive; rural welfare decreases by 4.0 percent if all household heads had off-farm employment as main source of income. The immediate implication of this is a lack of requisite education and skills in rural areas as precondition for earning higher returns from nonfarm sector. Thus, it seems it might not pay a great number of rural inhabitants to shift from

farming to nonfarm sector just yet, nor pay to migrate to urban centres at current level of capability of rural inhabitants.

#### Macroeconomic support

We simulate the effect of an increase in credit facility and central government transfers to local councils, expected to support implementation of local development projects and thereby directly stimulating rural economy.

***Experiment 10: All household heads receive in credit at least the sample mean amount of US\$180.*** Currently, the credit most households receive comes from informal sector through rotating savings and credit associations (ROSCAS), village money lenders, relatives and friends, and mostly in very small amount. The mean average amount loaned out to the sample farmers discussed in Chapter Seven, Table 7.11, is Le780,000 (US\$180), ranging from a minimum of Le230,000 (US\$51) in the informal sector, to a maximum of Le4.4 million (US\$1000) in the formal sector after correcting for outliers. Our simulated effect is again counterintuitive of the projection that all household heads receive in credit at least the sample mean amount of US\$180; this reduces rural welfare by 3 percent. A key implication is that, size of loans given out matters for welfare, but what matters most is their utilisation and the terms of their disbursement. Inappropriate use of credit and unfavourable terms can both negatively affect welfare (see review Chapters Three & Four, and discussion in the next chapter).

***Experiment 11: All central government transfers increased by 50 percent—towards education, health and agricultural development projects.*** This also leaves us with counter intuition, reducing rural welfare by 1 percent below the sample score. A plausible explanation for this is that, indeed, increased spending could have increasing welfare effects but for only certain segments of the population. If poverty of the left-out population segments in service delivery

increased at higher rates than the effect the policy has on other segments, the net effect will be negative, thereby calling for reengineering in resource allocation and targeting process *inter alia*.

### Joint implementation of policies

**Experiment 12: Simulating effects of undertaking joint policies.** This is to test whether having a policy mix is better or not. We suppose that every household head attained at least junior secondary; no household is in dire hunger (extreme poverty is eradicated); every household head has right to trade land in the market; all mothers attained at least junior secondary; and macroeconomic spending is increased. With this simultaneous policy undertaking, the net rural welfare is estimated to increase by 15 percent above the sample score, which implies that affordable combination of policies (that are well balanced) will yield better welfare outcome than implementation of single policy.

**Table 8.20: Policy simulations & experimentation for selected policy areas**

Changes in policy choice variables (A-L)	Simulated effects on poverty/welfare dimensions (dependent variables)						Total Net Effect	Change in Welfare Value
	Economic wellbeing	Education	Health	Nutrition	Employment	Migration		
	<i>0.92</i>	<i>1.41</i>	<i>1.01</i>	<i>0.13</i>	<i>0.73</i>	<i>1.49</i>	<i>5.69</i>	-
A: All household heads attained at least primary education	0.98	1.36	0.83	0.18	0.73	1.73	5.81	2%
B: All attained at least JSS	1.78	1.49	0.43	0.12	0.65	1.70	6.16	8%
C: Eradicating extreme poverty	1.01	1.29	0.91	0.22	0.75	1.69	5.87	3%
D: 50% of all children per woman were alive	0.94	1.30	0.89	0.13	0.78	1.76	5.79	2%
E: All women attained at least primary education	1.02	1.34	0.85	0.34	0.74	1.69	5.98	5%
F: All women attained at least junior secondary education	1.02	1.35	0.84	0.34	0.76	1.70	6.01	6%
G: Marital and pregnancy age delayed to at least 20 years	1.00	1.23	1.20	0.13	0.71	1.62	5.88	3%
H: Everyone has right to trade land in the market	1.11	1.40	0.60	0.36	0.72	1.79	5.98	5%
I: Heads have off-farm employment as main source of	1.20	2.14	0.55	0.41	0.03	1.13	5.45	-4%
J: Minimum credit increased from Le 230,000 to Le730,000	1.02	1.29	0.83	0.31	0.73	1.32	5.51	-3%
K: Increasing Central Government Transfers by 50%	0.94	1.30	0.84	0.15	0.73	1.70	5.66	-1%
L: Jointly implementing policy B, C, G, I & L	1.96	1.96	0.04	0.32	0.51	1.72	6.51	15%

**Source:** STATA econometric page version 12.0 based SLIHS2011 & model in Table 8.18.



### **8.11 Summary of SEM results and next level estimation**

We have looked at welfare as a composite function of various requirements for households to live acceptable, minimum quality of life. These requirements include those we have analysed above: economic wellbeing; education; health; nutrition; access to off-farm employment; and economic opportunities from migration. From the system (SEM) regression and policy experiments, economic wellbeing and education have been suggested as the most essential factors in fighting rural poverty. Largely, the OLS results corroborate the SEM results regarding education and economic wellbeing as lead predictors. Based on various welfare implications highlighted, education appears as the most contributing factor to rural poverty alleviation. Therefore, before concluding this chapter, we will analyse in the next section the extent to which education and other significant policy choice variables can predict rural poverty headcount using two-stage probit least squares. The 2SPLS also enables us parametrically predict required financial investment to eradicate poverty, which we compare with nonparametric resource estimates in Chapter Seven. And it extends the benefit incidence analysis undertaken in the previous chapter.

### **8.12 Predicting poverty headcount and resources: A 2SPLS framework**

Two equations have been specified within a two-stage probit least squares [see equation system (8.8)]. The first equation is a poverty headcount function while the second is a function of years of schooling of household head. To identify the system, independent variables are not the same across the equations, but all are hypothesised to affect the dependent variables directly or indirectly.

$$P_o = \delta_1 + \delta_2 HYrSch + \delta_3 HSIZE + \delta_4 RDispla + \delta_5 AGE + \delta_6 SqAGE + \delta_7 HLoc + \delta_8 PUB\_SERV + \delta_9 MACRO + \delta_{10} MACRO * PUB\_SERV + \delta_{11} MACRO * HLoc + \omega_1 \quad 8.8$$

$$HYrSch = \rho_1 + \rho_2 P_o + \rho_3 HSIZE + \rho_4 SYrSch + \rho_5 AGE + \rho_6 SqAGE + \rho_7 SEX + \rho_8 PSchTime + \rho_9 PUB\_SER + \rho_{10} MACRO * PUB\_SER + \omega_2$$

The variable,  $P_o$ , is poverty headcount ratio, the dichotomous dependent variable;  $HYrSch$  is years of schooling of household head, the continuous dependent variable. These two variables (both automatically instrumented to control for simultaneity) are also regressors in the system.

The exogenous regressors are discussed as follows:

- The variable  $HSIZE$  is household size, a measure of burden on household resources expected to increase poverty and decrease chances of education attainment. The variable  $RDispla$  (only entered in the first equation) is a dummy variable as to whether the household head has right to trade land in the market. It is expected to have reducing effect on poverty headcount and increasing effect on schooling. The variable  $SYrSch$  (only entered in the second equation) is years of schooling of spouse which is expected to encourage the head to acquire more education and to reduce poverty through improved household information and balance in decision making over allocation of resources (Pasqua 2001).
- The variable  $AGE$  is age of household head, expected to reduce poverty and increase household education over early age range till the end of active economic life.  $SqAGE$  is square of age of household head as a measure of the range of life over which a person is expected to become economically inactive with dwindling income. This is not unexpected to exert upward pressure on poverty and decrease chances of schooling.

Upward pressure on poverty may arise provided no sufficient savings were made for old age or retirement consistent with inter-temporal choice theory.<sup>40</sup>

- *PSchTime* is time taken to access primary school, and the shorter it is, the more the likelihood that the head will be able to acquire more years in school, thereby increasing chances of reducing poverty. The variable *SEX* is gender of household head. In the current context of rural Sierra Leone, males generally tend to have more chances of schooling and hence more chances of bailing themselves out of poverty.
- *HLoc* is a factor measure of geographic location of households, expected to reduce poverty headcount and increase years of schooling as its scores increase. That is, those who are located in regions with better socioeconomic services (such as in western rural settlements near the capital city of Freetown) are expected to be better-off than those residing in the provinces.
- The variable *PUB\_SERV* is a factor measure of status of public service delivery by local councils (discussed in Chapter Six). Higher scores on this variable imply higher likelihood that those residing in highly scored districts for service delivery performance will attain higher education with increased chances of reducing poverty. *MACRO* denotes macroeconomic support to councils, measured by central government transfers, and credit availability to households, expected to reduce poverty and increase years of schooling.
- *MACRO\*PUB\_SERV* is a multiplicative factor measure of marginal effect of macroeconomic support on poverty and schooling conditioned on level of effectiveness of service delivery by local councils. The more effective services are delivered the more

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<sup>40</sup> The concept of inter-temporal choice explains trade-off over costs and benefits that consumers have to make at different points in time.

effective and efficient local councils are likely to become in the use of resources towards poverty reduction and education development.

- Finally, *MACRO\*HLoc* (only entered in the first equation) is a multiplicative factor measure of marginal effect of macroeconomic support on poverty and schooling conditioned on whether households are located in regions characterised by high performing councils in service delivery. Locations where councils perform highly are expected to benefit more from macroeconomic support in terms of resource utilisation.

Annex 4 presents descriptive statistics of the variables. A total of 2955 rural households and 2268 urban households have been analysed, focusing on heads that attained at least a primary level of education to enable us obtain comparable samples for the analysis.

### ***Estimation results***

We report predicted marginal probabilities for both poverty headcount in the probit component and years of schooling in the OLS component, using STATA econometric programme. Marginal probabilities are evaluated at the mean values of the regressors except for the constant term [see Ssewanyana & Younger (2007); among others]. Results are presented in Table 8.21. At current average level of schooling in rural areas, and rural household size, land distribution pattern, age of household head, geographic location of households, level of macroeconomic support, and status of public service delivery, the probability of becoming poor in rural areas is generally estimated at 0.678. This clearly indicates that the conditions surrounding rural households are generally not conducive to welfare improvement. The probability of becoming poor in urban areas evaluated at the average means of these conditions is estimated at 0.296, which is more than two-fold less than rural estimate, glaringly pointing out to wide development disparities

between the two sectors.

The parametric prediction of rural poverty headcount ratio of 0.678 closely tracks the nonparametric estimate of 0.682 in Chapter Seven, obtained based on the FGT estimator (see Table 7.34). In urban areas, poverty is parametrically predicted at 0.296, against 0.354 percent from the FGT, which are less close to each other relative to predictions for rural sector. Apparently, urban poverty had considerably decreased more than we thought in Chapter Seven while rural poverty is marginally below what was presented there. By the FGT formula, urban poverty reduced by 11.62 percent in 2011, from 47 percent in 2003, while the 2SPLS suggests a reduction of 17.40 percent. Rural poverty reduced by 10.34 percent based on the FGT estimator, and 10.75 percent based on the 2SPLS estimator. The 2SPLS supports earlier suggestions that policies have generally been more pro-urban-poor than rural despite evidence that the rural sector holds most of the national poverty. This suggests need to refocus public policies.

Turning to individual regression coefficients, the marginal probability of reducing poverty headcount ( $P_0$ ) for every additional year gained in school (HYrSch) is estimated at 0.140 for rural sector, which is surpassed by response in urban areas at 0.155 (Table 8.21). Out of every 1000 persons in poverty, about 140 and 155 are expected to break free of poverty for every additional year gained in school in rural and urban sector, respectively. The mean elasticity of poverty reduction is estimated at 0.56 percent for rural areas (inelastic response), and 2.06 percent for urban areas (elastic response) for every percentage increase in number of years spent in school.<sup>41</sup> As presented below, since the average household in the urban sector is predicted to have higher level of education than the rural counterpart, a small increase in number of years in school in the urban sector is expected to increase chances of job access there than in rural sector.

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<sup>41</sup> STATA econometric software can also automatically generate elasticity estimates but not reported in the tables for brevity.

The effect of household size (HSIZE) on poverty headcount is positive and significant as expected for rural areas, establishing the negative implication that increased demographic burden could have for investment in productive sectors. Regarding land, it is counterintuitive, although explainable, that right of disposing the resource through market in the rural sector (RDispla) would increase chances of holders becoming poor. Its probability is however small at 0.07, with inelastic coefficient of 0.051. Generally, there can be upward pressure on poverty in the absence of proper negotiations over land sales on behalf of rural farmers, most of whom lack education. Furthermore, poverty cannot be alleviated effectively if proceeds from land sales are not put into proper use.

The effect of age (AGE) is partly as expected (on its polynomial covariate end) and partly not (on the linear end). Age is expected to reduce poverty over its early range (early years, which are the linear covariate part, moving from childhood to adulthood with expected increase in one's economic activity). In late age range, poverty increase cannot be unexpected (the polynomial covariate end) where one retires or becomes less economically active, especially if sufficient inter-temporal budget planning had not been done through savings and investment for old age. And geographic location (HLoc) is found significant in determining level of poverty for rural areas.

Again, evidence suggests here that, scoring local councils high for public service delivery under the current assessment framework (PUB\_SERV) does not appear to necessarily imply reduced household poverty. The factor shows positive marginal coefficients for both rural sector (0.023) and urban sector (0.063), which may point out to some methodological issues that would necessitate revision of current framework for assessing service delivery performance to provide robust check for this evidence. However, the counterintuition can be practical. It may imply that

the initial (short-run) state effort in service delivery has not been *pareto effective*. That is, a net increase in poverty cannot be unexpected once the growth in poverty for the (possibly) left out segments in services outweighs the positive effect of services on other segments of the population (who possibly constitute the far minority). Nonetheless, there are chances that any short-run negative welfare effect can be minimised or eliminated overtime since there is an indirect poverty reducing effect of current service delivery effort through its reported direct positive impact on schooling—indirect poverty reducing effects are estimated at -0.009 for rural sector, and -0.033 for urban sector, although not sufficient to produce expected net negative effect on poverty.<sup>42</sup> The average suggestion is to increase accountability in public service delivery.

And macroeconomic support does not also appear to have the expected poverty reducing effect in rural areas even though service delivery is rated high (MACRO\*PUB\_SERV). This counterintuition can be explained alongside the need to increase accountability and equitable distribution of resources in service delivery chains as aforementioned, while data measurement issues should be revisited. It is not surprising that this interactive variable turns out significant in reducing urban poverty because there is relatively high level of advocacy for service delivery in urban settlements; most civil society organisations including the media are located in urban areas.

Let us turn to regressors in the OLS component of the model for household education. Poverty headcount ratio ( $P_0$ ) is found to have significant impact on household schooling. The average number of years spent in school among rural household heads is estimated at 10 (about completing primary level), whereas the years completed among urban households is estimated at

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<sup>42</sup> We follow the same chain rule as in Footnote 39 on Page 316 to estimate indirect effect of public service delivery on poverty headcount.

15 (about finishing junior secondary). This places households in urban sector with increased chances of earning income more than their rural counterparts for any additional year spent in school.

However, it appears the cost of poverty is higher in the urban sector, where years of schooling will more than reduce by 1.371 points for every household head sliding into poverty, relative to rural sector, where the reduction is 0.271 points for every one sliding into poverty there. This has an indirect and increasing feedback effect on poverty headcount. We estimate that, the indirect effect of a household head falling into poverty is such that this will compel 31 out of every 1000 persons to fall into poverty in the rural areas through the loss in school participation resulting from the trigger-poverty. About 258 out of every 1000 persons will fall into poverty in the urban areas through this transmission effect.

Number of years of spouse in school (SYrSch) and management of household size (HSIZE) are found to have significant desired effect in influencing rural household education. They are not found significant in urban areas. Age and sex are not significant in affecting education in the two sectors. Time taken to access primary school (controlling for community infrastructure, PSchTime) is found significant in influencing schooling in the rural areas, suggesting that school attendance increases with decrease in time taken to access school through increased supply of facilities. This variable is not significant for urban areas, perhaps because urban areas are generally far more favoured in the distribution school facilities than rural areas that time may not be as much of an issue in the former. Macroeconomic support (MACRO) is found to have significant and positive effect on schooling but is conditioned on how effective local councils are in managing public resources, and it is significant only for the urban areas.



### Minimum financial resources required to close poverty gap

We will focus on estimating total investment resources required to close rural poverty gap with special attention to calibrating the share of these resources needed in education and other policy choice areas. We discovered above that the rural poverty headcount estimated by the 2SPLS model (67.80 percent) closely tracked the nonparametric estimate obtained from the FGT formula in Chapter Seven (68.21 percent); and the corresponding estimates for the urban sector were 35.40 percent (FGT), and 29.10 percent (2SPLS) (compare Table 8.22 here and Table 7.38 in Chapter Seven). Based on the current national poverty line and population, the predicted minimum gap resources necessary to close rural poverty gap are estimated at US\$ 222 million from the regression (Table 8.22), closely tracking the FGT estimates at US\$224 (Table 7.38); the corresponding estimates for the urban sector are US\$ 25 million (2SPLS) and US\$30 million (FGT).<sup>43</sup> The statistics in these two chapters (Seven and Eight) strongly evince the need for a stronger focus on alleviating rural poverty. This attention will require planning specific sectoral resource requirement, such as investment required in education, population management, and land reform towards closing rural poverty gap. The 2SPLS regression has advantage over FGT estimator in calibrating these specific resources as follows.

Of the predicted resources by 2SPLS model, 14.0 percent are suggested for investment in *education* towards closing rural poverty gap in the coming fiscal years, amounting to a minimum of US\$ 31 million (Table 8.22).<sup>44</sup> Those suggested for investment in rural *population planning*, *land reform*, and building *public service delivery* capacity (including macroeconomic support)

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<sup>43</sup> The process of obtaining the parametric investment estimates involves (i) estimating expected size of the total poor population based on the overall rural/urban population and poverty line, and the predicted probability of becoming poor from the 2SPLS model; and (ii) multiplying the predicted size of the poor population by the amount of gap financial resources needed per poor person in the rural/urban areas.

<sup>44</sup> Resources needed to invest in education towards closing the poverty gap is an expected value calculated by multiplying the predicted marginal probability of reducing poverty headcount through schooling by the predicted total amount of resources needed to close the total poverty gap: that is,  $0.140 * USD222$  million. This applies to other policy choice areas analysed.

**Table 8.21: Two-stage probit least squares estimates**

	Poverty headcount (Probit, Po)		Years of Schooling completed by head (HYrSch)	
	Rural	Urban	Rural	Urban
Years of schooling completed by head (HYrSch)	-0.140** (0.038)	-0.155* (0.039)	-	-
Poverty headcount (Po)	-	-	-0.271* (0.133)	-1.371* (0.256)
Years of schooling completed by spouse (SYrSch)	-	-	0.425** (0.042)	0.070 (0.062)
Household size (HSIZE)	0.054** (0.004)	0.052 (0.004)	0.103* (0.021)	0.214 (0.034)
Right of disposal of land (RDispla)	0.070** (0.018)	0.009 (0.045)	-	-
Age of household head (AGE)	0.010** (0.003)	0.003 (0.004)	0.009 (0.007)	0.014 (0.015)
Aquare of age of household head (SqAGE)	0.000* (0.000)	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)
Sex (SEX)	-	-	0.009 (0.044)	0.109 (0.100)
Time taken to access primary school (PSchTime)	-	-	-0.001** (0.000)	0.002 (0.002)
Geographic Location of the household (HLoc)	0.027** (0.015)	0.006 (0.019)	-	-
Public service delivery by local councils (PUB_SERV)	0.023** (0.009)	0.063** (0.015)	0.063** (0.020)	0.211* (0.093)
Macroeconomic support (MACRO)	0.010 (0.010)	0.016 (0.013)	-	-
Macroeconomic support times public service delivery (MACRO*PUB_SERV)	0.028* (0.010)	-0.024* (0.012)	0.002 (0.020)	-0.085** (0.053)
Macroeconomic support times location (MACRO*HLoc)	-0.015 (0.011)	0.025** (0.012)	-	-
Constant	-0.022 (0.338)	0.275 (0.407)	1.358** (0.210)	1.143** (0.489)
Sample predicted poverty headcount	0.678	0.296	-	-
Sample predicted years of schooling	-	-	10	15
N	2955.000	2268.000	2955	2268
F/LR-Chi-Square	262 (0.00)	387 (0.00)	35 (0.00)	66 (0.00)

Notes: - Notes: \*\* denotes significant estimates at 1 and 5%; \* denotes significance at 10%; standard errors are in parentheses; marginal probabilities are reported for the probit estimated at the mean values of the regressors, except for the constant term.

**Table 8.22: Financial resources required to close poverty gap 2011**

Policy Area	Predicted probability of reducing poverty headcount (Po)	Predicted Total Gap Resources Needed for Eradication of Rural Poverty (USD'mn)	Minimum Investment Needed Per policy Areas
Education	0.14		31
Rural Population Planning	0.05		10
Land Reform	0.07	222	16
Local council capacity building	0.075		17
Others	0.665		148

Source: STATA econometric package version 12.0 based on SLIHS2011.

are estimated at US\$ 10 million, US\$ 16 million and US\$ 17 million, based on predicted marginal probabilities of 0.05, 0.07, and 0.075, respectively (Table 8.22).

This model only serves as a policy guide. The fact that the sum of absolute marginal effects (0.335) in the estimated model (Table 8.21) is less than one suggests that there are several other factors/sectors that should be invested in to reduce poverty such as highlighted in the SEM and OLS estimations. That is, the balance amount of predicted gap resources of US\$ 148 million (after deducting amount needed for education, population planning, land reform, and service delivery capacity) can be allocated to several other policy areas including direct income support programmes, health, nutrition, off-farm job creation, and so on.

### **8.13 Summary of chapter**

We have carried out triangulatory analysis of determinants of rural poverty in Sierra Leone, and tested effectiveness of selected policy choice variables in reducing poverty. The analysis predominantly involved latent determinants/factors, which have the advantage of indicating to the state broad policy areas that require significant investment to reduce poverty. We conducted analysis on three levels: (i) equation-by-equation, OLS estimation; (ii) nonrecursive simultaneous system estimation using structural equation modelling; and (iii) nonrecursive simultaneous system estimation using two-stage probit least squares. Across these frameworks, we hypothesised sixteen latent determinants as key predictors of rural poverty including the six dependent variables (Annex 1). With the aid of factor analysis, the sixteen latent factors were reduced from more than 90 observed relevant measures/indicators of poverty generated from the household data of 2011(Annex 1). The hypothesised latent factors or predictors were:

- Economic Wellbeing; Education Status; Health Status; Nutrition; Employment; Migration; Demographic Management; Community Infrastructure; Housing and the Environment; Mothers' Capacity; Preventive Healthcare; Geographic Location; Public

Service Delivery; Post-Conflict Management; Agricultural Transformation; and Macroeconomic Support.

(See Annexes 1, 2 & 3.)

Thirteen of these hypothesised predictors clearly came out as significant determinants of rural poverty and welfare across the models estimated:

- Economic Wellbeing; Education Status; Health Status; Nutrition; Employment; Migration; Demographic Management; Community Infrastructure; Mothers' Capacity; Geographic Location; Public Service Delivery; Agricultural Transformation; and Macroeconomic Support.

Systemically, economic wellbeing and education came out as lead predictors in terms of impact on welfare. Education is most outstanding, combining its manifested effects and breadth of welfare implications deduced from the analysis. Policy experiments affirmed the need to stimulate the rural economy and enhance education on a sustainable basis, with emphasis on girl child education and women empowerment. Trading of land in rural areas came out with mixed implication for rural welfare—a generally positive effect on overall welfare was suggested on the one hand by the SEM model; on the other hand, the 2SPLS highlighted an increasing effect on poverty headcount at least in the short run.

In the current conditions facing the average rural household, with low level of education in particular, the simulated effect of having all economically active members engaged in off-farm activities as main source of livelihood was found negative. Also found negative in the simulations were increased financial credit to households and increased central government transfers to local councils. Effectiveness in the use of central government transfers was found dependent on the geographic location of councils.

We ended regression analysis with prediction of minimum amount of financial resources needed to eradicate rural poverty and the share of these resources to devote in certain policy

areas in the process, including education, population management, land reform, and capacity building for public service delivery.

We will move on to the next chapter to discuss in detail all empirical findings of the research obtained in Chapters Seven and Eight. Its paramount objective is to synthesise all results and provide clearer policy direction to proffer recommendations in the final chapter that follows.

## Chapter Nine

### Discussion of Empirical Results

The last two chapters have undertaken extensive descriptive and econometric analyses of rural poverty situation in Sierra Leone. We have thoroughly explored the circumstances underpinning the rural poor, and determined the extent to which income poverty has changed over the years within government's poverty reduction strategies. Policy experiments have been conducted to test the potency of various policy options to reduce poverty and increase welfare of the rural poor in the long-run, and pointers have been provided in regard to critical areas to prioritise public investments for effective poverty reduction. The current chapter reflects on major findings from the previous two to ascertain the extent to which findings are supported by existing theories and other empirical works. It re-examines results in the context of the role that household socioeconomic conditions and local governance have played in determining poverty and welfare; and the extent to which public policies have impacted on rural poverty. Then a coherent framework is suggested for effective treatment of rural poverty in direct response to the last research objective of the study, which is re-stated as follows.

*Research Objective 5: To advise priority policy areas and a framework for guiding decision-making and promoting sustainable rural poverty reduction and national socioeconomic development.*

#### 9.1 General overview of results

The empirical results amply reflect the socioeconomic conditions of the average household in least developed countries; those households that encounter the complex task of undertaking numerous and concurrent welfare decisions about consumption, production and so on, with each

decision affecting the other (Bardhan & Udry 1999; LaFave & Thomas 2012; Sadoulet & de Janry 1995; Singh et al. 1986). Because of this complex nature of household decision-making, we had prioritised a system approach to estimating policy parameters and conducting simulations. Our estimation framework was guided by an underlying optimisation problem facing the average (poor) household that we have studied. The simultaneous problems of this household include the welfare (poverty) dimensions we have analysed: striving to maximise (i) economic wellbeing, (ii) educational status, (iii) health status, (iv) nutritional status, (v) off-farm employment opportunities, and (vi) chances of better livelihood options elsewhere (migration); all within extremely meagre resources.

The theoretical framework guiding our estimation derives heavily from the human capital investment models necessitating analysis of poverty from simultaneous system perspectives where a given household welfare dimension is both predicted and itself a predictor (Grossman 2000; among other) so that parameter estimates so derived can be much more representative of welfare situation and can better inform policy.

Against this theoretical backdrop, our empirical analysis has suggested education as lead (and perhaps the most important) predictor of poverty at all levels, suggesting that the state should devote substantial share of national budget to investing in rural education. Stimulating the rural economy and income generating activities has also been found substantially crucial to any effort at supporting rural development. Reciprocally, all six poverty dimensions studied affect each other, with health, nutrition, employment, and migration affecting education and economic wellbeing as the latter affect them, in addition to effects from the exogenous predictors analysed: demographic management, community infrastructure, mothers' capacity, public service delivery, geographic location, agricultural transformation, and macroeconomic support. Inasmuch as all these factors have been found significant, what is crucially needed is an optimal balance of

policies taking into consideration the weight differentials of these factors in the aggregate welfare value of the household. Evidence suggests that even though certain policies can be perceived as currently crucial, they could have negative direct impact on welfare in the short-run, but with potential long-run positive effect. This research traces these dynamics through discerning indirect effect of covariates, thereby lending credence to the system estimation approach that we prioritised in the analysis. This approach enables adequate perusal of direct and indirect interaction of variables to determine net effects that can be most pivotal for policy planning purposes.

Evidence suggests that households encounter an income substitution effect problem to juggle among its competing welfare needs. There is an inevitability of welfare trade-offs that the average rural household has to manage under its current poor condition (see related finding in Fin et al. 2000, for rural China). Sometimes it may have to reduce health spending (by opting for self-medication or traditional herbs) in favour of child education to take advantage of marginal income increases, and vice versa; or reallocate resources from standard healthcare, standard diet, and child education to be able to invest in migration opportunities and off-farm employment elsewhere. This can be practical with the evidence that about 68 percent of rural people still live on less than US\$ 1.25 a day on account of having to meet both food and non-food needs, and many of whom are caught in low-level equilibrium trap. Carefully planning state policies, therefore, is tremendously crucial. There is need to ensure optimal balancing of development effects on households' numerous welfare decisions to achieve sustainable rural and national development.

According to this research, net negative welfare effects may exist even as service delivery performance could currently be rated as high. If this does happen, two implications can be noted: (i) there might be need to revise the existing framework for assessing service delivery



performance; and (ii) the highly rated performance for service delivery might be consistent with an increase in welfare but perhaps only for certain segments of the population that are in the (extreme) minority; such that perhaps the left-out segments of the population in the provision of services might have constituted the (extreme) majority and their poverty levels may have increased faster than any positive effect of services on the fortunate few. In general, the data suggest a serious need for increased transparency and accountability in public service delivery; more specifically, the need to strengthen resource targeting and monitoring system.

Essentially, there is a call for careful management of policies to reconcile short-run negative impacts with desired long-run effects, ensuring to the extent possible that net short-run effects are positive. Community needs should be carefully assessed; comparative needs assessment of locations and socioeconomic groups is crucial and evokes the need for minimised patronage and patrimony in policy targeting (Bardhan & Udry 1999; Mosley et al. 2012; Todaro & Smith 2011).

Policy experiments suggest that policy mix (once got right) will impact on poverty far more than focusing on single policy. This subscribes to the finding that cost of eliminating permanent poverty is reduced by at least 60 percent if appropriate policies are applied (Otsuka et al. 2009, p.6). The next sections will discuss results by poverty dimensions.

## **9.2 Household conditions, local governance and poverty**

### **9.2.1 Household demographics and poverty**

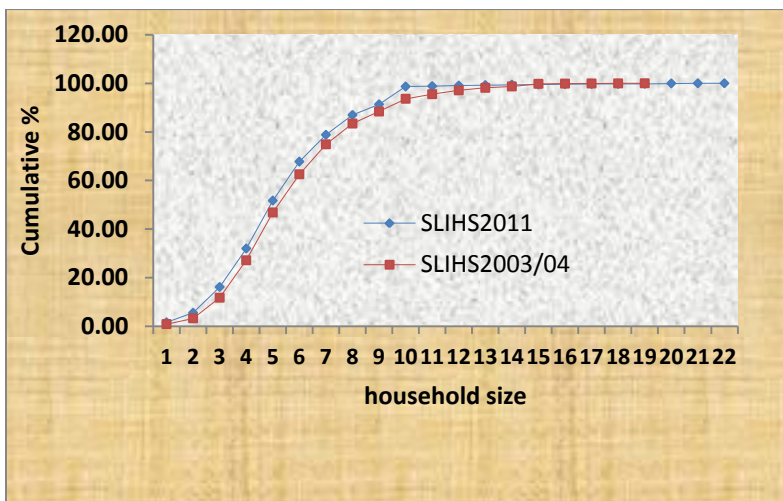
As evidenced in both the SEM and 2SPLS regression frameworks, managing household demographics is among key exogenous factors found significantly explaining quality of life in rural communities. This cannot be overemphasised with regard to reducing poverty headcount in

real terms. The regression results demonstrate the imperative of keeping households to affordable sizes through family planning so that domestic responsibility can be matched with resource capacity to permit optimal spending on critical non-food components such as child education and healthcare.

The descriptive statistics suggest that Sierra Leone's rural household size has not changed in the desired direction, especially a change that can bring about healthy growth of children (Figure 9.1). Owing to insignificant structural transformation the rural household landscape (size and composition) that existed in 2003 has prevailed to date, and still captures the early 1970s' structure identified in Dorjahn (1977, p.107) for the average household in the country. Extended relations still persist in households, which Dorjahn estimated at a rate of 60 percent in 1972; this rate is revealed in this study to have only reduced to 52 percent in 2003, and 48 percent in 2011. Polygamy is still reasonably practised, albeit showing hopeful signs of reduction in the long-run, as reported in the descriptive analysis; and it is religiously seamless in rural areas, with no sharp differences between Muslims and Christians. Fertility rate has declined somewhat but remains above desired Sub-Saharan African threshold of 4.3 according to the World Bank Development Indicators. Evidence suggests that marital status in households is not only limited to the head, spouse or their children; other members also exercise nuptial status under the same roof, with a single breadwinner in many cases. This landscape remains rigid, and still captures Dalton's narrative of the primitive, peasant societies that existed in pre-and post-industrial times characterising nations in early stages of development (Dalton 1971); and Polanyi's concept of *reciprocity* describing the central and dominant role of large households in promoting socioeconomic exchanges in peasant economies (Polanyi 1944; Ibid). It also captures the typical African rural household described in Chapter Two for whom polygamy and large families are

central to the socioeconomic survival of households (Peeters et al. 2009; Stichter 1985; Swindell 1985; among others).

The literature review noted some appealing reservations about arguments for minimised family size in LDCs (Becker 1991; Bongaarts 2001; Eloundou-Enyegue & Williams 2006; Kuznets 1978). But while this is the case, the inertia experienced in reducing Sierra Leone’s rural poverty (comparing poverty headcounts of 2003 and 2011 in Chapter Seven, Table 7.34) amid large household size lends substantial credence to Becker and others’ quantity-quality model hypothesising negative relationships between family size and income, schooling, child health and macroeconomic development (Becker 1960; Becker & Lewis 1975; Black et al. 2005; Bongaarts 2001). Besides the positive relationship between demographic management and welfare reported by the SEM model, the 2SPLS indicates that at least 54 out of every 1000 poor persons would be removed out of income poverty if the average rural household reduced in size by one person.



**Figure 9.1: Shift in rural household size from 2003 to 2011**  
*Source:* Author’s construct based on SLIHS 2003 & 2011.

Some of the manifested poverty outcomes in other sectors such as high rural illiteracy and school dropout can be traced in the demographic and social stereotypes obtained in households [see other country evidences in Banerjee & Duflo (2011)]. Besides the tendency towards increasing

population, the high rate of early marriage (47 percent) revealed in this study, for instance, is a key agent of illiteracy, poverty and mortality. There has been express international concern in this area for the progress of the developing world (UNFPA 2012). Our early marriage estimate for rural Sierra Leone almost perfectly tracks UNFPA's current estimate of 48 percent for the entire country, ranking it 10<sup>th</sup> highest for incidence of early marriage in a sample of 41 countries (ibid, p.23). And regression simulations did confirm the expected increase in rural welfare if rural marital and pregnancy age were considerably delayed.

The effect of the decade long civil war (1991-2001) is another explanatory factor that could have adversely affected household demographics and worked to entrench a high dependency syndrome. Some households have increased due to war widows, the separated, war-children, and orphans; the postwar effects include single- and child-headed households. There are also street children as a result, consistent with prevalence of circumstantial households [see Hope (2008); Illife (1987); Zack-Willians (2007); and Chapter Two, Section 2.4.2)]. The postconflict resettlement process involving large numbers of returnees to their villages could also be a critical factor bloating rural households' size.

In summary, government faces huge demographic challenges in pursuit of its poverty reduction programme. A comprehensive understanding of the demographic context is decisive to the formulation of any successful policies and ensuring effective targeting of resources. The desired change of current demographics requires an integrated population strategy drawn from livelihood support and initiatives implemented in other sectors. Containing population pressures on households in light of the highlighted demographic context will be a critical cornerstone for the success of country poverty reduction programmes.

### **9.2.2 Income sources, land, farm input and poverty**

Improving economic status of households measured by such indicators like level of income and asset has been found in the regression analysis as key determinant of overall welfare of rural inhabitants. It suggests the need for diversifying economic activities, stimulating and pursuing opportunities in the nonfarm sector. The descriptive analysis indicates that rural Sierra Leone has continued to remain dependent on farming. This leaves the country in the group of those in their early stages of development, for whom farming is principal source of household livelihood and revenue to finance other sectors [consistent with Dalton's (1971) peasant economic analysis; sequential development stages hypothesised in Otsuka et al. (2009); and Rostow's (1960) stages of development]. Financing child schooling at this stage is mostly dependent on farm income because the majority of those interested in educating their children are engaged in farming (Bangura 2013a; Otsuka et al. 2009). But rural households cannot progress and reduce poverty sustainably without a drastic shift towards the nonfarm sector believed in the long-run to provide higher returns to human capital. It is recalled here that "...the development of the nonfarm sector and increased access of households to nonfarm labor markets are clearly the major driving force behind the reduction in poverty in rural villages in Asia....economic development in Asia is clearly pro-poor and returns to labor [have] increased relative to the returns to land" (Otsuka et al. 2009, pp. 201-209). This suggests, therefore, that Sierra Leone should scale-up efforts at transforming the rural sector, calling for heavy educational investment consistent with the growth arguments in Chenery (1979); Lewis (1954); Romer (1993); Solow (1956); among others. Additionally, practical lessons can be drawn from China's rural transformation in Binglong Li et al. (2009) from the perspective of increasing rural human capital for effective participation of rural folks in nonfarm activities.

Currently, self-employment (including farming) earns the average rural Sierra Leonean more income than wage employment. This further highlights the significance of education and skills development to induce the optimal rewards expected from the nonfarm sector for rural transformation, which are currently low in the rural areas. Rural incomes from both wage- and self-employment declined during 2003-2011 and were below the national per capita GDP and poverty line.

The statistics contend that either rural areas have not seen adequate stimulation of economic activities, or their employabilities have not grown beneficially, or both. There is growing advocacy for inclusive and shared growth in Africa aimed at ensuring that the currently acclaimed rising growth of the continent is pro-poor (GoSL 2013a; World Bank 2013b). But this objective is greatly challenged by the fact that illiteracy is substantially high on the continent (about 40 percent according to World Bank Development Indicators). Sierra Leone is among SSA countries that have witnessed impressive macroeconomic growth during the period under review but larger segments of society have not benefited (Schubert 2012), which is attributable largely to high illiteracy rate (at 58 percent) to enable the majority (rural inhabitants in particular) to share in GDP growth.

The regression models investigated and found significant effect of government's agricultural transformation drive on rural welfare in terms of the combined poverty influence of such measures as 'right to trade land in the market' and 'use of improved farm technology (inputs)' could have. The importance of the agricultural transformation factor is partly predicated on the argument that ownership of land that is predominantly communal cannot guarantee agricultural productivity and sustained rural poverty reduction since it weakens incentives to invest (Bardhan & Udry 1999; Binglong et al. 2009; Foray 2011; Johnson 2011). According to

the descriptive statistics, the system of land ownership in Sierra Leone is still predominantly communal and can therefore be characterised as unproductive and correlated to the low rural incomes revealed in the data. This tenure condition is largely blamed on the colonial past (Foray 2011; Chapter Four, Section 4.2.11) that bequeathed postcolonial administrations an unresolved land system and a dual model of governance: a statutory governance in the Crown Colony, now covering the Capital of Freetown and the western peninsula with market-based land acquisition model accounting for 21 percent of the national population and 0.77 percent of the national land area; and a native/customary land governance system in the protectorate, now designated as the provinces and rural areas which is predominantly communal and accounts for 79 and 99.23 percent of the national population and land area, respectively.

The ongoing state land reform process is therefore a step in the right direction with plans to increase the role of the market in transacting communally owned lands to attract private investment (Foray 2011). Indeed, the descriptive data suggest there is optimism for an expansion of the land market in rural areas, noting an increase in rate of land disposal through the market during 2003-2011, and there is also increased rate of its collateralisation, subscribing to the “family contract operation system” of the Chinese, which can be given a consideration in the Sierra Leone reform process; in China, rural communities divided up collectively owned land equally among all members to create market incentives such that a rural family or member was permitted to contract or operate its own portion at will (Binglong et al. 2009).

However, the regression analysis generally suggests need for cautious and gradual approach to monetising lands. While policy simulation with the SEM estimates wholly supports an untrammelled participation of the market in rural land economy, the two-stage probit estimates suggest moderated market participation. The probit model suggests poverty will not

significantly reduce in the absence of proper negotiations of land sales on behalf of the peasant, most of whom lack education. Nor reduce if proceeds from the resource are not put into proper use. This caveat partly captures the growing land grab concerns in Africa as well as in Sierra Leone (Christian Aid 2013).

Use of improved farm technology: While dependency on the farm has been sustained, the rate of utilisation of improved farm technology has been extremely low according to the descriptive statistics, evidence that can partly be attributable to low farmers' income to purchase inputs. Yet, parametrically, use of improved farm technology, especially improved seeds was found significant in reducing poverty. Green Revolution has been seen as 'indispensable' for reducing widespread poverty in Sub-Saharan Africa even at the acknowledgement of regional environmental differentials (Otsuka et al. 2009); suggesting Sierra Leone should scale up support towards agricultural intensification, and increase its commitment to the Maputo Declaration requiring African countries to maintain a minimum threshold budget for agriculture.

However, background reviews suggest that the state has spent huge sums of money towards rural agricultural transformation. Thus, the most essential suggestion coming out of the research for agriculture is 'need to step-up accountability mechanism in the distribution of agricultural support for the poor,' as buttressed by concerns expressed in Box 9.1. The low credit supply to the rural sector equally calls for improved accountability system and reduced patronage in credit distribution chains (see also Box 9.1). Strategies should be in place to minimise moral hazards on the part of beneficiaries, coupled with need for improved management of risks in the agricultural sector.



**Box 9.1: Quotes from field interviews on state's agricultural and credit support**

1. "I believe it is wasted effort for government to buy tractors that they say are meant for the poor in agriculture. They only make richer those that are already rich in the district, such as the councillors, who sometimes connive with NGOs to divert resources. Both the NGOs and local councils are not monitored in the distribution of inputs and other assistance meant for poor farm families. I think government should establish state farms that will benefit the poor." (Coming from a resident in Northern Region; 18<sup>th</sup> October 2012.)
2. "Microcredit enslaves the people. There are fraudsters in the industry cheating the poor with high interest rate. There is selfishness and greed on the part of the implementers of microcredit; they only care about themselves and their people." (Coming from a respondent in a focus group conducted in Western Area; 30<sup>th</sup> October 2012.)
3. "Sincerity is the problem in public service. Officials are not sincere in the implementation of poverty initiatives that is why the poor are not receiving the assistance meant for them." (Coming from a resident in Southern Region; 6<sup>th</sup> September 2012.)

On the risks factor, Dalton has argued that "A legitimate role for any central government wanting to accelerate local development is for it to bear some portion of the financial risk of economic and technological innovation" (Dalton 1971, p.104). This research subscribes to Dalton's opinion given the low penetration of formal financial services in the rural areas. This is a crucial market failure that the state should address as it will not only deny rural population access to vital resources but equally deny the financial sector 'small but numerous' savings necessary for the expansion of the credit industry and growth of the national economy. [See Stiglitz & Uy (1996), for details on the role of mobilising small savings in the transformation of the East-Asian economies.]

The ineffective provision of credit to rural areas by formal financial institutions has been substituted for, but to a limited extent, by informal financial schemes, mainly the ROSCAS or OSUSU as commonly dubbed in West Africa. While these schemes are generally not well organised institutionally, they have served as crucial resort and interface in offsetting effects of limited penetration of formal services in rural areas. Some Commercial Banks in Sierra Leone

are currently utilising these schemes as group collateral to increase lending to small scale operators (SLLC 2011). Hope (2008) and others have discussed their widespread role across West Africa. Plans by Government of Sierra Leone to reinstitute Credit Guarantee Schemes (GoSL 2012a) would make a further difference in the rural economy if properly implemented.

Evidence suggests the need to support rural areas to diversify activities within the farm sector, considering the potentially huge returns that can be earned from investing in animal husbandry, which serves as a major source of income for a cross-section of the households, and investing in other sub-sectors like aquaculture. This could serve as shock absorber, and build welfare resilience in times of crop losses and general economic crises.

### **9.2.3 Household capabilities and poverty**

The regression estimates affirm the theoretical expectation that human capital factors are principal determinants of welfare. These factors include those we have analysed as predictors of poverty: education, health, nutrition, housing, and community infrastructure. While some households have witnessed improved status in one or more of these factors, a great proportion witnessed deterioration in one or more of them, with evidence generally suggesting that there has been tepid policy performance in these factors—a good proportion of these indicators still remain appalling as the descriptive statistics illuminated.

It is of great concern that evidence points out rising levels in both illiteracy and mortality rates in the rural sector for the period 2003-2011. These have happened in times of increased public spending in education and health, although performance in some of the intermediate indicators in these sectors has been encouraging. Reasons to explain the deterioration at outcome level may include the fact that many rural settlements suffer from geographic terrains characterised by widespread mountains and poor road conditions thwarting state policies from

yielding optimal effects. This restricts the supply of schools and health facilities, and discourages effective participation of the private sector in the provision of social services. Also, the need for improved accountability in service delivery in these sectors cannot be overemphasised.

In the education sector, the number of primary schools has tremendously increased, but there is a huge mismatch with the number of schools needed at secondary level. This deters primary graduates in remote communities from smoothly transitioning to secondary, with a lot dropping out as a result. While this creates disincentive especially for rural parents to send children to school, it is a lead cause of the majority terminating at primary level. Long distances to school and cultural factors compound the problem. A consequence of these circumstances is the mushrooming of unauthorised schools, outnumbering official schools in some districts with attendant questions about the quality of education provided. Although marginal effects are very small, the probit model shows a significant poverty reducing effect from any one minute reduction in time taken to access primary school. The SEM model also affirms the expected positive effect of increased access to infrastructural services on the general welfare of rural communities.

In the health sector, insufficient facilities may cause quacks and traditional healers to hold sway over remote communities, in addition to the likely influence of the negative income substitution effects reported in the regression analysis. Traditional medicine may have a complementary function with formal care (Bangura 2011; Nandy 2004; Walraven 2011), but can be counterproductive if totally relied upon or unregulated in light of dosage management and other risks (Van der Geest 1997).<sup>45</sup>

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<sup>45</sup> Indeed, in Sierra Leone, traditional medicine is part of the National Health Service delivery system given its easy accessibility by the remote communities. “Traditional healers and Traditional Birth Attendants (TBAs) are reported to be providing a significant amount of health care, with TBAs attending to almost 90% of the deliveries at the community level” (GoSL 2009b, p.4). However, to ensure control and monitoring of this healthcare type to reduce

Testimonies collected by this research from primary healthcare units indicate that long distances to health facilities have reinforced ingrained negative cultural behaviour in remote communities that puts children at risks of death at the outset of health episodes. A community health worker in the north testified that “many parents refer cases to sorcerers than (or before) referring to formal care” (22<sup>nd</sup> October 2012). High illiteracy among parents as reported in the descriptive analysis could have been a primary underpinning of this behaviour. This is where empowering women can be most crucial as supported by regression estimates and emphasised in other empirical works in regard to general improvement of development indicators (Bangura 2013a; Bangura & Kim 2013; UNFPA 2012). Increasing mothers’ capacity is found to have significant effect on both health and education status. Policy experiments indicate that educating them to primary and junior secondary will increase aggregate rural welfare at least by 3 and 6 percent, respectively, with a likelihood of removing 49 out of every 1000 persons from income poverty.

Housing conditions such as status of dwelling structures, types of toilet, and sources of drinking water have been among the measures of community infrastructure analysed and found significant in predicting poverty. From descriptive statistics the vast majority of rural residents continue to dwell in substandard housing, while a good proportion still source drinking water from rivers, lakes and streams, which have been concurrently used by some as toilet. Mud floored and walled houses generate large amount of dust, exposing inhabitants to respiratory infections such as bronchitis with children at the highest risk [see Rutstein (1990); among others]. The risks of morbidity and mortality are high for communities with poor sanitation associated with poor toilet and water conditions—those affected are directly exposed to water

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risks and enhance its expected complementarity to the formal system, the government has planned to “develop a traditional medicine policy” (ibid, p.34).

borne diseases and related health hazards.

The foregoing discussed conditions, ranging from demographic context, to education, health and housing are key dimensions of nutrition. The inadequate status of these conditions for large segments of the rural population can explain the relatively high malnutrition and child mortality rates reported for Sierra Leone relative to other countries (WHO 2011). Malnutrition is multidimensional. We have analysed its measures in composite terms in the regression as both a predictant and predictor among the poverty dimensions studied. Its implications for macroeconomic stability in terms of national productivity has been highlighted in Chapters Five and Six and could be traced through the effects it could have on key human capital factors such as education and health (Aguayo, Scott & Ross 2003; World Bank 2011). In our estimates, nutrition more vividly impacts on health than other dimensions; in turn, it is predicted most by level of household education and mothers' capacity; economic status does not seem to play a central role as suggested in other studies (Alderman et al. 2001; Anand & Ravallion 1993; Mackinnon 1995). The effective treatment of these conditions will need substantial investment in public education and awareness campaigns with a special focus on empowering women. There are country cases where low mortality rates have been recorded at low incomes, Sri Lanka and Indian State of Kerala being examples, which implies that such countries have placed high premium on educational campaigns in fighting poverty (Anand & Ravallion 1993; Bangura 2012c; Howling et al. 2007; UNDP 2010).

#### **9.2.4 Migration and poverty**

This study has classed outmigration in rural Sierra Leone as essentially a coping strategy because most of those moving out for better economic opportunities elsewhere are not with requisite skills to actively participate in the labour market, and most end up in informal activities that may

not earn better returns than the farms they abandon. Both the OLS and SEM regressions did confirm migration as a significant copying mechanism that while it was found significant in positively contributing to rural welfare in a number of equations, its net contribution to the overall rural welfare is one of the least at 0.09 percent (see the SEM estimates in Table 8.12, Chapter Eight); the low contribution is perceived on account of the limited education and skills that rural persons often have to offer in the labour market. It is noted from the descriptive statistics that 66 percent of a sample population of 25,000 rural inhabitants are without formal education.

Despite its relatively low contribution to household welfare, the SEM model suggests a high propensity for rural Sierra Leoneans to migrate if their overall welfare were improved. The regression generally reveals that there would be more investment in education and migration if the total welfare of households were to improve. Indeed, the large share of remittances in total household income recorded in 2003 suggests that migration can be beneficial even in regions with high illiteracy rates. However, the importance of remittance at that time should be examined in the context of the immediate post-conflict environment that existed in 2003 when many families depended on assistance from relatives elsewhere for sustenance. Remittances have drastically declined in due course as noted from the 2011 survey.

The reduced rate of rural outmigration noted in 2011 and hence the reduction of remittances suggest one, some or all of the following: (i) many rural people were still displaced in 2003 and living in urban centres due to the civil war; majority of these may have returned to their villages and towns by 2011 and resumed normal livelihood activities, mostly farming; (ii) the fact that the government and private businesses have increased investment activities in the rural areas in mining, construction, agriculture and other economic activities since the end of the

war; and (iii) the global economic crisis (sparked-off in 2008) may have affected remittance flows and discouraged incremental out-migration.

The data suggest that outmigration in the rural areas consists mostly of males and youth. The share of females in the rural labour force has been largest and child engagement phenomenal. This can be strong basis for prioritising women in other countries for rural support (Todaro & Smith 2011), and Sierra Leone could draw from this.

### **9.2.5 Local governance and poverty**

The regression estimates support the argument that political inclusion is a critical factor for poverty reduction (Acemoglu & Robinson 2012; Mosley et al. 2012; Wagle 2010; among others). Generally, the need to resuscitate Sierra Leone's local councils after the war has been corroborated by the results for improved rural welfare. However, the relatively small net effect of the public service delivery factor and the negative sign it shows in some of the estimated equations reiterates the need to increase capacity of councils and constantly monitor their performance in service delivery. This implication also reflects the evidence that marginal effects of macroeconomic support will depend on geographic location of households vis-à-vis the effectiveness of local councils in the utilisation of transfers received from central government. The implication is crucial to efforts aimed at strengthening aid effectiveness in Sierra Leone, noting that the component of external assistance in central transfers has been very large. Both government and development partners should coordinate efforts towards increasing service delivery performance of councils, and the civil society has a fundamental role to play.

Achieving effectiveness in the operations of the local councils depends highly on prioritising support for ward committees (the lowest service delivery authority) whose interaction with the local communities is critical but found weak in the data. The key elements of

support required for ward committees include provision of logistics to increase their contact with the grassroots, coupled with ensuring minimum standard of education for all councillors, and discouraging patrimonial politics in their election.

### **9.3 Changes in rural income poverty profile and benefit incidence of public spending**

We have discussed results about determinants of rural poverty and highlighted policy areas to consider towards improving rural welfare. In this section, we will reflect on the descriptive statistics regarding income consumption poverty presented in Chapter Seven, and interpret changes in poverty headcount, poverty gap index, and extreme poverty. We will discuss the distribution of poverty across space and benefit of public spending to the income poor compared with non-income poor.

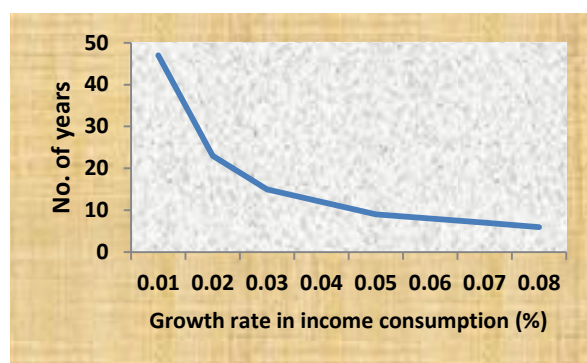
#### **9.3.1 Income poverty**

In real terms, poverty has substantially increased in rural Sierra Leone, tracking trends at Sub-Saharan African level. Despite the percentage decline from 79 to 68 percent, the number of rural poor persons increased by 63,150 from 2003 to 2011 (based on the FGT estimator). This is a statistical paradox but can be substantiated *inter alia* by the suggestion that the rate of population growth in rural areas has been outpacing the rate of growth of state policy efforts at fighting poverty, calling for comprehensive and integrated population policy as alluded to earlier.

Based on the two living standards surveys analysed, rural population grew annually by 2.6 percent during 2003-2011 while consumption expenditure of the poor grew by 6.4 percent. Further calibrations, based on this population growth rate and the total poverty line of 2011, indicate that poverty headcount should have proportionately reduced to 66.4 percent during 2003-2011 instead of 68.21 percent to keep real poverty numbers to what they were in 2003. In other words, poverty reduction programme of government should have been rated more effective



if policies had increased rural consumption beyond 6.4 percent. And it should have necessitated a macroeconomic growth rate way above what has been perceived impressive at average GDP growth rate of 5.8 percent during 2003-2011,<sup>46</sup> and which should have been inclusive and shared with the rural populace. Calibrations based on the Morduch's time taken to exit poverty (Chapter Five, Section 5.1.3) suggests that it will take 47 years for rural poverty to be eradicated if rural consumption annually grew by 1.0 percent since 2011, and 23 years if grew by 2.0 percent; it will take 7.0 years if grew by 7.0 percent, and 6.0 years if grew by 8.0 percent since 2011 (Figure 9.2). These calibrations are expected to guide macroeconomic programming towards poverty reduction.



**Figure 9.2: Time taken to exit from poverty since 2011**  
*Source:* Author's construct based on SLIHS 2011.

By and large, population planning is of key priority if poverty numbers are to decline overtime. But while the population factor remains plausible to explain the increase in numbers of the poor, evidence also suggests that structural conditions of some previously income rich persons may have deteriorated. These individuals may only have been transitorily income rich at the first survey, but may not have been structurally secure in terms of possession of key assets including requisite human capital (Carter & Barrett 2008; among others); or may have been

<sup>46</sup> World Bank Development Indicators.

affected by shocks; and at the same time a good proportion of the previously income poor may have remained poor. This calls for effective social protection system to support the most impoverished.

Rising poverty numbers also point at the need to scale-up effectiveness in poverty targeting and accountability in service delivery chains. The district is the unit of identification and observation of poverty pockets in our analysis. By all standards, all thirteen rural districts analysed have remained poor on average, ranging from a poverty headcount index of 54.53 percent in Koinadugu District, to 93.46 percent in Tonkolili District, currently.

We have noted that the patterns of the three FGT poverty indices—headcount index, poverty gap, and extreme poverty—do not exhibit a linear logic. A location or socioeconomic group can be worse in one poverty dimension and better-off in another while the state would need to pay attention to both dimensions. Each dimension can have distinct realities on welfare. Some districts may have lesser numbers below the absolute poverty line but more numbers below the food poverty line, making them worse in terms of extreme poverty. Put differently, some individuals may fall below the line but are very close to it and are easy to bail out, while others may fall below and are far away from it. This may call for different policy options as we have tried to advise below. Every poor person is essentially, naturally vulnerable, but the most crucial measure of vulnerability among the three FGT indices analysed is extreme poverty. This state of deprivation should be treated most urgently, its characteristics including persons suffering from severe hunger that in the absence of immediate state response could starve to death or adopt problematic coping strategies including selling of productive asset, pulling children out of school, using child labour, or damaging the environment, thus reinforcing (or causing spiral) poverty.

### 9.3.2 A guideline for effective poverty targeting

To ensure balanced, effective and sustained policy response, therefore, this research has developed the following guideline elements A to G. This enables us identify districts that need attention most under each of the guideline elements against the backdrop that each element can have a unique policy implication for the welfare of the group falling under it:

- A. the top five districts currently in absolute poverty (poverty breadth and incidence);
- B. the top five districts in poverty gap (depth measure);
- C. the top five districts in extreme poverty (severe hunger);
- D. the top five districts in numbers of poor persons (real terms measure);
- E. districts with increased proportion of poverty during 2003-2011:
  - in headcount/absolute index,
  - in poverty gap index, and
  - in extreme poverty index;
- F. districts with increased numbers of poor persons during 2003-2011; and
- G. the top five districts in inequality by gini-coefficient measure.

Details of this guide and application are presented in the matrix of Table 9.1. The delineations in the table have helped us determine differentials in the current burden of deprivation between districts based on the frequency of reporting each district under the nine policy elements developed—element E is divided into three. Bo and Tonkolili Districts appear to be currently carrying the highest burden of poverty, each scored with a frequency of seven out of nine—they fall under seven out of the nine policy dimensions (elements) that identify districts with the highest poverty caseload. They are followed by Moyamba District scored with a frequency of six out of nine, closely followed by Bombali, Kambia and Pujehun, scored with a frequency of five out of nine. These six districts are all from the North and South; four of them (Kambia,

Tonkolili, Moyamba & Pujehun) are currently the worst hit in food insecurity (World Food Programme 2011; cited in GoSL 2012c, p.10). The rest of the seven districts are scored with frequencies two or less; Bonthe District does not show in any of these extreme poverty cases, implying it has done relatively well than the rest of the districts during the period under review. There is a limitation in this analysis in that, all nine policy dimensions are assumed to have equal weights.

We have deduced the following key messages from Table 9.1 in terms of effectiveness of policies in balancing welfare outcomes across districts and regions:

- The 2003 household survey indicates that poverty (on account of the three FGT indices) was more concentrated in Kailahun, Kono, Kenema, Bombali, Koinadugu, Port Loko and Bonthe District, closely followed by Tonkolili. These districts covered the entire East and most of the North, with only one coming from the South.
- Indeed, the literature comments that policies of government and nongovernmental organisations at the time did focus attention on welfare differentials between groups and locations; as such attached larger priority weights to these districts in some instances (GoSL 2012a; GoSL 2005a).
- The pattern seen in the matrix, therefore, suggests that public policy has been effective in targeting the poor to a certain extent. In that, in 2003, the entire East was a poverty lighthouse that drew heavy policy focus; today, no district from this region is among those currently marked as the most poverty ridden according to this study. Some amount of “district poverty swapping” also took place within the largest region, the north, which was another lighthouse, with the exception of poverty in Bombali District—Bombali was among the worst hit in 2003 and remains so currently.

**Table 9.1: Determining poverty burden differentials among rural districts**

A	B	C	D	E	F			G	H	I
Districts	The top five districts in poverty head count index currently	The top five districts in poverty gap index currently	The top five districts in extreme poverty index currently	The top five districts in numbers of poor person currently	Districts with increased percentage of poverty during 2003-2011			Districts with increased numbers of poor persons during 2003-2011	The top five districts in inequality by gini-coefficient currently	Frequency
					Head Count	Gap index	Extreme poverty			
<b>Eastern Region</b>										
Kailahun								X		1
Kenema				X					X	2
Kono									X	1
<b>Northern Region</b>										
Bombali	X	X	X	X					X	5
Kambia	X	X			X	X		X		5
Koinadugu								X	X	2
Port Loko			X	X						2
Tonkolili	X	X		X	X	X		X	X	7
<b>Southern Region</b>										
Bo	X	X	X	X	X	X		X		7
Bonthe										-
Moyamba	X	X	X		X	X	X			6
Pujehun			X		X	X	X	X		5
<b>Western Region</b>										
Western Rural					X	X		X		2

*Source:* Author's construct based on Foster-Greer-Thorbecke income poverty estimates in Chapter Seven.

- Nonetheless, the fact that some districts that were better-off before have experienced a decline in welfare overtime, most notably from the southern region, indicates a substantial limitation of effectiveness of public policy. A policy balance has not been achieved in the outcomes in that the welfare of some districts has been increased with a decrease in the welfare of others in contravention of the principles of pareto efficiency discussed earlier. In other words, public policy of the country has been somewhat distributively efficient and allocatively progressive but not pareto effective; the latter is the most desired welfare outcome. Thus, more needs to be done to maintain equity.

### **9.3.3 Projected policy measures relating to various resource targeting options**

Against the backdrop of the policy messages discussed above, various policy measures have been projected in Table 9.2, drawing from the policy outcome obtained in the matrix of Table 9.1. The elements in columns F and G in Table 9.1 are grouped into one for policy prescription in Table 9.2. These measures take the context of social protection policy options for the poor entirely, with special attention to districts marked as most deprived under the policy elements developed. The projected measures are summarised as follows:

- Provide support for income generating activities with a focus on small business development and agriculture input needs.
- Vulnerability support initiatives & support for special needs persons—HIV/AIDS persons, the orphans, etc; special assistance to women, children and the old; there is need to carefully planned social cash transfer schemes.
- Setting aside a proportion of central transfers to be allocated on the basis of poverty gap index or extreme poverty.
- Consider feeding programmes for school going children; and provide nutritional support to households.

- Need for strong and integrated population control interventions; ensuring balanced distribution of public resources—public investment opportunities; general development assistance; central transfers; etc.
- Provide more education facilities and skills development programmes; increase community participation in development processes, including social networks and political decision arenas.
- Increase general accountability in service delivery chains, and corporate social responsibility.

**Table 9.2: Policy measures for the most impoverished districts**

<b>Policy Dimension (PD)</b>	<b>Simulated Policy Options</b>
PD1. The top five districts in poverty head count index currently	1.1 Prioritise support for income generating activities with a focus on small business development and agriculture input support 1.2 Prioritise vulnerability support initiatives and support for special needs persons--HIV/AIDS persons, orphans, etc 1.3 Prioritise special assistance to women, children and the old
PD2. The top five districts in poverty gap index currently	2.1 Prioritise social cash transfer schemes 2.2 Setting a proportion of central transfers to be allocated on the basis of poverty gap index 2.3 Consider options 1.1-1.3 with higher priority weight for overlapping districts from PD1
PD3. The top five districts in extreme poverty index currently	3.1 Prioritise social cash transfer schemes with highest priority weight for overlapping districts from PD2 3.2 Consider school feeding programmes for school going children 3.3 More nutritional support to households 3.4 Consider options 1.1-1.3 with highest priority weight for overlapping districts from PD1 & PD2
PD4. The top five districts in numbers of poor persons currently	4.1 Prioritise population control interventions 4.2 Consider options 1.1-1.3 with higher priority weight for overlapping districts from PD1
PD5. Districts with increased poverty (numbers and percentage) during 2003-2011	5.1 Prioritise population control interventions 5.2 Ensure balanced distribution of public resources-- public investment opportunities; general development assistance; central transfers; etc. 5.3 Consider options 1.1-1.3 with higher priority weight for overlapping districts from PD1
PD6. The top five districts in inequality by gini-coefficient currently	6.1 Prioritise education and skills development 6.2 Prioritise community participation in development process including social networks and political decision processes 6.3 Prioritise corporate responsibility and accountability in the service delivery chain 6.4 Consider options 1.1-1.3 with higher priority weight for overlapping districts from PD1

*Source:* Policy projection based on policy matrix in Table 9.2.

### 9.3.4 Benefit incidence of public spending

We have analysed differentials of public spending incidence between the income poor and the rich, guided by the equity principle that the poor should have the largest share of benefit from the distribution of certain public services. We focus on two key poverty sectors: education and health. We emphasise education in this analysis as lead determinant of rural poverty, and human development in general. Comparison of differentials is also done between rural and urban areas. Since the rural sector holds the largest share of the poor, it is expected on equity grounds that the sector would receive the largest share of benefit from certain public spending such as related to education and health.

The general indication derived from the nonparametric analysis in Chapter Seven is that government policies have been pro-poor in education spending within the rural areas, but not pro-rural. The urban areas appear to have benefitted from education resources more than policies would wish. The parametric estimates from the probit regression model substantially corroborate this finding. The model notes on average that education pays off more highly in the urban areas than in the rural areas in view of the wide differentials in the predicted poverty elasticity response to every additional year spent in school in the urban areas compared to rural elasticity. The elasticity of poverty reduction is estimated at 0.56 percent for the rural areas (inelastic response) and 2.06 percent for the urban areas (elastic response) for every percentage increase in the number of years the head may have spent in school. Any additional year in school in the urban areas would take the households there higher in knowledge acquisition with more chances of securing high paying labour market jobs than an additional year would in the rural areas. The elasticity differentials can be attributed to the prevailing differentials in socioeconomic and geographic conditions related *inter alia* to the fact that the average level of schooling attained in rural areas is far below the urban average. The rural sector has far worse infrastructural conditions to explain why reduction of poverty headcount there has been inelastic, suggesting the



need for much more comprehensive programmes to alleviate rural poverty. It implies, for education spending, therefore, that the share of benefit to the rural poor would have become larger than indicated if policies were not only pro-rural-poor but also pro-rural in general. The data suggest that decisions on education spending be predicated not only on enrolment (ex post decision) but also on the conditions that restrict communities to respond to educational services. There is a need for rural structural transformation that will increase the rate of response of the state to remote communities and in turn household responses to services provided. The road development programme pursued by government is a key package in this direction, coupled with the ongoing state attitudinal and behavioural change project. This direction also holds for health services we turn to next.

Health spending was estimated to be pro-rural but not pro-poor, and there has been marked benefit differential across regions. The regional/district differences owe (as mentioned earlier) to the fact that policy decisions were sensitive to the initial differential conditions that prevailed across regions and districts; more attention was apparently paid to locations that were more impoverished earlier. The following summarises the key policy messages that have emerged from the benefit incidence analysis:

- The analysis suggests a need for constant adjustment of resource allocation formulas to changing contexts and should reflect demographic needs as well as service utilisation rates in fiscal decision processing. The simulated fiscal estimates on education spending presented in Table 7.41 in Chapter Seven demonstrate the need for a combination of various welfare parameters in determining public allocations.
- A good proportion of central transfers to local councils has been allocated on the basis of service utilisation only. To improve equity, the South African case could be considered where the allocator of education resources has used both school enrolment rates and

school age population; for health, resource distribution has been done on the basis of “the differential use of the public health system by people with and without aid and health insurance” (Hunter et al. 2003, p.17). Fiji captures a differential disadvantage index in the allocation of education resources and could also be a useful lesson (Fiji Government 2009).

- It is noted that the size of allocation to a frontline user does not necessarily guarantee high benefit incidence for the poor. Inducing the poor themselves to go for subsidised services (the behavioural and demand aspect of service availability) can be more critical to increasing effectiveness of public policies (Bradshaw 2006; Demery 2000). An argument for allocating more public resources to primary than secondary schools is that the poor tend to use the former more than the latter. But a comparison between Columbia on the one hand, and Ivory Coast and Indonesia on the other indicates that while Columbia has had smaller budget to primary relative to secondary schools, the poor benefited more at primary level in Columbia than they did in Ivory Coast and Indonesia where budget shares to primary education have been larger than secondary (Demery 2000). Behavioural change is therefore critical on the part of the poor if service utilisation differential should be narrowed between the rich and them; the rich generally have far higher propensity of service utilisation than the former (Bangura 2011; Bradshaw 2006; among others).
- But underutilisation of services by the poor, especially in the rural areas, can stem from the following factors:
  - The level of remoteness of communities in terms of long distances to services and bad road network affect both demand and supply side of service availability. The opportunity cost of time use is also critical here, a plausible reason why a remote

villager may inadvertently prefer to go to traditional healer nearby than spending three or more hours going to a formal care while having to go to his farm the same day.

- Weak enforcement of public policy such as the compulsory basic education policy of Sierra Leone is another critical element [see argument in Bradshaw (2006) on *blaming-the-victim theory* of poverty and what can be done to influence the behaviour of the poor to increase effectiveness of public policy]. Any noncompliance by the poor with expected behaviour can be punished, as poverty, whether self-inflicted or not, has a negative externality; it is a vector of market failure and should be rectified by the state as an institutional responsibility (see the theoretical contentions in Chapter Two).
- A third factor is behaviour on the part of service providers/public administrative officials regarding their reception to clients/taxpayers, and malfeasance at workplace.
- To the extent that the officially unrecognised schools dominate in some of the districts in Sierra Leone (see Chapter Four) can be a useful measure of demand for schooling in remote communities irrespective of questions bordering quality of teaching services. This could serve as a contingency valuation to signal to the need to increase service supply even at considerable tariff to those localities.
- LDCs generally encounter inadequate data systems for planning, Sierra Leone not an exception. This constraint can negatively affect policy benefits accruing to the poor since some critical parameters are excluded in resource allocators due to data constraint. This makes poverty reduction a key function of efficiency of data systems.

- Being efficient in targeting resources is necessary but not sufficient; the desired outcome depends on effectiveness of state monitoring mechanism to constantly follow up on the delivery of services. Upgrading accountability mechanisms can increase benefits reaching the poor.
- The inequality measures analysed in Chapter Seven present another perspective of benefit incidence for the poor. Those measures, more so the Engel Coefficient, suggest that, while the Sierra Leone economy has (normally) recorded impressive growth since 2003, the poor have become poorer and the rich richer. The bottom one-fifth in consumption spending now proportionately spends more on food than before. This implies the share of spending by the poor on the most vital sectors for sustainable livelihoods and poverty reduction like education has declined; the average household income has not grown in pace with the general cost of living; and the macroeconomic growth recorded does not seem to have been distributed effectively. Thus, special assistance should be directed to the rural sector to increase the chances of communities to acquire key enablers of sustainable income and shared growth such as education, health and nutrition.
- The results advise a note of caution. In some rural communities, income differentials between groups do not significantly imply differentials in other poverty indicators, leaving on average every one there potentially poor. While the degree and depth of poverty differ across the thirteen rural districts, all are impoverished on average. Conditions such as the types of toilet facility used, and water sources do not seem to differentiate much between income/expenditure differentials in some communities; the income rich more or less equally affected as the income poor in some of the cases. (See Chapter Seven, Table 7.37; see also the descriptive statistics of the hypothesised factor variables for the regression analysis in Annex 3, where the dispersion of factor scores is

only much visible in three factors—economic wellbeing; affordability of healthcare; & migration capability—out of the sixteen welfare factors initially hypothesised for analysis). This could be attributable to the fact that the degree of remoteness of some of the communities due to bad geographic terrains among others can hardly permit production of private goods and services to aid differentials in the acquisition of certain amenities between the income rich and the poor. The remoteness even restricts supply of services by the state. Under these circumstances, those perceived rich on income basis in the remote areas can be poor from a non-money metric perspective, and potentially poor from a money metric standpoint in light of vulnerability implications vis-à-vis exposure to health hazards in the appalling environmental and sanitary conditions that both the “income rich” and the poor live.

- In these circumstances, improving education for all could engender much wider differentials between the income rich and the poor both of whom, given the descriptive statistics, could be currently equally illiterate in some of the communities. Improving education and awareness of both groups could possibly place the high income group further away up in welfare from the position of the poor, but the entire community (income poor and rich) could also be placed on a higher welfare curve.

### **9.3.5 Projected measures to improve public policy benefit to the poor**

Although benefit incidence analysis “...can be said to be helpful in identifying problems, but not particularly useful in providing solutions” (Demery 2000, p. 52), the following policy measures have been projected to improve the share of policy benefit to the poor based on our analysis of education and health spending in Sierra Leone:

- The following decision parameters can be considered in the resource allocation formulas in addition to utilisation rates:

- Education-: school age population; lagged per capita subsidy; and gap/extreme poverty index.
- Health-: women and children population; lagged per capita subsidy; and gap/extreme poverty index.
- This research is aware that, capturing these variables certainly presupposes an improvement in the data system of the country.
- Reaching the poor and increasing their utilisation of services also demands an improvement in road condition and general infrastructural situation of the country; and there is a need to scale up efforts at implementing policies and enforcing regulations to secure the needed behavioural change both on the demand and supply side of services.
- Providing remote community allowance and other incentives to attract teachers and reduce attrition are key prerequisites for enhancing the outreach of services in the poor communities.
- Increasing health allocations to commune-based care and away from hospital services as Demery (2000) suggests for poor countries could be another lesson for Sierra Leone in terms of improving the quality of care obtainable at peripheral health units. This also requires remote community allowance and other incentives to community health workers, as well as improved infrastructure.

### **9.3.6 Financial resource needs**

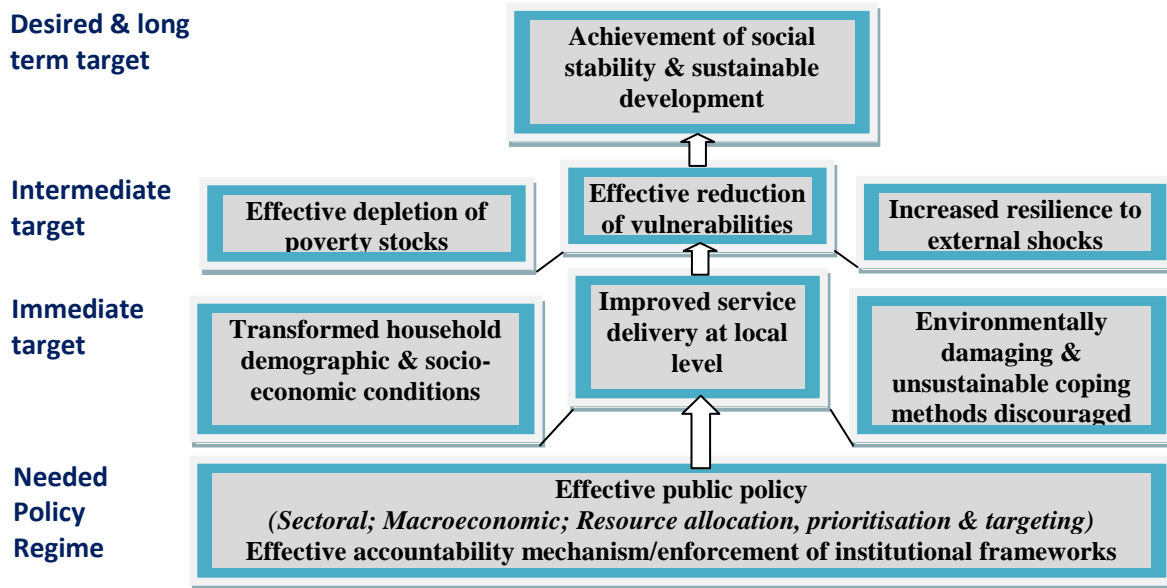
Our empirical analysis does not only highlight policy options but also provides capability in advising minimum amount of financial resources needed to eradicate poverty. The two-stage probit least squares regression model goes further to estimate the minimum amount that could be needed to invest in specific policy areas based on predicted probabilities of poverty reduction.

The efficacy of the regression model in this exercise is tested against the fact that its predicted probability of a person becoming poor in rural areas (0.678) closely mimics the nonparametric estimates based on the FGT estimator of 0.682; the two estimators therefore provide close estimates of the minimum amount required to fill the full poverty gap. The gap resources needed is US\$ 222 million based on parametric prediction, and US\$224 million based on nonparametric prediction. Education is predicted as the most crucial policy choice variable for reducing poverty, and annually requires an investment of US\$31 million based on the parametric estimator towards reducing rural poverty. Investments in other sectors are predicted as follows: rural population planning (US\$ 10 million); land reform (US\$ 16 million); and local council capacity building including macroeconomic support (US\$ 17 million). These are only minimum estimates to guide policy.

#### **9.4 Summary of chapter**

This chapter has provided a comprehensive interpretation of all empirical results. In summary, effective reduction of poverty requires getting public policies right; ensuring that these policies are properly targeted and monitored; and strengthening and enforcing institutions (including rules and regulations). More essentially, ensuring drastic alleviation of rural poverty demands significant unlocking of opportunities for majority to secure the first rungs of development that would provide them with alternative paths to prosperity. This can be fulfilled through sustained transformation of household structures in light of the current demographic and socioeconomic conditions underpinning rural poverty. This is a precondition for the maximisation of benefit for the poor resulting from any incremental services delivered. We have schematised a policy structure in Figure 9.3, relating instruments identified to stem poverty, to ultimate desired objectives. Securing adequate financial resources combined with robust targeting mechanism and monitoring framework within appropriate institutions would engender the required

transformative processes in the rural areas. This would be accompanied by improved service delivery culture and environmentally friendly survival strategies, leading to reduced vulnerabilities, increased household resilience in times of shocks, and ensuring sustainable poverty reduction, social stability and development.



**Figure 9.3: Policy structure for rural poverty reduction**  
*Source:* Author's construct based on overall research evidence.

This brings us to closure of the penultimate chapters of the entire research. It is believed that the five specific objectives of the research have been adequately addressed. With this, we move next to concluding the study in Chapter Ten.



## Chapter Ten

### Conclusion and Policy Direction

#### 10.1 Key findings

This research has sought to contribute to the ongoing discourse on resolving the ironies underlying the development outlook of Sierra Leone. The country is swamped with natural resources and boasts a relatively favourable genesis at independence fifty-three years ago. Yet it has perennially remained one of the least developed nations on earth. We have attempted to complement the search for sustainable solutions to combating the country's persistent poverty focusing on the development of the rural sector which holds more than 75 percent of the poor. The research has explored the structural conditions of the average rural household and the extent to which these conditions have been impacted upon by public policies in light of improving the welfare of rural inhabitants. We have determined the key predictors of rural poverty and highlighted alternative policy trajectories, suggesting which among the highlighted policy scenarios to prioritise as sustainable solutions to persistent rural poverty. In the next paragraphs, we shall summarise key findings under the five research questions we have pursued.

- 1. What are the fundamental conditions and characteristics underpinning rural poverty in Sierra Leone and to what extent have these changed overtime?*

We have argued that policies must effect requisite change in rigid, age-old household structures to unleash the potentials necessary to initiate desired changes in income poverty and the drive to prosperity. These structures constitute the contexts—conditions and circumstances—in which the

households have lived overtime. While we note that the state has made laudably strides at improving rural livelihoods through policy and provision of socioeconomic services, the impact of these on poverty has been dwarfed by the evidence that a range of rural structural conditions have not optimally changed during the period under review to create the space necessary to increase the quality of life of the majority. Household size and composition have remained rigid with continued dependency on the resources of a single person—the head—leading to reduction in monetary savings to invest in more productive ventures including child education; it reduces the capability to hire labour and deploy better farming methods to increase farm yields. Early marriage has remained commonplace, hijacking the right of girls to pursue education and other livelihood enhancing opportunities for prosperity and posterity. These circumstances breed generations of indigence with increased proclivity for rising populations above household and state social protection capacity. We find these conditions compounded by limited access to credit facilities to expand economic space; deplorable housing and environmental conditions; and difficult geographic terrains, deterring communities from accessing public services and state's efforts to reach them. These rigid structures, coupled with lacklustre public service delivery performance in districts (see government's latest press release, GoSL 2013b), may have provided reason for the increase in the numbers of the income poor in the rural sector.

*2. Have poverty programmes been effective in improving the welfare of rural households?*

To the extent that the proportion of the poor fell during the period under review suggests substantial impact of programmes on poverty; in that the income rich have increased in the rural sector. Spatially, positive programme impact is discerned from the evidence that eight out of the thirteen rural districts had their poverty numbers reduced during the period under review. However, the evidence that five districts had their poor residents increase in numbers during the

same period conversely suggests that there have been imbalances in policy and programme implementation across space. And since the net effect has been an increase in the number of the poor in the entire rural sector (despite proportionate improvement) implies the increase in poverty numbers in these five districts outweighs the decrease in the eight others. Moreover, in relation to Research Question 1, the evidence of having increased numbers of the poor, overall, also points out to an insufficient programme impact at transforming rural structures and increasing capabilities to create assets including human capital to build resilience against welfare shocks. Once rigid structures persisted and the masses were stuck in low-level equilibrium traps or below the *Micawber* threshold the chances of multiplying the poor from any procreation within these communities would be high. Managing fertility rates and populations therefore remains a central need to ensuring that state responsibility is matched with capacity to supply services.

Among the challenges depicted for public service delivery is an inevitability of trade-offs between short- and long-run effects: policies with currently negative effects could have long run positive effect. Another trade-off is about the average rural household and its decision making: the household is confronted with the task of addressing numerous welfare problems concurrently while surviving on less than threshold income; this would compel it sometimes to reduce health/nutrition spending in favour of child education, and vice versa as the case may be.

### *3. Which are the most significant factors explaining rural poverty?*

We have analysed determinants of six poverty/welfare dimensions: economic wellbeing; education; health; nutrition; employment; and migration. These dimensions are found significant in determining and predicting themselves in addition to other determinants, the exogenous regressors, which are: demographic management; community infrastructure; mothers' capacity;

geographic location; public service delivery; agricultural transformation; and macroeconomic support. The research finds education as lead predictor of rural poverty and welfare, and suggests that the state should devote a substantial share of national budget to investing in rural education. The size of welfare impact of the economic wellbeing factor (relating to income, asset and related measures) has been close to education. These two dimensions impact far more on health, nutrition, employment and migration than the latter impact on them. Therefore, strategically investing in one or two sectors such as education and income/asset generation can immensely improve the overall quality of life through knock-on effects on other sectors. Education, for instance, can engender the behavioural change needed for improved health status, nutrition standards, access to employment opportunities, and increased probability of high returns from migration. Generally, the positive contributions of all thirteen (endogenous and exogenous) poverty determinants to welfare indicate a need to pay attention to all in addressing rural poverty albeit the need for assigning different weights. The demographic factor and community infrastructure are lead predictors among the exogenous regressors, followed by mothers' capacity that emphasises the importance of educating the girl child. The public service delivery and macro policy factors appear as least contributing predictors attributable because of the noted weakness in resource targeting and accountability in service delivery chains (GoSL 2013b).

Households appear to have intrinsic motivation to invest in education and migration opportunities once welfare is improved. Although migration does not come out large in impact, it seems there is sustained inclination to invest in it as a reliable source of incremental income; this perhaps is generally nurtured because of those who may have earned substantial returns from migration. Anyhow, the fact remains that optimum success of migration presupposes minimum education and skills. This could argue why although migration appears frequently significant in

some of the regression models, its impact on reducing poverty is found generally low because most rural migrants are illiterate or low skilled, and hence have low productivity.

*4. How would different policy options and scenarios affect rural household welfare?*

The essence of regression models is their predictive and simulative ability beyond parametric estimation. This is the core of policy analysis to advise the best investment options. This research therefore conducted policy simulations and experiments to assess the effectiveness of select policy measures. First, the simulations suggest that promoting rural education is effective in reducing poverty overtime: an assumed increase in the level of education attained by the household head was projected to increase welfare overtime, as well as the level of education attained by women. Second, eradicating poverty (assuming an increase in income of the poorest to certain level) was also found effective in reducing poverty overtime, as well as assumed increase in household health status. Third, with a view to gauging the impact of discouraging early marriage and minimising fertility rates, the simulated effect of delaying marital and pregnancy age to maturity status also appears effective in reducing poverty and increasing welfare overtime. Fourth, combined evidence from the structural equation model and the two-stage probit least squares suggests that there is a limit to which trading rural lands in the market will increase welfare; this confirms the growing concern from NGOs about land grabs in the country in light of the increasing private sector investment in rural areas (Christians Aid 2013). Indeed, benefit of land deals to land owning communities might be ephemeral with the potential to intensify poverty overtime in the absence of astute state regulatory frameworks, given the influx of foreign investors who currently lease swaths of community lands. Fifth, we have also recorded counter-intuition for increased off-farm employment, credit, and central government allocation to local councils. These projections do not generally appear effective in improving

rural welfare overtime. Evidence suggests that the effect of increased off-farm employment is minimal without minimum education and skills; the effectiveness of credit depends on supply and size, but most importantly on how it is managed and the terms surrounding it; and the impact of fiscal transfers to local councils depends on probity in the use of these resources and the effective monitoring of their utilisation by central government and the communities. The time ineffectiveness of these instruments wouldn't be surprising, therefore, if the highlighted conditions were not met. Finally, the simulations indicate that combining policies in the right mix can yield better welfare effect than focusing on one instrument.

*5. Which among identified rural poverty instruments and policies to prioritise going forward?*

From the overall analysis, four instruments should top any current agenda as the most effective solution to ensuring sustainable reduction of rural poverty. These are:

1. Sustained promotion of rural education with focus on the development of the girl child.
2. Robust approach to increasing rural incomes and assets, including agricultural transformation, social protection, and so on.
3. Development and robust implementation of integrated population policy.
4. Effective resource targeting mechanism and state of the art monitoring of service delivery.

Spatial considerations are crucial to development planning and poverty reduction. The policy matrices developed in Chapter Nine (Tables 9.1. & 9.2) suggest that six districts currently carry the highest poverty burden in rural areas: Bo, Moyamba, Pujehun (from the south); Tonkolili, Bombali, Kambia (from the north). Four of these (Kambia, Tonkolili, Moyamba and Pujehun) are the worst hit in food insecurity according to the World Food Programme. It would be of

immense contribution to the fight against poverty that these districts are given special priority in the current national development plans while keeping optimal balance in the delivery of services across all thirteen rural districts—indeed, all thirteen are appallingly poverty ridden, albeit at different degrees; rural poverty headcount ratio ranges from 54.53 percent in Koinadugu District, to 93.46 percent in Tonkolili (Table 7.34).

## **10.2 General policy implications and recommendations**

The research has therefore provided the following suggestions to guide all development actors in Sierra Leone. Firstly, prioritise rural education, and formulate and implement an integrated rural population policy. A well run social protection system is needed, drawn on an effectively coordinated inter-sectoral effort that ensures coherent support for families. This has the potential to stymie poverty-recycling livelihood methods and engender better welfare paths that can be substituted for the desire to produce children mainly for farming and other poverty reinforcing stereotypes like early marriages. Commitment mechanisms should be in place to engineer and reinforce progressive behavioural and attitudinal change through formulation and enforcement of requisite legislations and public education programmes.

Secondly, increase the effectiveness of resource targeting, and public service delivery and monitoring. This can be enhanced through: increased technical capacity for identifying the most indigent populations for resource targeting and monitoring catalysed by a sound digital infrastructure to ensure utilisation of speedy, fast and real-time tools to track poverty outcomes better; increased local capacity for development policy analysis and planning; and supporting statistical offices to generate all requisite data for planning and policy analysis. Financial management systems of local councils should be strengthened. Strengthening monitoring of service delivery chains should encompass both state and non-state service providers at central

and local level, bolstered by scaled-up anti-corruption mechanism to thwart and curb patronage and malfeasance from the village to the centre; this requires strengthening of country information regimes and flow from the periphery to the centre.

Thirdly, improve the physical connectivity of remote communities to service supplying centres to increase state response to community needs and effectiveness of community demand for public services. This requires *inter alia* the effective implementation of the government's rural feeder roads policy and programme with particular emphasis on roads maintenance to ensure sustainability and value for money.

Fourthly, stimulate and diversify the rural economy to increase incomes and assets so as to increase inclusiveness and sharing of national income and capability of parents to finance the schooling of children for sustainable poverty reduction. Ensuring balanced policies (with effective sequencing) is crucial to responding to the complex decision making process of the poor household so that net effects of policies on welfare can be positive; this needs increased capacity in the area of economic policy analysis and planning.

Finally, ensure effective regulation of all investors over land deals especially with remote communities in light of the growing concern about land grabs in the country. Credit to the poor can still make a difference if effective credit services are provided so as to increase their participation in the market and chances to resurrect from the stranglehold of poverty traps.

### **10.3 Specific recommendations for state and non-state actors**

The foregoing policy direction pertains to all development actors in the country, including government, donor agencies, civil society organisation/NGOs, and local communities. It reflects more essentially the lead role of the state in public policy and service delivery. The next paragraphs highlight additional policy directions with regard to specific roles that the state, donor



agencies, and civil society should play to ensure successful implementation of the measures suggested in Section 10.2.

### *The state/government*

The chief precondition for any successful pro-poor strategy is ‘the righting of the national political economy.’ Before undertaking data analysis of the specific determinants of rural poverty and policy options in Chapters Seven, Eight and Nine, we had undertaken pertinent review of the socioeconomic, political and general development landscape of Sierra Leone and lessons from other countries in Chapters One, Two, Three and Four. This constitutes documentary review of factors affecting poverty in the country and elsewhere. It is instructive from those reviews that, the policy measures we suggested from the household survey data will be meaningless without a political ecology and leadership that are focused on public development results. It is a precondition to have sustained political will towards diversifying the economy, reducing reliance on natural resources and ensuring optimal investment of resource rents in human capital development. Substituting knowledge for resource-based strategies is inevitable for the transformation needed in the rural sector and the entire national economy. A commitment to promoting education and knowledge in general would produce development catalysts and engines including a capacitated electorate that can deliver the required politicians, bureaucrats, and the enforcement of social accountability from the top. Instruments of public accountability are generally not short in supply in LDCs including Sierra Leone; rather what is limited (that needs special response) is commitment to enforce the available instruments to improve service delivery for the poor.

The successful implementation of the measures suggested in Section 10.2 demands effective management of macroeconomic variables like inflation which directly impacts on the

welfare of the rural sector. This is particularly essential to meeting the nutritional requirement of the populace. Inflation reflects various imbalances in the economy particularly the perennial dependency on importation of basic commodities. Principally, the sustained importation of rice—Sierra Leone’s staple grain, whose cultivation predominates the rural economy—has been of crucial fiscal issue to the state. Its local production and supply should be scaled-up to domestic demand while encouraging the populace to increase the substitution of other crops like *cassava* for rice in the staple basket. Staple food diversification is a culture that can be encouraged through demonstrated consumption among policymakers, the bureaucrats and politicians to cut down state budget on rice; the resulting savings can be reallocated to boosting local production of the grain.

Certainly, there is increased potential to address inflation *as public enemy* in Sierra Leone through moderating pass-through effects of the importation of petroleum products in light of the discovery of offshore oil in the marine boundaries of the country. But while government is encouraged to pursue prospects in this direction, there is already mammoth concern about the oil finds adding to the resource-curse worries of Sierra Leone in terms of its implication for conflict and worsening of poverty (see Chapters Two & Three). The impending curse could be dissipated if mechanisms such as establishing sovereign wealth funds (SWFs) on the potential oil revenues are undertaken. Substantial proportion of such funds can be set aside to support education with a focus on rural areas, local production of rice, and diversification of the economy. The establishment of these funds should be underpinned by a state of the art monitoring to ensure probity in their implementation.

### *Donor Agencies*

We recall our argument that because Sierra Leone is highly aid-dependent and particularly influenced by policies of the Bretton Woods Institutions therefore an assessment of the country's policy effectiveness for poverty reduction equates with any assessment of the effectiveness of donor policies (see Chapters One & Four). Therefore, just as we have recommended a strong political will for recipient states, we will also recommend this for donor agencies and governments. As the development policies of Sierra Leone continue to be inextricably linked to external advice through the country's dependence on aid, it is extremely important that donor agencies and governments demonstrate sincerity, honesty, and transparency to give meaning to the policy measures suggested in Section 10.2., and to ensure effective reduction of poverty. Donors should appreciate recipient country contexts; support programmes to increase capacity of states to assume full service delivery responsibility as external assistance diminishes; increase their own capacity to analyse and understand domestic realities; accord government sufficient flexibility in domesticating external prescriptions; increase aid predictability and alignment to national priorities; and adhere to the principles of mutual accountability (see Chapter Four).

The argument remains that high poverty incidence in the south does not only impact on the economies of those countries, but also has telling implication for the north through cross-border flight of contagious diseases, organised crimes, and drugs/human trafficking (see Chapter One). The velocity of these cross-border effects increases with the intensification of globalisation and information technology. Therefore, the contribution of the international community to eradicating poverty in LDCs remains crucial to the delivery of sustainable welfare for the entire globe. Paying great attention to Sub-Saharan Africa as a major contributor to global poverty with emphasis on lagging countries such as Sierra Leone and rural development will be highly decisive. Donors should provide sincere advice towards productive public investments in

recipient economies. Rural education and economic transformation are decisive public investment areas that donors could press the Sierra Leone government for long-term reduction of poverty.

### *Civil Society*

Where its capacity is well developed, perhaps the best placed sector to enforce social accountability on behalf of the poor is the civil society including the media; they can be effective in the enforcement of state compliance with public policy. They are important not only to enforcing government accountability but also that of donors and the corporate sector. They constitute an instrument with which the international community together with state accountability institutions could maximise results for the poor through capacity building for advocacy and monitoring of service delivery. But they should in turn be regulated through state-enforced regulations, and depoliticised to yield the expected social wage for the poor.

#### **10.4. Theoretical implications and future research direction**

This research suggests that, for individuals caught in low-level equilibrium traps or below the micawber threshold (the extremely poor), *necessities* could appear as *inferior* or *giffen goods* in contradiction to microeconomic theory. Theoretically, inferior or giffen goods are those for which demand decreases as income increases, as opposed to luxurious goods or goods of necessity which are expected to increase in demand with increases in income or at least remain unchanged in purchases. But the income substitution effect revealed in the data suggests that an extremely poor person can be forced to substitute one necessity for another to the extent that an increase in income for such individuals will only provide them opportunity to withdraw more resources from one necessity (such as a standard diet) to satisfy another (say, sending a child to school)—a paradox of marginal income increases. This is an area worthy of further research.

The research also highlights the need to adjust the Foster-Greer-Thorbecke headcount poverty estimator for population dynamics. It can be deceptive about the true picture of poverty as the formula currently is, since a percentage reduction of poverty does not necessarily imply a real reduction due to population dynamics.

*Regarding approach to addressing our research objectives.* Poverty is a broad concept, and its treatment can be approached from a wide range of perspectives. A key challenge that researchers encounter is its measurement, which this study has also demonstrated. Depending on availability of data different methodologies can be applied to address the objectives examined in this study. The study highlighted various methodologies that can be utilised of which the ones we have employed are only a fraction (see Chapters Five & Six).

Where data are available and appropriate it will be a great policy add-on for future researchers to investigate determinants of poverty and pro-poor policy effectiveness using panel data and computable general equilibrium models. Input-output tables to run CGE models are currently nonexistent for Sierra Leone and this limits the latitude for extended macro-wide pro-poor policy analysis. Comprehensive economic surveys should be conducted to construct IO tables to fill this gap.

Conducting in-depth anthropological research into the state of rural poverty will be crucial for prescription of more meaningful policies for poverty alleviation in Sierra Leone. We have perhaps only scratched the surface in this study using descriptive statistics in Chapter Seven to analyse the conditions and characteristics underpinning rural poverty. It is limited in terms of providing answers as to why these conditions and characteristics—such as household demographic systems, marriage patterns, methods of production, and copying strategies—are what they are, with the potential to continue to persist in the long-run. Deeper understanding of these issues with better social scientific lens such as from anthropology and sociology could help provide answers to the inertia encountered in reducing poverty in rural Sierra Leone despite

increased development resources. This recommendation lends credence to the invitation of anthropologists worldwide to a conference in Nairobi, 1<sup>st</sup> August 2012 to seek their assistance in addressing factors limiting Sub-Saharan Africa to progress on the UN MDGs and poverty reduction strategies (see Chapter Two, Section 2.4).

Comprehensive impact study of effectiveness of local public service delivery since the resuscitation of decentralisation programme in 2004 will add value to the search for better solutions to addressing rural poverty. It will be a key response to repeated findings of local councils' underutilisation of standard accounting and financial management guidelines and procedures, and reported underperformance in service delivery in a pool of cases. This will complement previous service delivery assessment surveys, like the CLoGPAS.

Finally, this research has only broadly identified policy areas that can be most pivotal to fighting rural poverty: education; income and asset generation; demographic management; and empowering women; among others. Since there is likely to be differential of contexts within the rural sector itself, there is a need to customise the instruments of each of the identified policy areas across communities. This would require further research to ensure deeper understanding of contexts and effectiveness of policies. A recommended research tool for this is the randomised control trials (Banerjee & Duflo 2011, pp.9-16) with the potential to discern with greater depth the circumstances underpinning the poor and pinpoint specific prescriptions that are necessary to enable them break free of poverty traps in their respective locations.

## Annex 1: Description of hypothesised factors and factor measures for the empirical analysis

Hypothesised factors	Measures of factors	Type	Value		
X1	Economic Wellbeing (ECO_W)	X1.1	Annual income received by the household head	Continuous	Le 1000 to Le 93 mn
		X1.2	Annual total expenditure by the household head	Continuous	Le 120000 to Le 300 mn
		X1.3	Value of household asset	Continuous	Le 1000 to Le 192 mn
		X1.4	Perception of household income situation	Categorical	1 to 5 (from very unstable, to very unstable)
		X1.5	The head's perception of welfare level based on own income	Categorical	1 to 5 (from very poor, to rich)
		X1.6	Perception of welfare level by head relative to others	Categorical	1 to 5 (from the poorest, to the richest)
		X1.7	Changes in living standards over the previous years	Categorical	1 to 3 (from decreased welfare, to increased welfare)
X2	Education (EDU)	X2.1	Highest grade level attained by the household head	Continuous	1 to 12 (from less than primary, to degree level)
		X2.2	Annual Household expenditure on child schooling	Continuous	Le 0.00 to Le 26 mn
		X2.3	Whether household head ever went to school or not	Categorical	0 to 1 (from no, to yes)
X3	Health (HLTH)	X3.1	Annual household expenditure of health	Categorical	Le 0.00 to Le 218 mn
		X3.2	Ratio of children alive to the total born to a respondent woman	Continuous	0% to 100 %
		X3.3	Whether a woman's pregnancies ended in live birth or not	Categorical	0 to 1 (from no, to yes)
		X3.4	Whether pregnancies ended in live birth or not	Categorical	0 to 1 (from no, to yes)
X4	Nutrition (NUTR)	X4.1	Regional food price index factor	Continuous	25 to 246
		X4.2	District z-score of stunting of children	Continuous	-2.2 to -1.4
		X4.3	District z-score of wasting of children	Continuous	-1.3 to -0.6
		X4.4	District z-score of child underweight	Continuous	-0.2 to 0.7
X5	Employment (OFF_FaEM)	X5.1	Head's main income derived from off-farm employment or not	Categorical	1 to 2 (from farm, to off-farm)
		X5.2	Whether household head work for wage or not	Categorical	1 to 2 (from no wage, to wage)
		X5.3	Whether household head is engaged in business activity or not	Categorical	1 to 2 (from no business, to business)
X6	Migration (MIG)	X6.1	Whether head migrated before for more than 12 months or not	Categorical	1 to 2 (from no migration, to migration)
		X6.2	Whether head ever migrated out of the country, within or not	Categorical	1 to 3 (from no migration, to migration out of country)
		X6.3	Whether migrated before for various durations of time of not	Categorical	1 to 2 (from no migration, to migration)

Cont'd

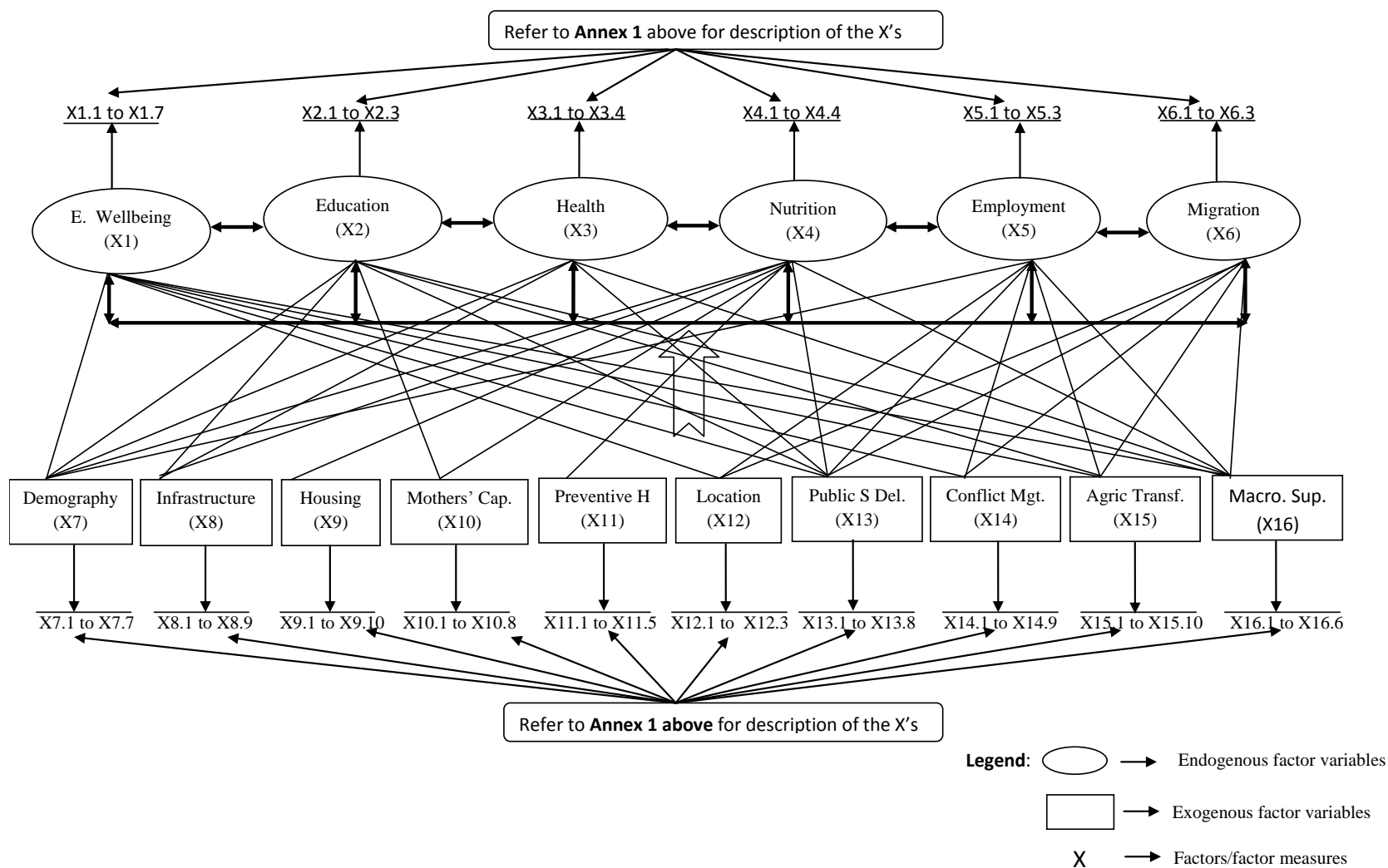
Hypothesised factors		Measures of factors	Type	Value	
X7	Demographic Management (DEM)	X7.1	Size of household	Continuous	1 to 26
		X7.2	Number of children in the household	Continuous	0 to 18
		X7.3	Age of the household head	Continuous	14 to 99
		X7.4	Sex of the household head	Categorical	0 to 1 (from no, to yes)
		X7.5	Marital status of the head	Categorical	1 to 7 (from no never married, to marriage monogamously)
		X7.6	Whether woman practice family planning method or not	Categorical	1 to 2 (from no planning, to planning)
X8	Community Infrastructure (COM_INF)	X8.1	Time taken by household to access primary school	Categorical	1 to 6 (from over 180, down to 0-14 minutes)
		X8.2	Time taken by household to access secondary school	Categorical	1 to 6 (from over 180, down to 0-14 minutes)
		X8.3	Time taken to access health clinic	Categorical	1 to 6 (from over 180, down to 0-14 minutes)
		X8.4	Time taken to access hospital	Categorical	1 to 6 (from over 180, down to 0-14 minutes)
		X8.5	Time taken to access all seasons roads	Categorical	1 to 6 (from over 180, down to 0-14 minutes)
		X8.6	Time taken to access public transport	Categorical	1 to 6 (from over 180, down to 0-14 minutes)
		X8.7	Time taken to access public transport	Categorical	1 to 6 (from over 180, down to 0-14 minutes)
		X8.8	Time taken to access drinking water source	Categorical	1 to 6 (from over 180, down to 0-14 minutes)
		X8.9	Time taken to access market	Categorical	1 to 6 (from over 180, down to 0-14 minutes)
X9	Housing & Environment (HOS_ENV)	X9.1	Number of rooms in the household	Continuous	0 to 25
		X9.2	Whether one household shares room(s) with another	Categorical	1 to 2 (from no, to sharing)
		X9.3	Construction material for outside wall	Categorical	1 to 5 (from very low quality, to cement)
		X9.4	Material used for floor	Categorical	1 to 5 (from very low quality, to tile)
		X9.5	Material used for roofing	Categorical	1 to 5 (from very low quality, to roofing tile)
		X9.6	Source of cooking energy	Categorical	1 to 4 (from firewood, to gas)
		X9.7	Source of energy for lighting	Categorical	1 to 6 (from very low quality, to electricity)
		X9.8	Refuge disposal methods	Categorical	1 to 5 (from unauthorised, to private commercial methods)
		X9.9	Source of drinking water	Categorical	1 to 5 (from river. stream, to piped water)
		X9.10	Toilet facility type	Categorical	1 to 5 (from bush/river, to flush)



<b>Hypothesised factors</b>	<b>Measures of factors</b>	<b>Type</b>	<b>Value</b>		
X10	Mothers' Capacity (MOTH_CAP)	X10.1	Marital age (age at first marriage)	Continuous	9 to 58
		X10.2	Age at first pregnancy	Continuous	10 to 37
		X10.3	Age at first birth	Continuous	13 to 38
		X10.4	Whether spouse present in the household or not	Categorical	1 to 2 (from not present, to present)
		X10.5	Whether father is alive	Categorical	1 to 2 (from not alive, to alive)
		X10.6	Whether mother is alive	Categorical	1 to 2 (from not alive, to alive)
		X10.7	Whether mother is in the household	Categorical	1 to 2 (from present, to not present)
		X10.8	Mothers' level of education	Categorical	1 to 12 (from less than primary, to degree level)
X11	Preventive Healthcare (PREV_HLTH)	X11.1	Whether water is treated before drinking	Categorical	1 to 6 (from don't know,, to boiling water)
		X11.2	Whether children under5 years were vaccinated before or not	Categorical	1 to 2 (from no, to vaccination)
		X11.3	Whether children had vaccination book or	Categorical	1 to 2 (from no, to having vaccination book)
		X11.4	Children received nutritional supplement & growth monitoring or not	Categorical	1 to2 (from no, to receiving supplement)
		X11.5	Whether children received full course of vaccination	Categorical	1 to 2 (from no, to receiving full course)
X12	Geographic Location (LOC)	X12.1	Whether household resided in the west, south, east or north	Categorical	1 to 4 (from residing north, to west)
		X12.2	Whether located in coastal district	Categorical	1 to 2 (from no, to yes)
		X12.3	Religion of the household head	Categorical	1 to 3 (from no religion, to Christianity)
X13	Public Service Delivery (PUB_SERV)	X13.1	Local councils governance performance score	Continuous	30 to 54
		X13.2	Frequency of visits to communities by local councillors	Continuous	29 to 91
		X13.3	Local public knowledge of councillors	Continuous	19 to 44
		X13.4	Public perception of responsiveness to community needs by councils	Continuous	51 to 85
		X13.5	Public satisfaction with local council budget spending	Continuous	1.6 to 2.1
		X13.6	Public level of trust in the operations of the local councils	Continuous	28 to 82
		X13.7	Household participation score in social & political associations	Continuous	0 to 12
		X13.8	Rating receipt of assistance due to participation in hard times	Continuous	0 to 12

Hypothesised factors	Measures of factors	Type	Value		
X14	Post-Conflict Management (PC_MGT)	X14.1	Severity of household income losses during the civil war	Categorical	1 to 3 (from severe, to not really severe)
		X14.3	Index of asset lost during the civil war	Continuous	0 months to 100 months
		X14.4	Whether household experienced crime in the last five years	Categorical	1 to 2 (from did not, to did experience)
		X14.5	Frequency of experiencing crime	Categorical	1 to 5 (from more than five times, to only once)
		X14.6	Perception of current level of crime compared to previous times	Categorical	1 to 5 (from decreased a lot, to increased a lot)
		X14.7	Perception of level of violence in the community	Categorical	1 to 7 (from no violence, to increased a lot)
		X14.8	Perception of safe at night	Categorical	1 to 4 (from no safety at all, to a lot of safety)
		X14.9	Level of confidence in the state for protection	Categorical	1 to 5 (from very confident, to no confidence at all)
		X15	Agricultural Transformation (AGR_TRA)	X15.1	Size of land own by the household head
X15.2	Type of land entitlement			Categorical	1 to 3 (from no ownership, to ownership with title)
X15.3	Whether household head has right to trade land in the market			Categorical	1 to 4 (from no right, to absolute right)
X15.4	Whether household head hires labour on the farm			Categorical	1 to 2 (from no labour hiring, to hiring labour)
X15.5	Whether fertilizer and other farm chemicals are used			Categorical	1 to 2 (from no use, to use)
X15.6	Whether uses improved seeds in farming			Categorical	1 to 2 (from no use, to use)
X15.7	Whether uses irrigation facilities			Categorical	1 to 2 (from no use, to use)
X15.8	Whether uses mechanical cultivation			Categorical	1 to 2 (from no use, to use)
X15.9	Whether uses storage facilities			Categorical	1 to 2 (from no use, to use)
X15.10	Labour cost incurred in processing farm produce			Continuous	Le 0.00 to Le 1.2 mn
X16	Macroeconomic Support (MACRO)	X16.1	Central transfers councils towards agricultural programmes	Continuous	Le 52 mn to Le 164 mn
		X16.2	Central transfers councils towards education programmes	Continuous	Le 148 mn to Le 10196 mn
		X16.3	Central transfers councils towards health programmes	Continuous	Le 145 mn to 1554 mn
		X16.4	Amount of credit received by household	Continuous	Le 0.0 to Le 35 mn
		X16.5	Regional food price index factor	Continuous	25 to 246
		X16.6	Regional non-food price index factor	Continuous	50 to 112

**Annex 2: The hypothesised structural equation model (SEM)**



### Annex 3: Descriptive statistics of hypothesised factors for the empirical analysis

Variable	Obs	Mean	Std. Dev	Min	Max
Economic wellbeing (ECO_W)	4123	0.000	1.000	-8.868	9.658
Education (EDU)	4123	0.000	1.000	-1.346	2.924
Health (HLTH)	4109	0.000	1.000	-1.908	32.701
Nutrition (NUTR)	4123	0.000	1.000	-1.302	2.468
Employment (Off_FaEM)	4123	0.000	1.000	-0.502	3.303
Migration (MIG)	4123	0.000	1.000	-0.185	8.773
Demographic Management (DEMO)	4123	0.000	1.000	-5.116	1.103
Geographic Location (LOC)	4123	0.000	1.000	-2.851	2.423
Community Infrastructure (COM_INF)	4123	0.000	1.000	-3.522	2.752
Housing and Environment (HOS_ENV)	4123	0.000	1.000	-3.680	4.090
Mothers' Capacity (MOTH_CAP)	4123	0.000	1.000	-2.755	6.988
Preventive Healthcare (PREV_HLTH)	1779	0.000	1.000	-2.290	0.920
Public Service Delivery (PUB_SERV)	4123	0.000	1.000	-2.472	2.391
Post-Conflict Management (PC_MGT)	3454	0.000	1.000	-3.615	2.071
Agriculture (AGR_TRA)	4123	0.000	1.000	-2.753	1.475
Macro Policy (MACRO)	4123	0.000	1.000	-3.327	4.141

**Annex 4: Descriptive statistics of the variables in the two-stage probit least squares**

Variable	Description	Rural				Urban			
		Mean	SD	Min	Max	Mean	SD	Min	Max
Years schooling completed by household head (HYrSch)	Continuous	10.02	5.00	3.00	22.00	15.85	5.01	3.00	22.00
Poverty headcount (Po)	Categorical	0.72	0.45	0	1	0.33	0.47	0	1
Years completed by spouse (SYrSch)	Continuous	3.59	2.23	3.00	20.00	7.24	5.94	3.00	20.00
Household size (HSIZE)	Continuous	6.33	2.64	1.00	24.00	5.76	3.30	1.00	30.00
Right of disposal of land (R.Displa)	Categorical	0.48	0.50	0	1	0.07	0.26	0	1
Geographic Location of the household (HLOC)	Factor Variable	0.00	1.00	-2.55	2.05	0.00	1.00	-2.55	2.05
Age of household head (AGE)	Continuous	46.01	14.81	0.00	98.00	43.48	13.94	16.00	95.00
Square of age of household head (SqAGE)	Continuous	2336.09	1495.46	0.00	9604.00	2084.65	1326.32	256.00	9025.00
Time taken to access primary school (PSchTime)	Continuous	39.37	45.61	14	180	26.93	19.32	14	180
Macroeconomic support (central transfers) (MACRO)	Factor Variable	0.00	1.00	-3.57	3.36	0.00	1.00	-4.22	2.79
Macroeconomic support times Location(MACRO*HLOC)	Factor Variable	0.00	1.00	-6.34	6.04	0.00	1.00	-8.49	3.00
Public service delivery effectiveness by local councils (PUB_SERV)	Factor Variable	0.00	1.00	-1.97	2.42	0.00	1.00	-1.96	2.29
Macro support times public service effectiveness (MACRO*PUB_SERV)	Factor Variable	0.00	1.00	-5.54	6.22	0.00	1.00	-5.27	3.76

*Notes:* All the variables have the same number of observations of 2955 and 2268 for rural and urban area, respectively.

**Annex 5.**

**Expert interview questionnaire administered September-October 2012**

*Gauging perceptions of the most important issues to address to ensure effective rural poverty alleviation in Sierra Leone*

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Dear Sir/Madam,

I am a Sierra Leonean student pursuing doctoral studies at the Ritsumeikan Asia Pacific University in Beppu, Japan. I am undertaking a research on the determinants of rural poverty in Sierra Leone with a view to highlighting key policy options to focus on in addressing rural welfare. As part of the research process, I am eliciting expert perception as to which welfare issues to prioritise in the next 10 to 15 years to effectively alleviate rural poverty. You have been identified as an expert with wealth of experience in the fight against rural poverty in Sierra Leone and your participation in this survey will be highly appreciated. Your response will be used for the purpose of this research only and will be treated with the utmost confidentiality.

Thank you so much for your understanding and cooperation.

Kind regards,

**Sheka Bangura**

JICA Scholar, Ritsumeikan Asia Pacific University  
Beppu, Oita, Japan; Mobile: 090 8407 2602

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**A. BACKGROUND INFORMATION OF RESPONDENTS**

Location of respondent

Town/City:

District:

Region:

Sex of respondent

Male

Female

Employment

Organization:

Job Title:

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*Continued Overleaf*

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**B. PERCEPTIONS ON RURAL POVERTY ISSUES**

**B1:** From the sources of information utilised so far, six key poverty issues have been identified as highly critical to reducing rural poverty in Sierra Leone:

1. Economic wellbeing—measured by having adequate income to afford basic needs; increased spending level; acquisition of assets; and so on.
2. Having sound educational background amongst rural inhabitants.
3. Adequate health facilities and services in the rural areas.
4. Well nourished children amongst households.
5. Access to nonfarm employment opportunities.
6. Reduced outmigration to urban areas or from agriculture to mining and other sectors, but hoping that those who emigrate will earn better returns to support families left behind.

From your perspective as a development expert in the country, are there other critical areas other than the six already mentioned that should be prioritised by government for rural poverty alleviation in the next 10 to 15 years? Please list in order of importance, if any.

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**B2:** Please comment on the six rural poverty issues identified in (B1) above.

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**<Thank You>>**

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