

# **Master thesis**

**An Assessment of the Samurdhi (Prosperity) Development Programme:  
a case study from the Ratnapura district, Sri Lanka**

**By  
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The master thesis is carried out as a part of the education at the University of Agder and is therefore approved as such. However, this does not imply that the University answers for the methods that are used or the conclusions that were drawn.

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## **Abstract**

This thesis assesses the impact of the Samurdhi (prosperity) development programme (SDP) on the livelihoods of its beneficiaries in the Ratnapura district of Sri Lanka. The assessment covers three main aspects; development, environment and management. First I identify a main research problem and three sub problems that are directly related to the success of the SDP. Second, based on the sustainable livelihood approach (SLA), I develop a theoretical framework where a poverty level of a household is directly and indirectly affected by the activities of the SDP through two channels; promotional and protective channels. From the theoretical framework I derive four hypotheses that underlie answers for the identified research problems of the study. Third, to test the validity of these four hypotheses, I employ both quantitative and qualitative approaches. The quantitative techniques include the use of various figures, tables, graphs, a transition matrix, univariate analysis of variance test, a Post Hoc test and estimation of multinomial logistic regressions (MNLRs).

A total of six MNLRs are run for two models to verify the validity of the first and third hypotheses. Two models were developed to capture the relationship between the poverty level of a household and the development of its capital assets. The dependent variable of the first model has four poverty categories: extreme poor, vulnerable, viable and sustainable households. The households are categorised into those four groups for 1995 and 2009 based on a range of income differences around two official poverty lines for each respective year. The dependent variable of the second model also has four poverty household categories: unsuccessful, struggling, successful and most successful which are categorised based on the direction of the movement between the two poverty categories identified in the first model during this time period. The independent variables of each model are the five categorical variables for the development of capital assets, one categorical variable for the gender and another three continuous variables: education, age and number of dependents in the family. Households are randomly selected covering 17 Divisional Secretariat divisions in Ratnapura district to obtain data for the quantitative study. In the qualitative study, semi-structured interviews are conducted for randomly selected 17 beneficiaries of the SDP with a view to find evidence supporting the second and fourth hypotheses of the study.

The results of MNLRs of two models confirmed that development of natural, physical, human and financial capital assets are significant determinants of 'vulnerable poverty' and of 'struggling poverty position' of a household. More than two thirds of households of the SDP are at a higher risk of being in 'vulnerable poverty' or 'struggling poverty position'. The poverty level of a household has declined with the increase of number of capital assets developed. The results of the qualitative study confirmed that the SDP has not very much concerned about the link between ecosystem degradation and poverty. The 'leakage' and 'undercoverage' errors of the SDP are at a considerable level.



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## **Abbreviations and acronyms**

ALH - Average land holding  
DS-Divisional Secretariat  
GDP -Gross Domestic Product  
GoSL- Government of Sri Lanka  
HCI- Head Count Index  
IDT-Inpres Desa Targeting (Neglected Villages Program)  
ISD-Integrated Sustainable Development  
LTM- Lower triangular matrix  
MDGs-Millennium Development Goals  
MEA-Millennium Ecosystem Assessment  
MNLR -Multinomial logistic regression  
MNLRS -Multinomial logistic regressions  
MNLRM -Multinomial logistic regression model  
MSOR- Main Secretary Office in the Ratnapura  
OLS- Ordinary Least Squares  
PBBM -Probability to Become a Beneficiary Member  
PDLG - Poor Decision of Local Governance  
PEAP- Poverty Eradication Action Plan  
PMA- Plan for the Modernization of Agriculture  
PRC - People's Republic of China  
PRSP-Poverty Reduction Strategy Paper  
RDP- Reconstruction and Development Programme  
SDP - Samurdhi Development Programme  
SEDC-Socio-Economic and Demographic Characteristics  
SL - Sustainable Livelihood  
SLA- Sustainable Livelihood Approach  
SLAs- Sustainable Livelihood Approaches  
SSNs- Social Safety Nets  
UANOVA-Univariate Analysis of Variance Test  
UTM- Upper triangular matrix  
VP - Vulnerability of the poor

## **Chapter 1: Introduction**

This Chapter consists of seven sections. The first section discusses the background information related to poverty in general and provides a brief introduction to the Samurdhi Development Programme (SDP). The second section discusses the research area of the study in which the attention is given to examine issues related to poverty levels in Sri Lanka and the Ratnapura district as well as the SDP. The other five sections are devoted to discussing the research question and hypotheses of the study, research objectives, importance of the study, method in brief and about the thesis outline.

### **1.1 Background**

The dimensions of poverty are wide and complex, and the face of poverty and its impacts vary between regions, countries, communities and individuals (Cahn 2002). Though it seems very difficult to provide an exact definition, I would like to follow the definition made in Hengsdijk et al (2005: p 9) that “poverty is the extent to which households or individuals have sufficient resources or abilities to meet their needs”. One of the main reasons for the use of this definition is that there is a close relationship between stock of assets (i.e. human, physical, natural, social and financial) and individuals’ ability to meet his or her needs. The other reason for the use of this definition is that it provides a framework that allows for its measurement including the complex web of interconnections between socio-economic, cultural, political and environmental factors.

Various programmes and strategies to alleviate poverty have been implemented over time by developed and developing countries around the world. In this regard, the social safety net (SSN) is one of the most attractive and popular programmes. The SSN programmes are designed to help households emerge out of chronic poverty and survive in the face of adverse shocks in transitory poverty (Coady 2004). Sri Lanka has a long history in the implementation of social assistance policies such as free education and health services (Jayasuriya 2001). As a result, though its per-capita income is low, its human development conditions are very high (Narayan and Yoshida 2005). However concurrently, one of the big challenges the country now faces is how to reduce overall poverty (Narayan and Yoshida 2005). Narayan and Yoshida (2005) indicate that last decade of poverty reduction strategies in the country have only achieved a marginal reduction of poverty by about 3 percent. This implies that the population living below the poverty line has declined only by 3 percent. In this sense, it seems difficult to reach the first goal of the Millennium Development Goals (MDG) to reduce half the proportion of poor living in less than a one dollar per day by 2015.

Within the context of this background, this study is aimed at assessing the significance of currently operating the Samurdhi Development Programme (SDP) implemented in 1995 by the People’s Alliance Government to reduce poverty in Sri Lanka (Salih 2000). The main target groups of the programme were women, youth, disable persons and economically disadvantage households. Three main components were designed in the programme to alleviate poverty: the welfare component, group-savings, credit component and integrated rural development. Various programmes and activities have also been designed to implement under each component.

Households were selected for the programme by the divisional secretariat officer of the relevant divisional secretariat division based on the socio-economic and health information of households collected through a structured questionnaire by Samurdhi officer at the village level.

## 1.2 Research area

The proposed study site for the research is the Ratnapura district situated in the Sabaragamuwa Province of Sri Lanka. The area is very popular for mining as its name Ratnapura means 'gems city'. A map of the location of the district is given in appendix 1. The district consists of 17 divisional secretariat (DS) divisions.

### 1.2.1 Poverty in Sri Lanka and in the Ratnapura district

#### *Increased disparity between rural and urban sectors:*

The government of Sri Lanka (GoSL) indicates that poverty in Sri Lanka is predominately a rural phenomenon as around 90 percent of poor people are living in rural areas where farmers possess small plots of land with few off-farm sources of family income (GoSL 2000). In rural areas, the growth of agriculture has stagnated and as a result poverty has declined slowly (World Bank 2002). According to the World Bank (2002), in rural areas such as the Moneragala district in the Uva Province (situated in the South-Eastern part of Sri Lanka) around half of all the households live in absolute poverty while the poverty rate in urban Colombo, where most of the manufacturing and services are located, is 10 percent. Narayan and Yoshida (2005) indicate that low productivity and income levels in the agricultural sector, a lack of access to markets to create income opportunities, and a lack of infrastructure in rural areas lead to huge disparities in poverty reduction achievements.

**Table 1.1: Head Count Index (HCI) of Sri Lanka by districts**

Province	Districts	HCI (%)		
		90-91	95-96	2002
Western	Colombo	16	12	06
	Gampaha	15	14	11
	Kalutara	32	29	20
Central	Kandy	36	37	25
	Matale	29	42	30
	Nuwara Eliya	20	32	23
Southern	Gal le	30	32	26
	Matara	29	35	27
	Hambantota	32	31	32
North-West	Kurunegala	27	26	25
	Puttalam	22	31	31
North-Central	Anuradhapura	24	27	20
	Polonnaruwa	24	20	24
Uva	Badulla	31	41	37
	Monaragala	34	56	37
Sabaragamuwa	Ratnapura	31	46	34
	Kegalle	31	36	32

Source: Narayan and Yoshida (2005: p 3)

According to Table 1.1, the incidence of poverty in Sri Lanka in 2002 is measured using the Head Count Index (HCI)<sup>1</sup>. The table indicates that poverty levels in Sri Lanka were high in all the districts except the main district of Colombo where infrastructure development and living opportunities are much higher. Table 1.1 also shows that HCI was 34 percent for the Ratnapura district in 2002, a 3 percent increase from the 90-91 periods. This indicates that around 34 percent of the population in the Ratnapura district were living below the poverty line in 2002.

Table 1.2 indicates that the Elapatha and Weligepola divisions in the Ratnapura district were among the 10 poorest DS divisions in 2002. The second column in Table 1.2 reveals that around 40 percent and 39 percent of the population in those DS divisions were living below the poverty line respectively. This figure for the district has historically been around 34 percent. This indicates that around 34 percent of population in the Ratnapura district were living below the poverty line in 2002.

<sup>1</sup> HCI means the percentage of people out of total population living below the poverty line in a specific area

**Table 1.2: Poverty levels in Divisional Secretariats (DS Divisions) of the Ratnapura district, Sri Lanka in 2002**

DS Division	Head Count Index (HCI)	Population below poverty line
Ayagama	33.7	9,480
Balangoda	27.3	20,399
Eheliyagoda	26.9	16,531
Elapatha	40.1	14,369
Embilipitiya	31.6	36,252
Godakawela	38.2	25,638
Imbulpe	32.0	17,070
Kahawaththa	32.7	13,234
Kalawana	36.4	17,252
Kiriella	25.6	7,706
Kolonna	37.7	16,139
Kuruwita	28.9	23,839
Nivithigala	32.8	18,820
Opanayaka	34.1	8,380
Pelmadulla	30.2	25,211
Rathnapura	21.9	23,818
Weligepola	39.2	11,150
Ratnapura District	34.0	305,318

Source: Narayan and Yoshida (2005: p 7)

*A change in the way poverty is perceived:*

The GoSL (2000, p. viii) proposes a new poverty reduction strategy that includes seven priorities such as:

1. Building awareness and consensus that peace can make a vital contribution to poverty reduction;
2. Expanding productive employment by maintaining a stable macro-economic environment;
3. Improving market access by linking poor regions to dynamic markets;
4. Raising productivity and broadening market access for the small and medium-scale enterprises;
5. Creating opportunities for the poor to benefit from structural change by fostering broad-based rural development, competitive industrialization, service sector development and sound urban settlement;
6. Improving access to quality education and healthcare; and,
7. Innovative environmental management to enhance the sustainability of the poverty reduction process.



The above components of the new poverty reduction strategy introduced in 2000 by the GoSL prioritised achieving peace, and transforming the quality of life of rural people. This was to be done through increased incomes, economic modernisation, environmental management, and providing opportunities and invigoration of the rural economy (World Bank 2002). Furthermore, reformulation of policies in economic, social and public sectors were also emphasised in the new approach in order to make an environment that was conducive to speeding up poverty reduction strategies (World Bank 2002). The World Bank (2002, p.v) indicated that “reducing poverty will require all policies, expenditures, and programs to be evaluated for their impact on the livelihoods of the average household and on the poorest Sri Lankans”.

*Characteristics of the poor in Sri Lanka remain unchanged over long periods:*

According to Tudawe (2002), Tudawe (2000) and Ratnapala (1989) the following are the most common features of poverty in Sri Lanka.

- Household size is above average
- High dependency ratio
- Low level of education
- Limited income sources
- High and irregular employment and underemployment rates
- Dependent on seasonal nature in employment opportunities and unskilled jobs
- Low wage rates
- Landless or fragmented land owners of relatively unproductive land
- Lack of productive assets
- Limited access to outside resources
- Limited mobility and access to services
- Socially marginalised
- Located in isolated villages, encroachment settlements, slums or areas of violent conflict
- Female-headed households

### 1.2.2 The Samurdhi (prosperity) development programme (SDP)

Having discussed common features of poverty and changes of the approaches to perceive poverty, it is useful to examine to what extent the SDP has taken into account these considerations in designing its strategies to alleviate poverty. The Samurdhi (prosperity) Development Programme (SDP) is a national poverty alleviation programme launched in 1995 by the People’s Alliance Government (Salih 2000). The SDP claims around 1 percent of the gross domestic product (GDP) of Sri Lanka and accounts for nearly half of all the government's welfare expenditures, excluding expenditures on education and health (Salih 2000). The SDP is the largest welfare programme presently operating in the country and runs in 21 out of 25 districts (Salih 2000). The programme reaches nearly 51% of the Sri Lankan population (Salih 2000). Three main strategies have been designed in the programme: 1) alleviate poverty 2) welfare component, group-savings, credit component and 3) integrated rural development.

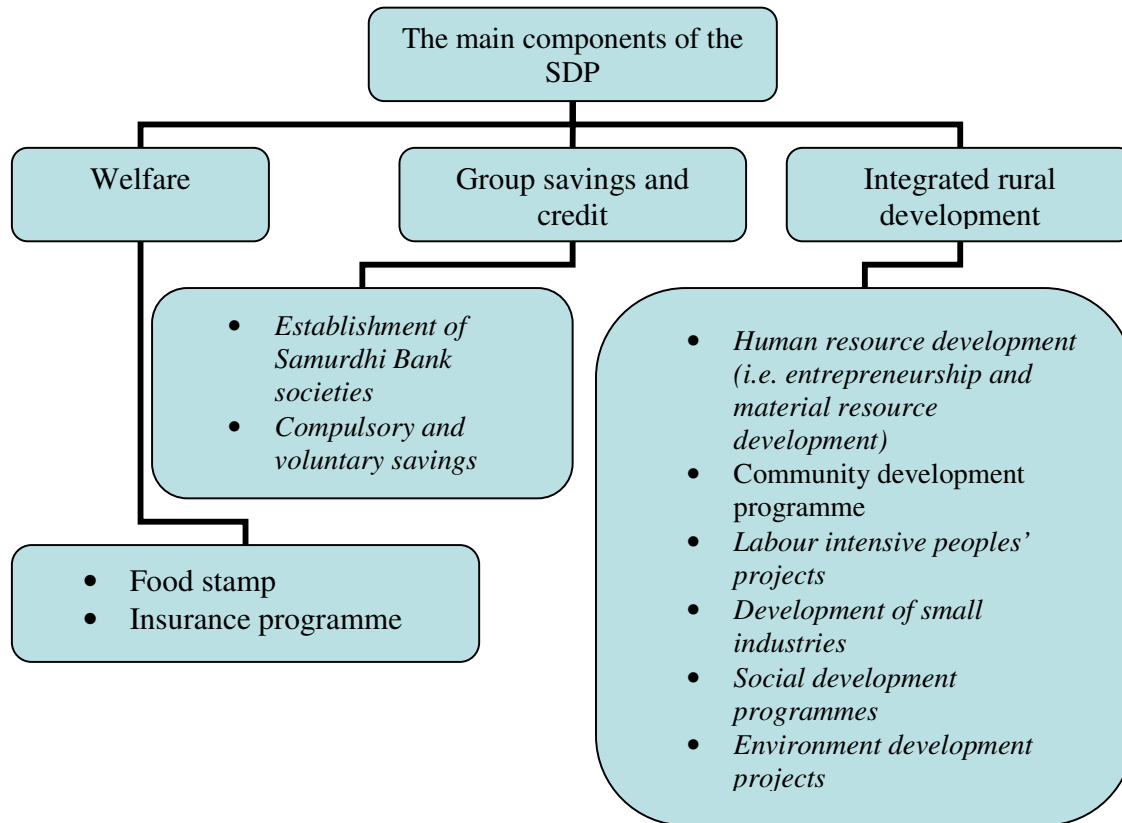
### 1.2.3 Main objectives and components of the SDP

The SDP has both 'protectional' and 'promotional' objectives. The programmes implemented with protectional objectives are mainly focused on assisting the poor in the face of adverse shocks. The other programmes such as group-savings, the credit component and the human resource development programmes have focused on long-term poverty reduction goals through empowering and enhancing the assets base of the poor to achieve promotional objectives (Salih 2000). From these key objectives, it is expected to eradicate poverty through ensuring the participation of the beneficiaries of the SDP in the rural farm and non-farm production process. As a national programme covering about 1.2 million poor families, the government of Sri Lanka is providing the required funds and implementing its strategies and activities to reach key objectives of the programme.

The following are its other main objectives:

1. Broadening opportunities for income enhancement and employment
2. Organising youth, women and other disadvantaged sections of the population into small groups and encouraging them to participate in decision-making activities and developmental processes at the grassroots level
3. Assisting persons to develop their latent talents and strengthening their asset bases through productive employment
4. Establishing and maintaining productive assets to create additional wage employment opportunities at the rural level.

The Figure 1.1 shows the various programmes implemented under the main three components of the SDP.



**Figure 1.1: The programmes and main components of the SDP**

#### 1.2.4 Criticisms on the SDP

Criticisms on the SDP are mainly concentrated on its inefficient management; its design weaknesses; and the political polarisation of the selection process (World Bank, 2002; GoSL, 2000; Gunatilleke, et al., 1997; Tudawe, 2002; Gunatilaka and Salih, 1999; Salih, 2000). The World Bank (2002) indicates that around 40 percent of the poorest in Sri Lanka who were eligible to receive SDP benefits have been excluded from the programme while considerably better-off household receive benefits due to political affiliation. The GoSL (2000) indicates that the SDP suffers from a number of targeting and administration difficulties such as the selection of the best suited beneficiaries for the programme and the higher cost to maintain a large number of officers in the programme. The GoSL (2000) suggests that better targeting of SDP can be achieved through employing community based assessments. Furthermore, the GoSL (2000) emphasises the involvement of community participation and the enhancement of supervision of the SDP as two crucial changes to be done. Gunathilake, et al., (1997) also notes the following

problems with the SDP: the inclusion of around 50% of better-off households (a higher leakage rate) to the programme; 'political polarisation of the selection process'; and lost of days work and other income sources for recipients due to compulsory attendance for community activities proposed by the SDP. The researcher also identifies the following additional weaknesses: corruption and inefficiency in the process of transferring grants to recipients; and grants for recipients not increasing with the cost of living index.

Gunatilaka and Salih (1999) conclude that the group savings and the intra-group credit components of the SDP are functioning as vital sources of emergency credit for some Samurdhi beneficiaries. Furthermore, the researchers indicate that those two components work better for rural areas where infrastructure facilities are very poor. The researchers reveal that the SDP has however failed to improve the income status of the poor in a higher income growth path due to deficiencies in the programme, infrastructure bottlenecks and imperfections in the market for technology. In addition, Salih (2000) indicates that undercoverage and leakage errors are also high in the SDP. The researcher identifies one of the main weaknesses of the SDP being the conflict between political motives and development motives resulting in a higher administrative structure at the cost of the substantial improvement of livelihoods of poor people. The researcher further emphasises that the SDP tries to find answers for the 'symptoms of poverty' rather than to find solutions for the 'causes of poverty' such as exogenous constraints like drought conditions and the lack of water, environmental degradation, the lack of access and public transport, poor education facilities.

### 1.3 Research question and hypothesis of the study

#### **Main research question:**

To what extent has the SDP been successful in improving livelihoods of the rural poor in the Ratnapura district of Sri Lanka?

#### **Secondary research questions:**

- I. Has the SDP identified the most important links between poverty and ecosystem degradation?
- II. To what extent has the SDP been focusing on building a synergy for community-government partnership?
- III. How has the SDP identified the 'real poor' for the target group?

### **Following are the four hypotheses of the study:**

- H1: the SDP has been successful in its poverty alleviation process through the development of assets base of its beneficiaries during the period from 1995 to 2009.
- H2: the SDP has helped households to reduce poverty through activities directed to secure the environment.
- H3: the SDP has helped households to reduce poverty through activities directed to improve social capital.
- H4: the actual level of poverty of the society as a whole could not be at a low level due to the failure of the SDP to select most suitable households to the programme.

### 1.4 Research objectives

The overall objective of this research is to assess whether the SDP has contributed to the improvement of livelihoods of its beneficiary population. The study is based on a case study from the Ratnapura district, Sri Lanka. A secondary objective of this study is to apply the knowledge acquired from the Master Degree in Development Management for understanding practical issues in the development debate.

### 1.5 Importance of the study

The importance of this research is of twofold. First, it will contribute to the knowledge of the Sri Lankan poverty assessment system, as there is currently little literature available in this regard. Second, this research could guide the Samurdhi Development Authority of Sri Lanka in reassessing and reformulating their policy strategies.

### 1.6 Method in brief

#### 1.6.1 Quantitative method

##### *Estimation of a transition matrix*

The main objective of the estimation of a transition matrix is to identify to what extent the SDP has helped poor people to get out of the poverty. The transition matrix is calculated based on the direction of the movement (transition) between two poverty conditions of a household from 1995 to 2009. Therefore, in the first stage of the estimation process, households are categorised using a relevant poverty line into four categories based on their income status for the initial year (1995) and for the year 2009. Those categories are: extreme poor, vulnerable households, viable households and sustainable households. In the second stage of the estimation process, households are categorised into four household poverty groups (unsuccessful, struggling, successful and most successful) based on the direction of the transition between two poverty conditions from 1995 to 2009.

### *Mean comparison tests*

Mean comparison tests are conducted to examine whether there are mean income differences between households who were able to develop their assets base and those who were unable to do so over the period from 1995 to 2009.

### *Visualization techniques*

This study will also use bar charts, pie charts, tables and line graphs for the easy comparison of data.

### *Estimation of multinomial logistic regression (MNL)*

In the multinomial logistic regression, the dependent variable has more than two categories. Following Akter, et al., (2008), I use two models where the dependent variable in each model has four categories. The categories of the dependent variable of model one are: extreme poor, vulnerable households, viable households and sustainable households. The categories of the dependent variable of model two are: unsuccessful, struggling, successful and most successful. The independent variables for each model include dummy variables for those who were able to develop natural, physical, financial, human and social capital assets; a dummy variable for gender of the household head and other variables including age level; years of schooling; number of dependents in the family. The main objective of the estimation of MNL is to identify whether there is a significant relationship between capital assets gain of a household and its poverty levels.

### 1.6.2 Qualitative method

The study is aimed at conducting a semi-structured interview with open-ended questions for 17 beneficiaries of the SDP. The main objective of this approach is to get a deeper contextual understanding about how SDP has actually affected on the lives of its targeted population and on their views about the environmental concerns of the SDP and political affiliations of the selection of households to the programme.

### 1.7 Thesis outline

The thesis is organised as follows: Chapter 2 is a literature review and theoretical framework for the study. Chapter 3 presents the method of the thesis. Empirical findings and analysis of the research are given in Chapter 4 in which findings are analysed with the support of the theoretical framework of the thesis. Finally, conclusions with some specific suggestions, recommendations and limitations of the study are given in Chapter 5.

## Chapter 2: Literature review and theoretical framework

This Chapter is divided into two sections. The first section reviews the literature under four subsections; livelihood development and poverty; ecosystem degradation and poverty; building a synergy for community- government partnership to alleviate poverty; and the identification of the real poor in poverty alleviation programmes. The second section outlines a theoretical framework from which four hypotheses are derived to find answers for the identified research problems of the study. .

### 2.1 Literature review

#### 2.1.1 Livelihoods development and poverty alleviation

Chambers and Conway (1991, p.5) define a livelihood as ‘a means of gaining a living’. The researchers (p.6) provide a comprehensive definition: "a livelihood comprises the capabilities, assets and activities required for a means of living. A livelihood is sustainable when it can cope with and recover from stresses and shocks and maintain or enhance its capabilities and assets both now and in the future, while not undermining the natural resource base". This implies that the poverty level of a household is crucially linked to the development of livelihoods. All poverty alleviation programmes directly or indirectly incorporate a sustainable livelihood approach (SLA). Special attention is paid here to investigate practical experiences of the use of SLAs as tools for reviewing and evaluating poverty alleviation projects (Cahn 2002; Ashley and Carney 1999). Cahn (2002) mentions that, to achieve the first millennium development goal (MDG) of reducing one-half the proportion of people living in poverty by 2015, it is vital to undertake a SLA though it is not a ‘panacea for development’.

Akter, et al., (2008) investigates poverty dynamics in relation to livelihood pathways and the role of livestock in alleviating poverty in a panel data study (a cross section of 320 households for 2001/02 and 2006/07) in the Indian State of Andhra Pradesh, India. They use an income-based definition of poverty for their quantitative analysis. The researchers define different poverty levels according to a subjective range of income difference relative to the poverty line of rural Andhra Pradesh. Poverty levels include extreme poor, vulnerable, viable and sustainable households. Households who have per capita income half or less than half the poverty line are considered ‘extreme poor’ while those who have income above this level up to double the poverty line are considered as ‘vulnerable households’. Those who have an income above double the poverty line up to triple the poverty line are considered as ‘viable households’ while the remaining households who have income above triple the poverty line are considered as ‘sustainable households’. Furthermore, the researchers categorise households into unsuccessful, struggling, successful and most successful groups based on their economic mobility from 2001/02 to 2006/07. In their analysis, the researchers compare poverty dynamics of those four groups according to a selected set of livelihood pathways (i.e. agriculture, livestock, non-farm, commuting, migration and diversification) for 2001/02 and 2006/07. The researchers employed a multinomial logistic model for use in considering the most successful group as the reference group in the model in order to measure the probability of being (or falling) in the other groups (i.e., unsuccessful, struggling and successful) when compared to the reference group. The researchers find that poverty is proportionately higher among the scheduled tribes and backward

castes and among those who are landless and marginal farmers. Their analysis indicated that a 'farm with livestock route' is one of the best pathways to escape poverty while the 'non-farm route' is the other best pathway to reduce the risk of being unsuccessful. Further results indicated that there is a negative association between land ownership and the probability of becoming unsuccessful or struggling. In addition, there is also a negative relationship between the probability of being unsuccessful or struggling with schooling, livestock asset in 2001/02, primary and secondary education of household head, migration route and agriculture–livestock route. The researchers conclude that expanding opportunities for non-farm activities and human capital development are important components of poverty reduction programmes.

Deshingkar, et al., (2008) investigates the role of livestock in rural livelihoods and its potential to assist people in escaping poverty in the Indian States of Andhra Pradesh (AP) and Madhya Pradesh (MP), using a combination of quantitative and qualitative methods. The researchers used a stratified random sampling method to select 720 households for both states. Basic information about occupation structures, caste, annual income, and asset ownership of sampled households was obtained from a census survey in 2002. In addition to this, they used focus group discussions and a participant observation method to collect information on qualitative aspects of the data. The quantitative techniques included 'tabular analysis' and the use of an ordinary least squares (OLS) regression model. The objective of the use of OLS was to identify how livestock, land, education, assets and diversification variables determine households' income. The results of the OLS regression confirmed that assets, land, education and diversification are important determinants of household income. The results of the qualitative study confirmed that households sell their livestock in order to meet expenses related to emergencies and agricultural needs. As a result Deshingkar, et al., (2008, p.22) identified "livestock as an important liquid asset that is used to mobilize cash in emergency situations" and further identified moneylenders as having livestock as an important assets in providing loans for poor households. Ellis (2001) and Ellis and Bahigwa (2001) investigate rural livelihoods, governance and rural poverty reduction in three rural districts in Uganda. The researchers employed both quantitative and qualitative methods. The researchers found that a lack of land and livestock as well as the unsustainability of non-farm alternatives to reduce farm-based activities are the root causes of rural poverty. The researchers concluded that the institutional context of the three districts concerned is unfavourable to rural families to expand monetary opportunities in these areas.

Barrett, et al., (2001) examined a set of seven papers on the topic 'Income Diversification and Livelihoods in Rural Africa: Cause and Consequence of Change'. The researchers noted that asset, activity and income diversification lie at the heart of livelihood strategies in rural Africa. The researchers find that non-farm activity is usually positively correlated with income and wealth (in the form of land and livestock) in rural Africa. This means that if rural poor are equipped with non-farm opportunities, there is a greater chance to get them out of poverty and increase their capabilities to cope with, and recover, from vulnerabilities. According to the researchers the aims of any poverty alleviation policy should be to improve the asset holdings of the poor, either through providing them with additional financial, fixed, human, natural, or social assets, or through increasing the productivity of assets they already hold or both. Ellis, et al., (2002) studied poverty reduction in Malawi using both quantitative and qualitative techniques. The researchers found that rural households face multiple severe constraints such as the lack of



access to markets, and lacked the ability to acquire new technology. However, they found that those who have only non-farm options had the capabilities for constructing pathways out of poverty. The researchers also conclude that existing programmes helped to improve broad scale developments in education, health and roads provision and but offered little by way of instituting an enabling environment for non-farm enterprise in reducing poverty.

Ellis and Mdoe (2002) study a macro strategic process, the Poverty Reduction Strategy Paper (PRSP) directed to poverty reduction in Tanzania. The researchers used micro level investigations of rural livelihoods in ten sub-villages in the country's Morogoro region. The purpose of the study was to identify policy inferences relevant to the capacity of the PRSP to deliver its promises for poverty reduction in rural areas using both quantitative and qualitative techniques. The researchers found that a lack of land and livestock, as well as the inability to secure non-farm alternatives to diminishing farm opportunities were the main causes of rural poverty in the region. The researchers conclude that the support from the institutional context for the rural poor and women to emerge from poverty is blocking rather than enabling them to construct their own pathways out of poverty. Okrasa (1999) investigates the impact of two major social assistance programmes (family allowances and unemployment benefits) on families' transition in and out of poverty using panel data for 1993-96 from Poland's Household Budget Survey. The researcher discusses how non-income sources of welfare or financial capitals of household livelihoods such as savings, access to credits and loans have affected the financial progression of poor people. The researcher concludes that the two major social programmes had significant impacts on households. The researcher found that if the family allowances programme were reduced to 1% of its share in the total household income, it would lead to increases the average length of poverty by roughly 2%. Furthermore, the researcher finds that if 1% change of the resources to be allocated to the second social assistance programme (unemployment benefits) were to be made, it would cause a 3 % change in the average duration of poverty.

After the apartheid period in South Africa, Mandela's government in 1994 implemented an integrated, coherent socio-economic policy framework, called the reconstruction and development programme (RDP). The prime objective of implementing RDP was to achieve development with a vision towards building a democratic, non-racial and non-sexist future (Corder 1997). The RDP consisted of six basic principles and five key programmes. The six basic principles included were: an integrated and sustainable programme, a people-driven process, peace and security for all, nation-building, link reconstruction and development and democratisation of South Africa. The five key programmes included: meeting basic needs, developing human resources, building the economy, democratising the state and society, and implementing the RDP. However, there are criticisms regarding the successfulness of the RDP in achieving its goals as they were too much optimistic (Beck 2000, p.194-195). Furthermore, the inability of provincial and local authorities to carryout RDP programmes has been one of the reasons behind its failure (Beck 2000, p.194-195).

### 2.1.2 The link between poverty and ecosystem degradation

The Millennium Ecosystem Assessment (MEA 2005, p. 61) indicates that as most of the world's poorest people live in rural areas; they are highly dependent on the ecosystem for food production, including agriculture, farming, livestock, and hunting. Therefore, the ecosystem directly influences the rural poor and to some extent determines their livelihood and survival needs. MEA (2005, p. 61) highlights that “ecosystem degradation is often one of the factors trapping people in cycles of poverty”. Within this context, ecosystem management must be a major component of any kind of poverty reduction strategy as it helps develop basic capabilities of the poor by ensuring the reduction of environmental degradation. MEA (2005, p. 61) warns that degradation of ecosystem services poses a significant barrier to reach MDGs. Accordingly, a combination of growing populations and land degradation in Sub-Saharan Africa, Central Asia, and parts of South and Southeast Asia as well as some regions in Latin America are increasing the vulnerability of people to both economic and environmental change, and pushing them into poverty (MEA 2005, p. 20).

Cord (2002, p. 67) indicates that a reliance on the natural resource base to sustain livelihoods of the poor has led to an increased risk of the sustainability of their seasonal income, food supply and growth opportunities. The researcher suggests that this type of uncertainty of rural livelihoods and likelihood towards a high rate of poverty due to higher reliance of natural resources can be overcome through pro-poor growth strategies. Moreover Ratnapala (1989, p. 13, 55) indicates that the absence of natural resources and degradation of existing ecosystem services are two fundamental causes of rural poverty in Sri Lanka. The researcher provides a good example where the poor attention in protecting or cultivating rattans<sup>2</sup> in some rural villages in Sri Lanka has resulted in a decline in income source for poor people whose main productions are based on rattans. This causes them to reduce their production due to the lost of main source of input. The ultimate result of this is a lost of income for poor people putting them further into trouble. Shaffer (2001) stresses that environmental capital such as land, water, trees, grazing, and livestock are main sources of formation of livelihoods of poor people. The researcher indicates that a SL approach directs attention to the interrelations between poverty reduction, environmental stress and external shocks. Therefore, any poverty reduction strategy should concern the crucial links between three sectors considered above. Likewise, Brundtland (1987) indicates that the overuse of environmental resources by poor people leads the environment to further deplete making their survival ever more difficult and uncertain. This means that any poverty alleviation strategy should incorporate strategies that help break “vicious cycle of poverty leading to environmental degradation that leads in turn to even greater poverty” (Brundtland 1987).

Hengsdijk, et al., (2005) also stresses a causal relationship between poverty and biodiversity degradation. In this context, poverty can force people to deplete their natural resource base upon which their incomes rely while in turn persistent natural resource degradation can contribute to poverty, particularly among subsistence farmers. The researchers maintain that this complex relation is further exacerbated by external claims on natural resources. The researchers develop a ‘logical framework’ to quantify trade-offs and synergies between poverty and biodiversity

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<sup>2</sup> Rattan is a kind of creepers growing in forests in Sri Lanka. It is used as an input to make chairs, bags and such kind of items.

conservation with aims at identifying relevant research questions contributing to improved policy formulation. The researchers indicate that the major threats to biodiversity are from poor households living in rural areas where agriculture is their main livelihood strategy. This occurs as a result of their continuous overuse of natural resources and the conversion of natural habitats into agricultural land. The researchers developed four scenarios to illustrate the consequences of contrasting options: (1) protected area, (2) buffer zone, (3) integrated sustainable development (ISD) and (4) exit scenario. The ISD seems most applicable to the current discussion on how a programme designed to alleviate poverty incorporates strategies directed to stop degradation of biodiversity while at the same time utilising benefits of the biodiversity services. Hengsdijk, et al., (2005) discuss linking those four scenarios into livelihood strategies such as intensification and diversification of production systems, expansion of land holdings, increase of off-farm and outflow from agriculture. In the ISD, communities are encouraged to conserve biodiversity by helping the local population to use the environment in a sustainable way as this scenario holds a view that the livelihoods of poor people can only be improved by allowing them to use bio-diverse ecosystems. Hengsdijk, et al., (2005) further stresses that policies or programmes designed to alleviate poverty must incorporate strategies that encourage poor people (and communities) towards conservation of ecosystems, as it is 'instrumental' in achieving poverty reduction.

Environmental degradation is a central issue even in sustainable development because maintaining an obtained development over long period requires continued assistance from the natural resource base of a country. This is vital for many developing countries as their economies are heavily dependent on natural resources (Repetto 1992). This has been a big issue for developing countries because they have tended to overuse their natural resources or they have neglected possible harmful long-term impacts of environmental degradation only for short-term development goals. "Human use of environment inextricably link to ecosystems" and hence, any action taken affects positively or negatively to the environment and then to the people (Adams 2001, p. 215). This means that an overuse of land due to higher levels of poverty causes environmental degradation, which intern clearly triggers poverty and problems related to rural livelihoods causing further threats to the environment and to the people.

### 2.1.3 Developing an environment for co-action (a synergy) for community- government partnership to alleviate poverty

Evan (1996a; 1996b) stresses the importance of developing an environment for coaction (synergy) based on the provision of 'complementarities and embeddedness' for public-private (community) partnership to achieve development goals including eradicating poverty. The researcher indicates that state-society synergy lies at the heart of the development. One of the fundamental factors affected to pay attention on the development of such a synergy is that it makes avenues for the formation of 'social capital for development ends' through improvement of civic engagement in 'forging norms of trust and networks' among citizens. Evans (1996b) indicates that in order to achieve long-term development success, 'capitalist development' and 'community norms and network' (social capital) need to be integrated.

Adato, et al (2004) indicates that social safety nets (SSNs) can help poor people by reducing their chronic poverty. SSNs typically include programmes such as cash transfers and conditional

transfers, direct feeding programs, school-based food programs, food stamps, social health insurance, microfinance, public works programs, subsidised agricultural inputs, price subsidies and free food distribution. The researchers stress that as SSN programmes have both short-term poverty reduction goals and long-term development goals, “policymakers must take up new approaches that involve partnerships between government and civil society” (Adato, et al., 2004, p. 1). Adato, et al., (2004, p. 06) further stresses that such a partnership for co-action would help strengthen the ability of poor and vulnerable people “to make claims on their governments and employers to deliver social protection and to strengthen the capacity of governments and employers to do so”.

#### 2.1.4 Poverty targeting and identification of the real poor

The term ‘poverty targeting’ means “the use of policy instruments to channel resources to a target group identified below an agreed national poverty line” (Weiss 2005, p.1). Weiss indicates that resources directed at the poor can be either ‘protectional’ or ‘promotional’. The former approach means direct resources at the poor to help them maintain welfare in the face of adverse shocks while the latter approach stresses direct resources at the poor to help them improve their welfare in the long run. The conventional wisdom of the long-run solution to poverty alleviation emphasise the use of policies that minimise the degree of leakage (incorporation of better-off households into programmes) from assistance programmes and maximise the benefits of a “labour-intensive growth and the development of human capital of the poor combined with targeted social safety net measures” (Weiss 2005, p.1). Weiss (2005, p. 7-8) indicates that targeting of the poor can be achieved in several ways: targeting by activity, indicator, location and targeting by self-selection. The social safety nets that can be implemented under any or a mixture of targeting strategies mentioned above cover measures such as providing subsidised food, employment creation, access to health and other social facilities, and cash transfers (Weiss 2005, p.1). Weiss (2005, p.25) stresses that poverty reduction strategies in India, Thailand, Philippines, Indonesia and People’s Republic of China (PRC) are mainly driven by macroeconomic developments (“the rate and the pattern of economic growth”) rather than by targeted interventions. That is, changing the pattern of growth in sectors that create employment opportunities and the implementation of promotional and protectional policies directed at the poor have direct impacts on poverty reduction.

Balisacan and Edillon (2005, p.219-243) examine recent poverty reduction efforts in Philippines. The researchers highlight that although the continues economic growth is a must to achieve poverty reduction targets, it is vital to have a programme that aims to improve the institutional and economic environment of poor so as to ensure their active participation in the growth process and subsequent benefits. The researchers conclude that improved access of the poor to basic services such as education and health is fundamental to poverty alleviation programmes in the Philippines. This is because as larger family size among non-educated people is high, it leads to lowering savings, parental earnings and reducing access to schooling (Khan and Weiss, 2006, p. 36). This emphasises the need of the development of education and the introduction of active population policies to obtain poverty reduction goals. The researchers stress that implementing such a general approach is a big challenge in the Philippines. Warr and Sarntisart (2005, p. 186-

217) examine the effectiveness of Thai government expenditures directed to poverty alleviation strategies in Thailand. The government has identified poor people based on geography and has allocated funds accordingly across provinces. The researchers note that although economic growth is necessary to gear up poverty reduction strategies it is not sufficient as other socio-economic matters need to be addressed. They identify the following basic features of poverty in Thailand: absolute poverty has declined dramatically in recent years, higher poverty rates are typical in rural areas, large families are more likely to be poor than smaller families, farmers possess small lands are more likely to be poor than large landowners, and households headed by persons whose education level is poor are more likely to be poor than others. Accordingly, “Thailand’s poor are uneducated, rural and living in large families” and therefore, in addition to maintain a sustained economic growth, the development of the social sector such as education is vital to “long-term decline in poverty” (Warr and Sarntisart 2005, p. 192). The researchers further identify three dimensions of the Thai government’s policy documents related to poverty alleviation strategies: opportunity (building capacity of poor to participate economically rewarding activities), security (helping poor to maintain their well-being in the face of socio-economic shocks) and community (building social capital that speed up development of two dimensions mentioned earlier). The researchers conclude that, on the whole, rewards for alleviation poverty over the past decades mainly go to economic growth rather than strategies implemented by the Thai government to assist the poor. One of the other distinctive features of Thai thinking on poverty reduction strategies is the use of “decentralized local community approaches” in that community people play a big role in designing and implementing poverty reduction strategies developed by community people themselves (Warr and Sarntisart 2005, p. 194). This intends to minimise the dependency of poverty reduction strategies on central government mediations and allows a synergy between community people and the government in case of resource allocation to community projects and the subsequent assessment of their projects.

Perdana and Maxwell (2005, p. 79-130) examine the effectiveness of various poverty alleviation programmes in Indonesia covering areas such as village improvement, food security, community empowerment, employment creation, education and health. All or most of the programmes came under these areas focused on geographical targeting or a mixture of geographical and household targeting. One example for such a programme is “*the Inpres Desa Targeting (IDT)* (Neglected Villages Program)” under which poor people living in neglected villages are given small-scale credits to initiate a range of self-employment activities. The central government provides funds to selected villages and these villages are then responsible to distribute these funds among selected group of people within the village. The identification of the poor into the village programmes are conducted in two stages. In the first stage villages are selected by IDT and in the second stage, community organisations in the village select particular households who deserve to receive the assistance. The researchers note that the identification of the poor was not easy due to a lack of appropriate ‘conceptual and methodological’ procedures. They indicate that IDT programmes did have positive impacts for the poor. That is the programme had helped the poor to increase their total per-capita expenditure, employment creation (especially on female workers), positive impacts on school attendance of children and reduction of regional disparities. Perdana and Maxwell (2005, p.125) conclude that all the programmes they studied have “two common problems”. Those include under-coverage and leakage. The first problem indicates the failure of programmes to include poor who were in the disadvantaged in the community while

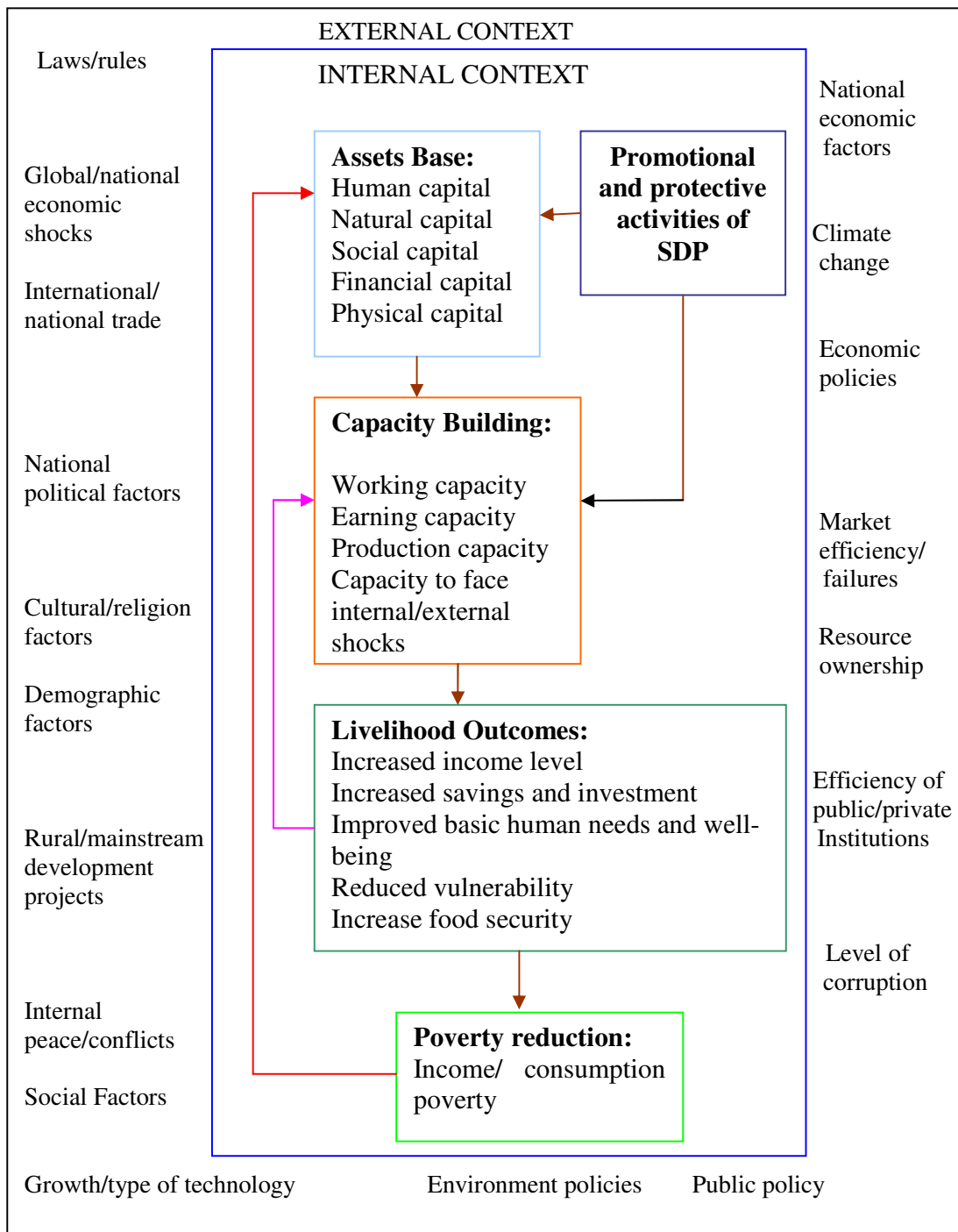
the second error indicates the opposite (incorporation of better-off households into programmes). Arif (2006, p. 194-219) evaluates the targeting efficiency of one of Pakistan poverty alleviation programmes called *Zakat*. The programme targets poor households who do not benefit from mainstream economic growth include extremely destitute, the unemployed, the sick and the aged (Arif 2006, p. 194). The researcher indicates that there are two types of targeting strategies in Pakistan: “broadly targeted (it does not include a specific targeting mechanism) and narrowly targeted”. The *Zakat* falls into the latter category where programme benefits are expected directly to the ‘poorest of the poor’ based on the ‘Islamic concept of charity’ (funds from central government are allocated to the District level *Zakat* committees and then to local *Zakat* committees made up of village volunteers who have the responsibility to select deserving categories of recipients such as widows, orphans and the disabled). According to Arif (2006, p. 194), Pakistan poverty alleviation strategies consist of achieving goals such as sustained high economic growth with human resource development, governance and targeting the poor and vulnerable. To evaluate the efficiency of *Zakat* programmes, Arif (2006, p. 205-210) estimated five logistic regression models and found that the likelihood of receiving *Zakat* assistance were positively related to age, education, housing characteristics (such as ownership, number of rooms and electricity), household headed by female widows, working states of the head of households and indebtedness of households. However, the researcher concludes that under-coverage, leakage and corruption can be observed in the *Zakat* programme in addition to the insufficient resource allocation per poor person to improve their well-being.

Srivastava (2005, p.34-75) studied the effectiveness of broad and narrow targeted poverty alleviation programmes in India. The researcher identified the following weaknesses: high leakage; misappropriation; lack of political leadership; poor governance; inadequate institutional capacities of local governments; inequities in power within villages; and the failure of administrative identification of the poor due to conceptual and methodological weaknesses. Sangui (2005, p.136-172) examined the effectiveness of various anti-poverty programmes implemented in People’s Republic of China (PRC). The researcher indicated that location targeting has been the main targeting method used in the PRC for its poverty reduction programmes. According to the researcher, the poverty reduction goals of the PRC had been mainly achieved. The researcher provides evidence based on a survey on PRC’s past studies conducted using regression models to examine the impacts of poverty reduction strategies on the poor counties in PRC. The researcher concludes that all the poverty reduction programmes studied in PRC have had a positive impact on household income and poverty reduction in poor areas. Finally, Hassan and Peters (1995) investigated how the poor are identified and how social safety net programmes reach the poor based on data from the 1992 Bulgarian household survey. The researchers conclude that social safety net programmes in Bulgaria are not well targeted due to a higher leakage rate.

## 2.2 Theoretical framework and hypothesis

Figure 2.1 below outlines the theoretical framework to be used in the study. The framework assumes that livelihoods of the beneficiaries of the SDP are mainly affected from the ongoing activities of the project within the internal context. This implies that although there are various kinds of factors in the external environment, which can directly or indirectly affect the livelihoods of people, it is assumed that the development of livelihoods of the beneficiaries of the SDP are mainly affected by activities of the SDP. Therefore, in order to measure the success of activities of the SDP, I neglect this complex web of interconnections with the external environment and concern myself only with causes and effects in the links that could exist in the internal context.

I hypothesise that promotional and protective activities of the SDP can directly and indirectly affect the livelihoods of its beneficiaries through two channels. The first channel is the assets base where there are five assets that can be directly affected from the activities of the project. Those assets are; human, natural, social, financial and physical capital. This can increase the capacity building of beneficiaries. The increased capacity can help poor people achieve positive livelihoods outcomes, which in turn can cause them to reduce their income and consumption poverty. The second channel has direct influence from protective activities of the SDP on the capacity building. That is, for example, when a beneficiary household receives a food stamp that covers his or /her daily food requirements then it helps that household to improve its working capacity by reducing hunger. It also helps that household to save some money as the food stamp covers some proportion of the food expenditure of the family and therefore it encourages saving some money or investing that money in productive areas. It appears that livelihoods outcomes and poverty have cyclical impacts in the above theoretical framework. Positive livelihoods outcomes cause to strengthen the capacity of poor people. For example, if the income level of poor people increase continuously, this could help to educate their children, and can help to get more inputs for the productions and can diversify their sources of income in order to reduce the risk of loss of income. The other cyclical impact emerges from the level of poverty. If the poverty level is high, this could cause deterioration in the assets base as poor people tend to overuse the existing assets in order to maintain their lives. This creates negative impacts on capacity building and livelihoods outcomes, which then exacerbates the level of poverty. Therefore, in order to break this poverty circle it is essential to have an external influence. As noted earlier, this can be achieved through promotional and protective activities of the SDP, which directly and indirectly affect to improve assets base of a household and its capacity building respectively.



**Figure 2.1: Links between the external environment, assets base, activities of the SDP and poverty**



The following four hypotheses are derived from the above theoretical framework based on two assumptions. First, livelihoods of the beneficiaries of the SDP are purely determined within the internal context of the theoretical framework. Hence, it is assumed that the impact of the external context on the livelihoods of the beneficiaries is negligible.

Second, although the theoretical framework shows a cyclical impact (or a two way causation) that exists between livelihoods outcomes and poverty; I concern only the one direction of the impact transmission. That is the impact of the development of capital assets on the level of poverty of households of the SDP.

Hypothesis 1: The relationship between poverty and assets base

There are various kinds of activities which were mainly focused on eliminating poverty in beneficiary populations of the SDP. Whatever the activities implemented, the poverty level of a household could actually be reduced if its assets base increased. That is, if the assets base of a beneficiary household increased during the period 1995 - 2009 then it should lead to a reduction in the level of poverty (income and consumption) of that household. Therefore, I hypothesise that the SDP has been successful in its poverty alleviation process through the development of assets base of its beneficiaries during the period from 1995 to 2009.

Hypothesis 2: The link between protection of natural environment and poverty

The SDP has aimed to secure the natural environment on which beneficiaries of the SDP are dependent on. If activities of the SDP were directed to the sustainable use of water sources, stop depletion of natural resources (soil erosion, deforestation for farming etc) and assure the reproduction capacity of natural resources (i.e. replanting of rattan), this could directly affect on the level of poverty of a household. If the natural assets base of a household was not protected, it can have a negative impact on the level of income, for example, due to the decline of crops, abandoning paddy cultivations and loss of inputs for their handicrafts. On the other hand, the unsustainable use of the environment has long term health impacts on households that creates poverty through lowering income due to, for example, reducing working days, working capacity and increasing hunger. Therefore, I hypothesise that the SDP has helped to reduce level of poverty of its beneficiaries through activities of the SDP directed to secure the environment. That is, if suitable activities were implemented during 1995 to 2009 to sustain the environment, it should help to reduce the level of poverty (income and consumption). However, as it is very difficult to obtain data on the relationship between the degradation of the environment and the level of poverty of a household within a very short period, I hope to test the validity of this hypothesis by inspecting the views of the beneficiaries of the SDP on the actions taken so far by the SDP to assure the sustainability of water sources for survival and livelihood activities of the beneficiaries. By testing this hypothesis I can assess whether the SDP has identified the crucial link between poverty and ecosystem degradation.

### Hypothesis 3: The link between social capital and poverty

The SDP has proposed several strategies to improve the social capital of its beneficiaries through continuous group based activities (i.e. works, building rural infrastructure, group savings etc) and making links with the respective local authorities. If suitable activities were implemented during the period 1995 to 2009, it should help to reduce the level of poverty (income and consumption) of a household through developing capability of a household to have productive assets and strengthening its ability to recover (and cope with) from adverse shocks. Therefore, I hypothesise that the SDP has helped households to reduce their level of poverty through activities of the SDP directed to improve social capital. By testing this hypothesis it is possible to assess whether the SDP has actually focused on building a synergy for community-government partnership.

### Hypothesis 4: The 'real poor' and political affiliations

There is a severe criticism towards the SDP related to its political affiliations in selecting households to the programme. In order to reduce the level of poverty, it is essential to include the real poor (the most suitable household) into the programme. Therefore, I hypothesise that if the SDP were unable to select the most suitable households to the programme, the actual poverty level of the society as a whole would not be reduced due to the implementation of the activities of the SDP. The validity of this hypothesis is confirmed by inspecting the views of the beneficiaries expressed on the selection of poor into this programme. They were asked to express their feelings on the political affiliations in selecting beneficiaries to the programme and on the political opinions of other beneficiaries of their village. The information required is collected from the qualitative approach of the study.

## Chapter 3: Method

This Chapter has three sections. The first section discusses the research design of the study. The second section discusses quantitative methods applied in the thesis. The main objective of the use of quantitative methods in this research was to investigate the first and third hypotheses of the thesis. The third section discusses tools used in the qualitative component of the thesis. The use of qualitative methodologies was to investigate the second and fourth hypotheses of the thesis by examining the various personal perspectives of the beneficiaries of the SDP.

### 3.1 Research design

According to Bryman (2004, p.33) there are five kinds of research designs: experimental design; cross-sectional or survey design; longitudinal design; case study design, and comparative design. The application of any research design depends on the priority of the researcher for a “range of dimensions of the research process” (Bryman, 2004, p.543). This implies that the researcher investigates all possible ways to study his or her research phenomenon and selects the best according to its relevance and usefulness for the study. Accordingly, a case study design was employed in this study as my main concern was to investigate the “causal relationship” between poverty and a number of variables. In addition, the study focuses on a sample taken from the beneficiaries of the SDP (the target population) in the Ratnapura district. Hence, it becomes a case study in the sense that the findings of the study are “generalized” to all the beneficiaries of the SDP in the Ratnapura district. The study employs both quantitative and qualitative research approaches. It was considered good to employ both strategies in order to improve the study. Specially, qualitative research which helps “in the generation of intensive and detailed analysis of the case”, which is most useful and important to confirm the validity of the findings of the quantitative strategy employed (Bryman, 2004, p. 543).

### 3.2 Quantitative method

#### 3.2.1 Data and sample

##### *Data*

Data are the inputs that help find answers for the hypothesis developed in any study. Therefore, it is essential to obtain the most appropriate data that reflects the parameters of the study concerned. Following this argument, in order to obtain data for my study, I developed a structured questionnaire (appendix 2) that investigates the relationship between poverty and its causes (including demographic information of households as well). As most of the issues concerned in the study (i.e. development of social or human capital) were qualitative in nature, answers obtained were qualitative. Therefore, most of the data obtained were non-measurable (i.e. skills and talents developed, development of social networks, improving confidence etc) rather than measurable, or numeric (i.e. monthly income, number of dependents etc). Since the application of quantitative methods requires having numeric data, the current study used a set of

subjective based criteria to convert non-measurable data into measurable data. Furthermore, it is important to note about the reliability of data. Initially, I had planned to obtain baseline data for randomly selected beneficiaries of the SDP from the Main Secretary Office in the Ratnapura (MSOR) district. Unfortunately, such a baseline data set had not been maintained by MSOR. However, MSOR said that they have planned to maintain such a data set from 2009 onwards. Therefore, I had to obtain baseline information from respondents themselves requesting them to memorize their conditions (i.e. housing status, income, livelihood assets etc) when they were entered to the SDP in 1995. This could influence the reliability of the data especially in case of income data as respondents would not provide actual figures for fear of losing out on future SDP funds.

### *The sample*

The study employed a random sampling method to collect data from a cross section of 170 households living in the 17 DS divisions in the Ratnapura district. The main criterion in selecting the above households was that they should be beneficiaries of the SDP since 1995. Therefore, those beneficiaries of the SDP were the “target population” of this research (Henry, 1990, p. 36-37). The use of random sampling implies that each beneficiary of the SDP has an equal probability of selection in the sample (Bryman, 2004, p 90; Henry, 1990, p. 96). The main advantage of the use of random sampling is that findings of the sample helps to make “inferences about the population” from which the above sample was drawn (Bryman, 2004, p.95). The standard method of random sampling technique was difficult to apply in the current study due to time limitations, as well as absence of respondents at the daytime, travel and cost problems. As a result I applied this sampling strategy in the following way. First, I obtained a list of all DS divisions in the Ratnapura district. Second, I randomly selected one village state from each DS division. In the next step, I visited the chosen village from where I randomly selected 10 beneficiaries of the SDP. Accordingly, I collected data from 170 beneficiaries from such 17 village states in the Ratnapura district. The main reason to use this method was that if I selected 10 households randomly from a list of names of the beneficiaries of the SDP in a DS division rather than from a village state, then I would be more difficult to collect data within a short period as the distribution of the sample units could be very large in the DS division.

**Table 3.1: Size and population distribution in DS divisions and village states in the Ratnapura district of Sri Lanka**

DS Division	Size of DS division (in KM)	Number of occupied housing units per DS	Number of households per DS	Number of occupants per DS	Average number of occupants per village state in each DS
Pelmadulla	164.0	19,686	19,906	86,246	2,331
Kuruvita	128.6	20,200	20,460	86,014	2,205
Ratnapura	310.0	26,252	26,549	114,178	2,154
Weligepola	158.8	7,634	7,690	30,447	1,015
Kalawana	372.9	11,864	11,905	49,893	1,512
Ayagama	135.4	7,310	7,357	29,775	1,418
Embilipitiya	319.0	29,027	29,126	123,132	3,078
Nivitigala	213.1	13,781	13,989	59,066	2,461
Eheliyagoda	141.7	15,394	15,566	65,546	1,490
Balangoda	233.7	18,448	18,720	78,813	1,487
Kolonna	166.7	10,557	10,661	44,829	1,546
Imbulpe	196.4	13,776	14,086	56,037	1,121
Kahawatta	141.1	9,867	10,032	42,694	2,033
Elapatha	89.5	8,692	8,828	36,819	1,841
Opanayaka	65.0	6,085	6,240	25,689	1,284
Kiriella	112.5	7,578	7,666	32,003	1,883
Godakawela	221.3	16,731	16,962	71,116	1,616
Ratnapura District	3169.6	242,882	245,743	1,032,297	

Source: Department of Census and Statistics of Government of Sri Lanka (DCS of GoSL 2004)

Table 3.1 provides information on the size of each DS division and the distribution of occupants in each DS division, as well as the average number of occupants in state villages in each DS division. Table 3.2 gives information on how the sample structure was designed in the study.

**Table 3.2: Sample structure of the study**

DS division	Number of village states <sup>a</sup>	Number of randomly selected village states	Randomly selected number of beneficiaries from selected village state	Total beneficiaries as at 2008 <sup>a</sup>	Sampled proportion (%)
Pelmadulla	37	1	10	11,121	0.09
Kuruvita	39	1	10	11,011	0.09
Ratnapura	53	1	10	11,799	0.08
Weligepola	30	1	10	4,160	0.24
Kalawana	33	1	10	5,914	0.17
Ayagama	21	1	10	5,295	0.19
Embilipitiya	40	1	10	17,360	0.06
Nivitigala	24	1	10	7,395	0.14
Eheliyagoda	44	1	10	4,948	0.20
Balangoda	53	1	10	9,260	0.11
Kolonna	29	1	10	7,090	0.14
Imbulpe	50	1	10	7,973	0.13
Kahawatta	21	1	10	6,595	0.15
Elapatha	20	1	10	6,392	0.16
Opanayaka	20	1	10	3,820	0.26
Kiriella	17	1	10	4,877	0.21
Godakawela	44	1	10	8,528	0.12
Total	575	17	170	133,538	0.13

Source: a. Main Secretariat Office-Ratnapura

### 3.2.2 Primary method

#### *Estimation of transition matrices*

Following the method used by Akter, et al., (2008, p.3), I categorised the beneficiaries of the SDP into extreme poor, vulnerable, viable and sustainable households for both 1995 and 2009. This was done based on a “subjective range of income difference relative to poverty line” of the Ratnapura district. Akter, et al., (2008, p.3) justify their method by indicating that, “conceptually, the extremely poor are likely to stay poor in the longer term, vulnerable households are likely to move ups and downs around the poverty line, viable households are likely to stay non-poor, sustainable households may never be vulnerable and non-poor”. The Department of Census and Statistics of Government of Sri Lanka (DCS of GoSL 2004) defines the official poverty line as the per-capita expenditure for a person to be able to meet the minimum living standards. That is the ability of a person to buy a consumption bundle that includes both food and non- food items

which satisfy both minimum nutritional requirements (nutritional anchor of 2030 kilocalories) and other basic needs. Therefore, using poverty line data for the Ratnapura district for 1995 and 2008, it is possible to categorize the respondent households into the following four groups:

- Category 01: Extreme poor = those who have per capita monthly income (PCMI) half or less than half the official poverty line
- Category 02: Vulnerable households = those who have PCMI above the PCMI level of extreme poor up to double the official poverty line
- Category 03: Viable households = those who have PCMI above the PCMI level of vulnerable households up to triple the official poverty line
- Category 04: Sustainable households = those who have PCMI above the PCMI level of viable households

Table 3.3 shows how these four groups are categorized based on two official poverty lines for 1995 and 2009. Average official poverty line for 1995 was 833 Sri Lankan rupees (LKR) per month while it is for 2009 was 2907 LKR per month.

**Table 3.3: Categorisation of poverty groups for 1995 and 2009**

Households category	Official poverty line for Ratnapura district in 1995 = 833 LKR <sup>a</sup>	Official poverty line for Ratnapura district in 2009 = 2907 LKR <sup>a</sup>
	Formula	Formula
Extreme poor	$PCMI \leq 416 \text{ LKR}$	$PCMI \leq 1453 \text{ LKR}$
Vulnerable	$416 \text{ LKR} \leq PCMI \leq 1666 \text{ LKR}$	$1453 \text{ LKR} \leq PCMI \leq 5814 \text{ LKR}$
Viable	$1666 \text{ LKR} \leq PCMI \leq 2499 \text{ LKR}$	$5814 \text{ LKR} \leq PCMI \leq 8720 \text{ LKR}$
Sustainable	$PCMI \geq 2499 \text{ LKR}$	$PCMI \geq 8720 \text{ LKR}$

Source: a. Department of Census and Statistics of Government of Sri Lanka (DCS of GoSL 2004)

In the next step I examine the movement (transition) between these four categories from 1995 to 2008. This helps to determine what effect, if any, the SDP has had on its beneficiaries over the 13 years of the SDP.

Following Akter, et al., (2008, p. 4), based on the calculations obtained for Table 3.3, I also categorize beneficiaries of the SDP into unsuccessful, struggling, successful and most successful groups (Table 3.4) based on the direction of the transition (“economic mobility”) of poverty groups from 1995 to 2009 between extreme poverty, vulnerable, viable and sustainable.

**Table 3.4: Categorisation of households groups based on the direction of the transition between poverty categories during 1995-2009**

Households Group	Direction of the transition
Unsuccessful	<p><b>From</b> viable/sustainable <b>To</b> Vulnerable  <b>From</b> vulnerable/viable <b>To</b> extreme poor  <b>Or</b>  <b>Remained</b> in extreme poverty</p>
Struggling	<p><b>Remained</b> in vulnerable</p>
Successful	<p><b>From</b> extreme poverty <b>To</b> vulnerable/viable  <b>Or</b>  <b>From</b> vulnerable <b>To</b> viable</p>
Most successful	<p><b>From</b> extreme/vulnerable/viable <b>To</b> sustainable  <b>Or</b>  <b>Remained</b> in viable/sustainable</p>

It is interesting to note that the poverty and household groups of Table 3.3 and 3.4 can be compared with the identified predictor variables for the study such as assets status, education level of the household, etc. This allowed me to test the first and third hypothesis of the study using multinomial logistic regression (MNLr).

### 3.2.3 Modelling the data

Two separate models were included in the study. This was because of the categorisation of a household to capture the ‘static’ and ‘dynamic’ nature of the poverty level of a household. The objective of such a categorisation was to examine how and to what extent the development of five capital assets (natural, physical, human, financial and social capital) were related to ‘static’ and ‘dynamic’ nature of the poverty level of a household. The ‘static’ form of the poverty level means a living condition of a household at a given year. Hence, the first model was developed to categorise a household into extreme poor, vulnerable, viable or sustainable for 2009 in order to examine how and to what extent these poverty conditions were related to the development of five capital assets. The ‘dynamic’ form of the poverty level means how a living condition of a household has changed from 1995 to 2009. Hence, the second model was developed to categorise a household into unsuccessful, struggling, successful or most successful based on the direction of the transition of a living condition during this period in order to examine how and to what extent these poverty positions were related to the development of five capital assets.



## Model 1

The purpose of the estimation of model one was to understand how and to what extent the developments of five different kinds of capital assets (natural, physical, human, financial and social capital) have affected on the four poverty status of beneficiaries of the SDP in 2009: extreme poor, vulnerable, viable and sustainable.

The interpretation of development of capital assets:

### *The development of natural capital:*

The development of natural capital asset of a household means that the increase of that household's earning capacity due to; a household can have a land (purchased, hired or its own land) where there is at least one kind of cultivations (i.e. tea) done with an assistance of a loan from the SDP or from the rendering free service of the SDP; a household can have a livestock farm (i.e. cows, goats, pigs, poultry etc) with the help of the SDP to improve his/her earning capacity; Furthermore a household can be assured the sustainability of water sources for his/her survival needs and for the sustainability of the water based livelihood activities.

### *The development of physical capital:*

The development of physical capital asset of a household means that the increase of that household's earning capacity due to; by developing infrastructure (rural road network, telephone facility and electricity ) of a village, a household can have much benefits by reducing their production costs and improving the efficiency of productions i.e. a household can reduce the cost associated to daily travels to the nearest city, transportation of crops (i.e. tea) and productions (i.e. prepared vegetable) and transportation of other inputs needed for productions. This then helps that household to save some money that can be used to develop its existing livelihood activity to generate income or can be used for new livelihood activity. If the SDP were helpful in the development of infrastructure of a village through its rendering free service or considering indigenous knowledge, it could have direct and indirect positive impacts on the increase of income capacity of a household. Furthermore, a household can build up his/her earning capacity through acquisition of moveable and non-moveable physical capital assets through the loan facility provided by the SDP. Examples for movable capital assets are acquisition of a tailor machine, equipments to prepare spices, a refrigerator to make ice packets or to keep prepared vegetables etc. An example for non-movable capital asset is the acquisition of a building (temporary/permanent) to open a retail shop or dressings shop.

### *The development of human capital:*

The development of human capital asset of a household means that the increase of that household's earning capacity due to; by maintaining working capacity through reducing hunger from the welfare component of the SDP; by developing talents and skills on how to run (or initiate) a business (livelihood activity) effectively through training programmes of the SDP; by

improving the 'confidence' to work hard for the engaged livelihood activity; and by reducing financial burdens through supporting to educate children of a household.

*The development of financial capital:*

The development of financial capital asset of a household means that the increase of its earning capacity due to; the SDP can motivate a household to change from a consumption culture to a saving culture where there are more opportunities to initiate a new livelihood activity or to expand the existing livelihood activity due to the increased ability to access for loans and higher financial discipline. Although a household does not have a good saving culture he/she can obtain a loan from the SDP to initiate a livelihood activity or expand (or diversify) the existing livelihood activity in order to earn a stable income per month. By maintaining a good repayment capacity, a household can have the chance to access for higher loans to develop the livelihood activity further and can avoid financial burdens that disturb his/her earning capacity.

*The development of social capital:*

The development of social capital asset of a household means that the increase of its earning capacity due to; a household can have benefits through social networks among community members by providing instant requirements at the face of adverse shocks and by sharing their expertise knowledge in the formation of other capital assets of a household. That is such kind of social networks could help a household to build up its capacity to participate economically rewarding activities and maintain its well-being in the face of socio-economic shocks. Furthermore, having a developed social network can help build infrastructure of the village with higher tendency for rendering free service and that in turn helps a household on its living condition. The reduction of the gap between the community and the local government authority could also help to motivate a household to function well in the engaged livelihood activity. This could happen due to the continuous possible supervision of government officials at the village (as a household in a village respects much for government officials, he/she does not like to report negative results of the progress of the livelihood activity and therefore tries its best to have positive outcomes) on the one hand and the increased ability to access for the correct information at the right time on the other hand.

Dependent variable of the model 1:

Dependent variable has four categories.

- Category 01: Extreme poor
- Category 02: Vulnerable households
- Category 03: Viable households
- Category 04: Sustainable households

Reference category: Sustainable households (Category 04)

Independent variables of model 1:

$D_{NC} = 1$  (Those who have been able to develop natural capital asset)  
0 (Those who have not been able to develop natural capital asset)

$D_{PC} = 1$  (Those who have been able to develop physical capital asset)  
0 (Those who have not been able to develop physical capital asset)

$D_{HC} = 1$  (Those who have been able to develop human capital asset)  
0 (Those who have not been able to develop human capital asset)

$D_{FC} = 1$  (Those who have been able to develop financial capital asset)  
0 (Those who have not been able to develop financial capital asset)

$D_{SC} = 1$  (Those who have been able to develop social capital asset)  
0 (Those who have not been able to develop social capital asset)

Edu = Years of education  
Age = Age level  
Ndepend = number of dependents in the family  
 $D_{gender} = 0$  Female household head  
1 Male household head

The creation of categorical (dummy) variables for the five capital assets:

The data obtained from the answers for those questions pertaining to the development of capital assets (financial, natural, physical, human and social capital) of households from 1995 to 2009 were qualitative. Therefore, I use dummy (categorical) variables to capture the development of each capital asset subject to some criterion that must be fulfilled by each household in order to identify that household as one who was able to develop its respective capital assets. The following section explains how each of the five dummy variables was operationalised.

**The dummy variable to capture the development of natural capital ( $D_{NC}$ ):**

$D_{NC} = 1$  (Those who have been able to develop natural capital asset)  
0 (Those who have not been able to develop natural capital asset)

A beneficiary of the SDP should provide positive response/responses for the following criterion or a combination of criterions in order to identify him or her as one who has been able to develop its natural capital asset base.

**Criterion (subjective judgments):** The following criterion or a combination of criteria should be satisfied by a beneficiary of the SDP in order to fall in  $D_{NC} = 1$ : **A or B or C or D** or any other combinations including **A B C D**. The formation of the natural capital of any household includes its ownership of a land used for cultivation/business purposes and/or having a livestock and/or having a sustainable water source for both livelihood activities and survival needs. It is very clear that a household who can meet any of requirements given above is able to develop its natural capital asset base.

**A:** The SDP helped me to purchase a land for farming activities (i.e. tea cultivation)/ business activities (i.e. opening a retail shop)

**B:** The SDP helped me to build up a new livestock (i.e. poultry farming, purchasing a cow for drinking milk/selling milk/making dairy products etc) or to expand the existing livestock in numbers and/or in quality

**C:** The SDP helped me to continue/expand the activities of the existing land (i.e. tea cultivation, vegetable and fruits cultivation etc)

**D:** The SDP assured me the security and the sustainable use of water sources for both survival and livelihood needs

**The dummy variable to capture the development of physical capital ( $D_{PC}$ ):**

$D_{PC} = 1$  (Those who have been able to develop physical capital asset)

0 (Those who have not been able to develop physical capital asset)

A beneficiary of the SDP should provide positive response/responses for the following criterion or a combination of criteria in order to identify him or her as one who has been able to develop its physical capital asset base.

**Criterion (subjective judgments):** The following criterion or a combination of criteria should be satisfied by a beneficiary of the SDP in order to fall in  $D_{PC} = 1$ : **B or C** or any other combinations including **B C**. The formation of physical capital requires having moveable or non-moveable capital equipments/tools that help generate income and develop/expand its own supply. Failure to acquire any kind of physical capital can result un-sustainability of income sources, low income, and higher vulnerability.

**A:** The SDP facilitated me to have piped water and a developed rural road network

**B:** The SDP helped me to acquire movable capital equipments/tools that help generate income (i.e. purchasing a tailoring machine, purchasing a machine for haircutting, purchasing a refrigerator for making ice packets and keeping prepared vegetables to sell, purchasing machines for making iron related works, for making leather shoes, furniture, foods, spices etc)

**C:** The SDP helped me to acquire non-moveable income generating property (i.e. a retail shop)

**The dummy variable to capture the development of human capital ( $D_{HC}$ ):**

$D_{HC} = 1$  (Those who have been able to develop human capital asset)

0 (Those who have not been able to develop human capital asset)

A beneficiary of the SDP should provide positive response/responses for the following criterion or a combination of criteria in order to identify him or her as one who has been able to develop its human capital asset base.

**Criterion (subjective judgments):** The following criterion or a combination of criteria should be satisfied by a beneficiary of the SDP in order to fall in  $D_{HC} = 1$ : **B or C or** any other combinations including **B C**. The formation of human capital requires the development of skills and talents of a household as well as the development of its confidence and self-reliance. The empowerment of a household through developing above features is essential to alleviate poverty of that household.

**A:** The SDP reduced my hunger by providing a considerable proportion of daily food requirements

**B:** The SDP improved my skills and talents so now I can run my own business/farm activities

**C:** I was not able to improve skills through the SDP but it built up my confidence to strengthen my livelihood activities and self-reliance

**D:** The SDP helped me to teach my children and maintain their health conditions

**The dummy variable to capture the development of financial capital ( $D_{FC}$ ):**

$D_{FC} = 1$  (Those who have been able to develop financial capital asset)

0 (Those who have not been able to develop financial capital asset)

A beneficiary of the SDP must fulfil the following criterion or a combination of criteria in order to identify him or her as one who has been able to develop its financial capital asset base during the period from 1995 to 2008.

**Criterion (subjective judgments):** The following criterion or a combination of criteria should be satisfied by a beneficiary of the SDP in order to fall in  $D_{FC} = 1$ : **A or C** or any other combinations including **A C** i.e. ABD, ABDF, BC, ABC etc. The reason for this is that the best indicator of the development of financial capital of any household is its tendency towards savings and the development of its earning capacity. Failure to accomplish any of this can result in low investment, higher indebtedness, higher vulnerability for internal and external shocks, and finally low income.

**A:** SDP motivated me towards saving and therefore now I save some money constantly per month

**B:** I have obtained loans more than one time

**C:** Loans obtained help me to improve my earning capacity (i.e. through spending that money to initiate a new business or to buy inputs to continue the existing livelihood activity)

**D:** I have a higher repayment capacity of loans

**F:** I obtained loans for income generating activities other than consumption activities

A beneficiary of the SDP should provide positive response/responses for the above criterion or a combination of criteria in order to identify him or her as one who has been able to develop its financial capital assets base.

**The dummy variable to capture the development of social capital ( $D_{SC}$ ):**

$D_{SC} = 1$  (Those who have been able to develop social capital asset)

0 (Those who have not been able to develop social capital asset)

A beneficiary of the SDP should provide positive response/responses for the following criterion or a combination of criteria in order to identify him or her as one who has been able to develop its social capital asset base.

**Criterion (subjective judgments):** The following criterion or a combination of criteria should be satisfied by a beneficiary of the SDP in order to fall in  $D_{SC} = 1$ : **A or B or C or** any other combinations including **A B C**. The formation of social capital requires having networks between community members and such kind of networks should help members in the community to recover from or cope with adverse crisis. Furthermore, having relationships between community members and local government authority are also essential to the development of social capital. Such kind of relationships should be able to integrate indigenous knowledge to the development process and help community members function well to develop activities that have economic rewards.

**A:** SDP helped me to build up relationships between community members and as a result, I was able to get benefits from mobilisation of labour for my livelihood activities, sharing credits and food requirements for my family etc

**B:** SDP helped to strengthen the relationship between local government authority and me. As a result, I have a confidence to talk about my problems with local government officers (including SDP officer at my village) and therefore I think that I can find solutions within a considerable period

**C:** SDP helped to improve the commitment and dedication of members of my village for team works/social works and the SDP concerning our knowledge (indigenous knowledge) in developing common projects (i.e. rural road development, rural water and electricity projects etc) at the village level

**D:** SDP helped members in my village to abandon their drug addictions

*Multinomial logistic regression (MNLr)*

The current study employs MNLr to estimate the two models. MNLr is the extension for the binomial logistic regression when the dependent variable has more than two (unordered) categories (Asgary, et al., 2007; Chan, 2005; Cramer, 2003, p.113). Unlike the binomial logistic regression, MNLr uses one category of the dependent variable as the reference category in order to simultaneously estimate binomial logistic regressions for each outcome category in the dependent variable. In MNLr independent variables can be either numerical or categorical or both kind of variables. If the dependent variable of a model has *M* outcome categories, *M-1* MNL regressions are estimated for each outcome category in the dependent variable using one outcome category (or a level) as the reference category (Asgary, et al., 2007; Chan, 2005; Cramer, 2003, p.113).

Assuming that the log odds of each outcome category in a model are linearly related to its independent variables, a multinomial logistic regression with logit link can be represented as following:

$$\text{Log} \left( \frac{P(Y_i = m)}{P(Y_i = 4)} \right) = \text{Logit} (Z_{mi}) = \beta_m + \sum_{k=1}^K \beta_{mk} X_{ki} + \varepsilon_{mi} \dots\dots\dots 1$$

Equation 1 given above shows the log of the ratio of the probability for the *i*<sup>th</sup> household being in the outcome category (*Y<sub>i</sub> = m*) over the probability of being in the reference category (*Y<sub>i</sub> = 4*) and is a function of *X<sub>1</sub>.....X<sub>K</sub>* independent variables and an error term (*ε<sub>mi</sub>*). The error term reflects unexplained variations of each outcome category of the dependent variable. As noted earlier, *M-1* multinomial equations are estimated with the same independent variables, one for each category relative to the reference category. This means that a MNLr is not estimated for the reference category. Parameters (*β*) in equation 1 are estimated using the maximum likelihood estimation method. The other method of explaining the effect of independent variables on the probability for the *i*<sup>th</sup> household being in the outcome category *m* compared to the reference category is to use predicted probabilities as following:

$$P(Y_i = m) = \frac{\exp(Z_{mi})}{1 + \sum_{c=2}^M \exp(Z_{ci})} \dots\dots\dots 2$$

Furthermore, the probability for the  $i^{th}$  household being in the reference category can be obtained as:

$$P(Y_i = 4) = 1 - \sum_{m=1}^M P(Y_i = m) \dots\dots\dots .3a$$

Or

$$P(Y_i = 4) = \frac{1}{1 + \sum_{c=2}^M \exp(Z_{ci})} \dots\dots\dots 3b$$

*Application of multinomial logistic regression (MNL) to model 1*

The dependent variable of the model one has four categories (M = 4). I use the fourth category (the sustainable households) as the reference category of the model one in estimating the MNL. Any category can be used as the reference (base) category.

Three equations are run for model one. The following is the first equation of model one (excluding a dummy variable for financial capital):

$$\begin{aligned} \text{Log} \left( \frac{P(Y_i = m)}{P(Y_i = 4)} \right) &= \text{Logit} (Z_{mi}) = \beta_m + \beta_{m1}D_{NC_{1i}} + \beta_{m2}D_{PC_{2i}} + \beta_{m3}D_{HC_{3i}} \\ &+ \beta_{m4}D_{SC_{4i}} + \beta_{m5}Edu_{5i} + \beta_{m6}Age_{6i} + \beta_{m7}Ndepend_{7i} \\ &+ \beta_{m8}D_{Gender_{8i}} + \varepsilon_{mi} \dots\dots\dots 4 \end{aligned}$$

The second equation of model one is run only for the significant variables identified in the first equation of model 1.

$$\text{Log} \left( \frac{P(Y_i = m)}{P(Y_i = 4)} \right) = \text{Logit} (Z_{mi}) = f(\text{significant variables of the first MNL of model 1})..5$$

The following is the third equation of model one (excluding three dummy variables for natural, physical and human capital, and including a dummy variable for financial capital): The objective of the estimation of this equation was to measure the impact of the development of financial capital on a poverty condition of a household due to the inability to include financial capital variable in the first equation since there was a higher correlation between this variable and other three variables(natural, physical and human capital).



$$\text{Log} \left( \frac{P(Y_i = m)}{P(Y_i = 4)} \right) = \text{Logit} (Z_{mi}) = \beta_m + \beta_{m1} D_{FC1i} + \beta_{m2} D_{SC2i} + \beta_{m3} Edu_{3i} + \beta_{m4} Age_{4i} + \beta_{m5} Ndepend_{5i} + \beta_{m6} D_{Gender6i} + \epsilon_{mi} \dots \dots \dots .6$$

It is useful to have an understanding about how to interpret the coefficients related to the categorical and continues variables of the above regressions (equation 4, 5 and 6). First, I provide an interpretation for a coefficient related to the categorical variables. For example, the slop coefficient  $\beta_{m1}$ , related to the development of natural capital assets ( $D_{NC}$ ) in equation 4 can be interpreted as following. For the  $i^{th}$  household who was not able to develop its natural capital assets ( $D_{NC}=0$ ) compared to one who did it ( $D_{NC}=1$ ) is more likely to be in the outcome category  $m$  (i.e. extreme poor) if the sign of the  $\beta_{m1}$  were positive. That is, the log of the ratio of the probability for that household being in the outcome category (i.e. extreme poor) over the probability of being in the reference category (i.e. sustainable household) is high when the sign of the estimated coefficient for  $D_{NC}$  is positive. It also means that the odds value for  $\beta_{m1}$  is greater than one. On the other hand, if the sign of the  $\beta_{m1}$  is negative it implies that the above household is less likely to be in the outcome category  $m$  (i.e. extreme poor). For such a case the odds value for  $\beta_{m1}$  becomes less than one. Therefore, this implies that the significance of these estimated coefficients as well as their signs are very important in explaining whether the development of capital assets has affected the transition of 'the poverty status' of beneficiaries of the SDP. Based on existing theory, a positive sign from the coefficients attached to  $D_{NC}$ ,  $D_{PC}$ ,  $D_{HC}$ ,  $D_{FC}$ ,  $D_{SC}$  and  $D_{Gender}$  for all categories of model 1 and model 2 are expected. A significant positive sign from the coefficient related to  $D_{Gender}$  is also expected as females are more likely to be in lower categories (i.e. experience higher poverty levels) of the dependent variable rather than in higher categories compared to males.

Second, how to interpret coefficients related to continues variables (covariates) such as education, age and number of dependents in a family is also important to note. For example, the slop coefficient  $\beta_{m5}$ , related to the level of education (Edu) in equation 1 can be interpreted as following. For the  $i^{th}$  household with additional one years of schooling, the log of the ratio of the probability for that household being in the outcome category  $m$  (i.e extreme poor) over the probability of being in the reference category (i.e. sustainable household) increases if the sign of the estimated coefficient related to the education variable (Edu) were positive and decreases if the sign were negative. Therefore, I expect a negative sign for the above coefficient for lower categories (extreme poor and vulnerable of model 1) of the dependent variable and a positive sign for higher categories (viable of model 1). Theoretically, I also expect a positive sign from the coefficient related to the number of dependents in the family (Ndepend) as the likelihood of being in the category of extreme poor or vulnerable or viable compared to the likelihood of being in the reference category (sustainable) can be increased with the increase of number of dependents in the family. The coefficient related to the age level of households (Age) can be either positive or negative depending on the experience they obtained regarding the management of capital assets to get out of poverty.

## Model 2

The purpose of the estimation of model two is to understand how and to what extent the development of five different kinds of capital assets (i.e. natural, physical, human, financial and social capital) have affected on the four levels of poverty transition: unsuccessful, struggling, successful and most successful.

Dependent variable of model 2:

The dependent variable of model 2 also has four categories.

Category 01: Unsuccessful households

Category 02: Struggling households

Category 03: Successful households

Category 04: Most successful households

Reference category: Most successful households (Category 04)

Independent variables of model 2:

Model 2 differs from model 1 only in terms of the categories of the dependent variable. All other independent variables used for model 1 are also used for model 2. Hence, interpretations made regarding variables and related issues of model 1 are also applicable to model 2.

### *Application of multinomial logistic regression (MNL) to model 2*

Three equations are also run for the model 2. Although the categories of the dependent variable for model two are different from the categories of the dependent variable of model one, the same set of independent variables are used for model 2. Hence, the three equations specified for model 1 are also used for model 2. However, the second MNL of model 2 is estimated as a function of the significant variables identified in the first equation of model 2.

### 3.3 Qualitative method

The main objective of the use of a qualitative approach in this study is to examine how the beneficiaries themselves consider the importance of the SDP in terms of the development of their livelihoods. As noted by Bryman (2004, p.543), the use of both approaches (i.e. qualitative and quantitative) in research can provide better results than concentrating on the findings from one approach. Furthermore, the quantitative method applied in this study has some limitations in testing the second and fourth hypothesis of the study due to the qualitative nature of the answers received for many of the questions asked. Therefore, in order to realize this goal, I conducted semi-structured interviews for 17 randomly selected beneficiaries of the SDP (the interview guide of the qualitative study is given in appendix 3). These beneficiaries were selected from different DS divisions in the district. Their views are presented and analysed in the next section without any modifications. The semi-structured interview was conducted, to examine whether their views made on the SDP are contradicted with their actual lives. Furthermore, as many of the answers obtained for questions asked under the structured questionnaire in the quantitative study were qualitative in nature, that information are also used as qualitative data in the analysis in order to make the study a better one.

## Chapter 4: Results and analysis

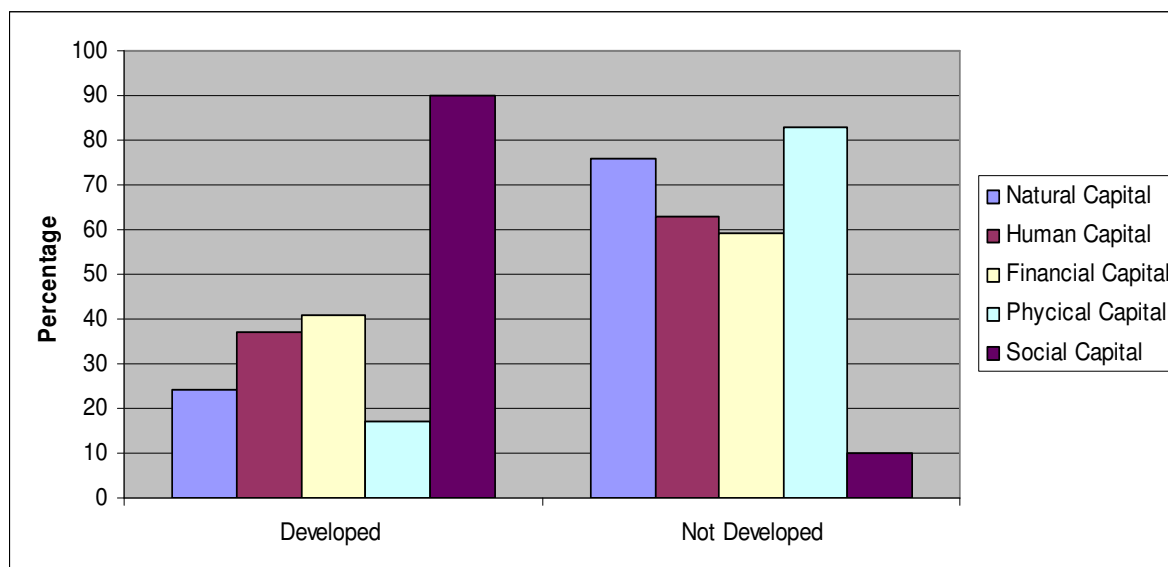
This Chapter has two sections. In the first section, the empirical findings obtained from the application of quantitative techniques are analysed to verify the validity of the first and the third hypotheses of the study. The second section analyses the results obtained from the qualitative component of the study in order to confirm the validity of the second and the fourth hypotheses.

### 4.1 Results obtained from the quantitative approach

#### 4.1.1 Preliminary results

This subsection analyses preliminary results of the survey of 170 households of the SDP.

Figure 4.1 shows the percentage of beneficiaries who were able to develop their capital assets during the period from 1995 to 2009. The figure shows that around 90 percent of households in the sample have been able to develop social capital while around 24 percent, 37 percent and 41 percent of households have been able to develop natural, human and financial capital assets respectively. The percentage of those who were able to develop physical capital is 17.



Source: Field survey on the beneficiaries of the SDP in the Ratnapura district, Sri Lanka (09.02.2009 -20.03.2009)

**Figure 4.1: Development of assets base of beneficiaries of the SDP as at 2009**

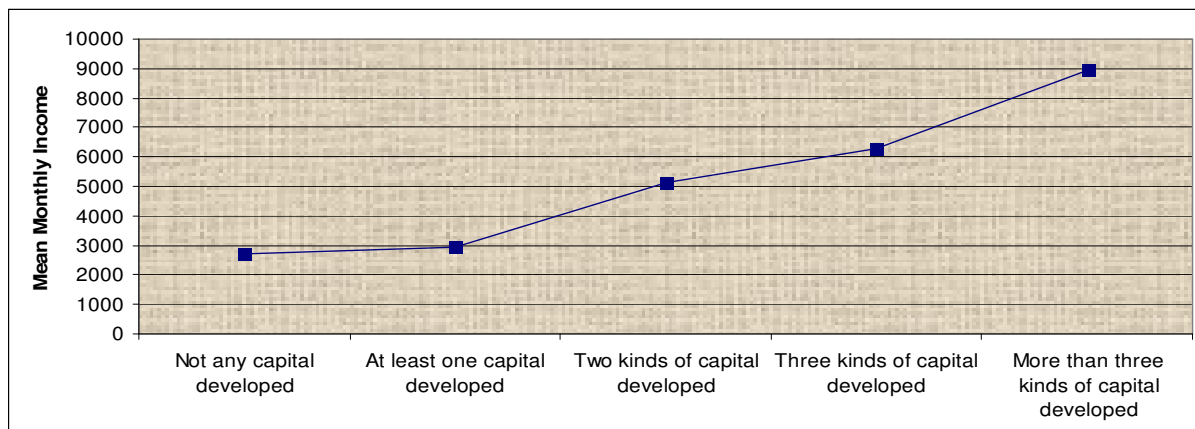
According to figure 4.1, on the whole, with the exception of the social capital component, around 30 percent of households in the sample were able to develop their capital assets during this time period. On the other hand, it means that – on average -roughly 70 percent of households within the sample were unable to develop natural, human, financial and physical capital assets. This implies that the SDP has failed to implement appropriate programmes directed towards the development of natural, human, financial and physical capital assets over the period from 1995 to 2009 as more than two thirds of households in the sample have not been able to develop those four kinds of capital assets.

Table 4.1 shows how the mean monthly income of beneficiaries of the SDP increased with the increased development of their capital assets. Households in the sample were categorised into five groups (Table 4.1) according to the method specified in Chapter 3 regarding the developments of their capital assets. The lowest mean monthly income was reported from those households who were unable to develop any kind of capital asset. There were 83 households who were able to develop one kind of capital asset and were able to earn around LKR 2940 mean income per month. The highest mean monthly income was reported from those who were able to develop more than three kinds of capital assets. In that category, there were 50 households who have earned around LKR 8964 mean income per month. When compared with total mean monthly income of households for the two time period, it has increased significantly around three times from 1995 to 2009 in nominal value. However, the standard deviation of total mean monthly income was four times larger the standard deviation of that income in 2009. This implies that there has been a higher variation of income earned by households in 2009. Interestingly, as expected from theory, mean monthly income of beneficiaries of the SDP increases with their ability to develop capital assets. This positive relationship between mean monthly income and the development of capital assets is clearly illustrated in Figure 4.2. However, the standard deviation of mean income seems to increase with the increase of mean income. This implies that the earning capacity generated from such capital developments is considerably different and limited among beneficiaries of the SDP.

**Table 4.1: Developments of capital assets and mean monthly income of beneficiaries in 2009 and total mean monthly income of beneficiaries in 1995**

Developments of Capital Assets	Mean monthly income in LKR (Sri Lankan Rupees)	Std. Deviation	Number of households
No any capital developed	2712	738.3	16
At least one capital developed	2940	946.1	83
Two kinds of capital developed	5125	1030.7	4
Three kinds of capital developed	6264	2921.5	17
More than three kinds of capital developed	8964	6177.1	50
Total mean monthly in come in 2009	5074	4444.7	170
Total mean monthly in come in 1995	1480	1104.13	170

Source: Field survey on the beneficiaries of the SDP in the Ratnapura district, Sri Lanka (09.02.2009 - 20.03.2009)



Source: Field survey on the beneficiaries of the SDP in the Ratnapura district, Sri Lanka (09.02.2009 - 20.03.2009)

**Figure 4.2: The relationship between mean monthly income and developments of capital assets of beneficiaries of the SDP as at 2009**

In order to determine whether the difference in the mean monthly income between the five kinds of capital developments from ‘no any capital developed’ to ‘more than three kinds of capital developed’ is significant, I conducted two tests: a univariate analysis of variance (UANOVA), and Post Hoc test. In the first test the following hypothesis was tested:

$$H_0 : \mu_1 = \mu_2 \dots = \mu_5$$

*Ha : at least one mean monthly income ( $\mu_i$ ) is different*

The null hypothesis ( $H_0$ ) is that the mean monthly income of beneficiaries of the SDP is not significantly different between the five different kinds of capital development gains. It further means that there is no association between capital developments and mean monthly income of the beneficiaries of the SDP.

**Table 4.2: Univariate Analysis of Variance (UANOVA) Test for status of development of capital assets and mean monthly income of households**

Dependent Variable: Monthly income in 2009

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	1247581488.8(a)	4	311895372.2	24.6	.000
Intercept	1676797952.2	1	1676797952.24	132.3	.000
Capital.Dev	1247581488.8	4	311895372.2	24.6	.000
Error	2090999746.4	165	12672725.7		
Total	7716530000.0	170			
Corrected Total	3338581235.2	169			

R Squared = .374 (Adjusted R Squared = .359)

According to the results of UANOVA in Table 4.2 above, the null hypothesis is strongly rejected even at 1% significant level (since Prob (Sig.) < Prob .01 level). This implies that, for example, the mean monthly income of a household who had developed at least one kind of capital asset is different from the mean monthly income of a household who had developed two/three/more than three kinds of capital assets. This finding implies that there is an association between capital developments and monthly mean income. However, UANOVA does not indicate which mean monthly income differs from the other. In order to determine this I conducted a Post Hoc test to identify which combination of capital development differs from the others in the case of income generation. Results in Table 4.3 reveal that the mean monthly income of those who were unable to develop any kind of capital asset is significantly different from the mean monthly income of those who were able to develop three kinds of and more than three kinds of capital assets (since Prob (Sig.) < Prob .05 level). Furthermore, mean monthly income of those who were able to develop one kind of capital asset is significantly different from mean monthly income of those who were able to develop three and more than three kinds of capital assets (since Prob (Sig.) < Prob .05 level). The results further reveal that there are no significant differences of mean monthly income between households who were able to develop two kinds of, three kinds of and more than three kinds of capital assets (since Prob (Sig.) > Prob .05 level). Additionally, results reveal that there were no significant differences in mean monthly income between households who were unable to develop any kind of capital asset, at least one kind of capital asset and two kinds of capital assets (since Prob (Sig.) > Prob .05 level). This implies the lack of appropriate efforts for the effective use of capital assets in generating income of beneficiaries of the SDP. For example, there were 90 percent of households (153 households out of 170) who were able to develop social capital in the study. Table 4.1 indicates that 83 households were able to develop only one kind of capital asset. Therefore, all or most of them are those who have developed social capital. Therefore, it seems that the SDP has failed to utilise 'social networks' (identified as social capital) to strengthen income opportunities of beneficiaries of the SDP.

The results in Table 4.3 below imply that although there is a positive association between the developments of capital assets and mean monthly income, income generation ability (or productivity) of capital assets has not been improved. This could happen, for example, due to the lack of motivation of beneficiaries towards the selection of different livelihood options. Most of the beneficiaries seem dependent on one livelihood option such as cultivation of tea or conducting a retail shop from a loan provided by the SDP. There were 50 households in the study who were able to develop more than three kinds of capital assets (Table 4.1). Most of them have developed their capital assets in the following way: for example, one who had obtained a loan had invested that loan to cultivate tea; hence natural capital was developed due to the use of that loan for the cultivation of tea in the existing land; financial capital was developed due to the increase of income capacity from the loan; human capital was developed due to the development of confidence and social capital was developed due to the increase of networks among community members. However, those households have had only one livelihood option that is cultivation of tea. Therefore, developments of capital assets do not necessarily imply differentiations of livelihood options by beneficiaries of the SDP. The lack of differentiation of livelihood options by beneficiaries causes them to keep their mean monthly income approximately at similar levels irrespective whether they were able to develop two kinds of, three kinds of or more than three kinds of capital assets.

**Table 4.3: Post Hoc test: Multiple comparisons between status of development of capital assets and monthly income of households**

Dependent Variable: Monthly income in 2009

	(I) Development of Capital	(J) Development of Capital	Mean Difference (I-J)	Std. Error	Sig.	
Tukey HSD	1	2	-228.4	972.0	.999	
		3	-2412.5	1990.0	.744	
		4	-3552.2(*)	1240.0	.037	
		5	-6251.5(*)	1022.5	.000	
		2	1	228.4	972.0	.999
	2	3	-2184.1	1822.3	.752	
		4	-3323.7(*)	947.7	.005	
		5	-6023.0(*)	637.3	.000	
		3	1	2412.5	1990.0	.744
		2	2184.0	1822.3	.752	
	3	4	-1139.7	1978.3	.978	
		5	-3839.0	1849.8	.236	
		4	1	3552.2(*)	1240.0	.037
		2	3323.7(*)	947.7	.005	
		3	1139.7	1978.3	.978	
	4	5	-2699.2	999.5	.058	
		5	1	6251.5(*)	1022.5	.000
		2	6023.0(*)	637.3	.000	
		3	3839.0	1849.8	.236	
		4	2699.2	999.5	.058	

\* The mean difference is significant at the .05 level.

1 Not any capital developed

2 At least one capital developed

3 Two kinds of capital developed

4 Three kinds of capital developed

5 More than three kinds of capital developed



**Table 4.4: Frequency and percentage distribution by poverty categories, 1995-2009**

Poverty status <sup>a</sup>	1995		2009	
	Number of households	%	Number of households	%
Extreme poor	0	0	1	.6
Vulnerable	131	77.0	124	72.9
Viable	19	11.2	20	11.8
Sustainable	20	11.8	25	14.7
Total	170	100	170	100

Source: Field survey on the beneficiaries of the SDP in the Ratnapura district, Sri Lanka (09.02.2009 -20.03.2009)

Table 4.4 shows the poverty status of beneficiaries of the SDP in 1995 and in 2009 according to the subjective range of income differences around official poverty lines for those two years. Poverty conditions of households in 1995 and in 2009 were calculated based on their monthly per capita income in those two years. Income data for 1995 was obtained from households themselves asking them to memorise their income levels when 1995. The same approach was used to obtain income figures for 2009. According to the information in Table 4.4, there were no households in the category of extreme poor in 1995. In 2009, there is a one household in extreme poor. The percentage of vulnerable households has declined marginally from 77 percent in 1995 to 73 percent in 2009. The majority of households in the sample are however still vulnerable. There is also a marginal increase of sustainable households from 12 percent in 1995 to 15 percent in 2009. This implies the fact that the SDP has only marginally contributed to the reduction of poverty over the period from 1995 to 2009. Within this context, it is useful to determine why the SDP has been slow in its poverty reduction process. One of the approaches available for this is to compare the poverty status of households and their field of employment.

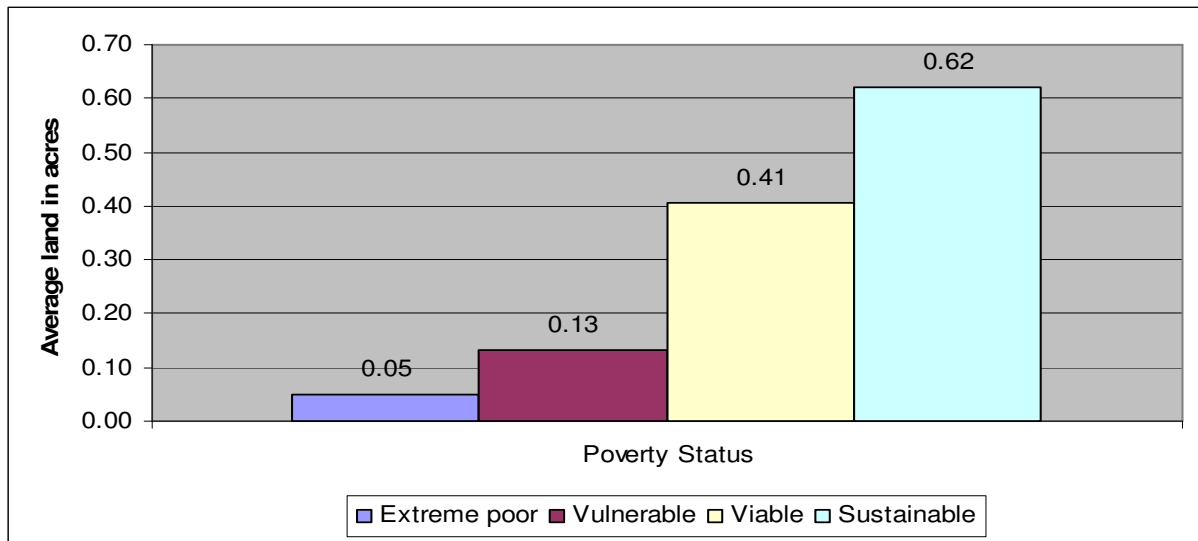
Table 4.5 provides details on the relationship between types of employment and the poverty status of beneficiaries of the SDP in 2009. Out of 170 households interviewed in the study 124 households were classified as vulnerable; with 95 households out of this sample of 124 households employed as labourers. The remaining vulnerable households employed in 16 different areas such as tea cultivation, vegetable selling, spices making and selling, conducting tea shops etc. There were only 5 households who did not have jobs. Two jobless households are in the extreme poor and vulnerable. With the notable exception of labour, the other highest employment category is tea cultivation where there are 27 households. 10 households out of those 27 households are vulnerable while another 10 are sustainable. The remaining 7 households are viable. In the survey it was confirmed that labourers did not have at least one additional livelihood activity. Therefore, it is possible to note that one of the reasons for the poor progress of the SDP in poverty alleviation process is that the SDP has failed to make avenues for the majority of its labourers to have other livelihood options rather than selling their labour. One of the other possible reasons for this poor progress of the SDP is the limited differentiation and slow growth of the chosen livelihood options by beneficiaries of the SDP.

**Table 4.5: Types of employment and the poverty status of beneficiaries of the SDP in 2009**

Type of employment	Poverty Status				Total
	Extreme poor	Vulnerable	Viable	Sustainable	
Conducting a beauty salon	0	1	0	0	1
Broom making	0	1	0	0	1
Businessman	0	1	0	0	1
Carpenter	0	0	1	2	3
Electrician	0	0	0	1	1
Selling embellishments	0	1	0	0	1
Making flower pots	0	1	0	0	1
Hair cutting	0	1	0	0	1
Ion works	0	0	0	1	1
Ion moulding	0	0	1	0	1
Jaggery selling	0	0	0	1	1
Labourer	0	95	3	0	98
Masonry	0	1	0	0	1
Owner of a poultry farm	0	1	0	0	1
Selling prepared vegetables	0	0	0	1	1
Owner of a retail shop	0	1	0	1	2
Sawyer	0	0	0	1	1
Spices making and selling	0	2	0	0	2
Selling string hoppers	0	0	0	1	1
Sweets making and selling	0	1	2	0	3
Tailor	0	0	1	0	1
Tea farming	0	10	7	10	27
Owner of a tea shop	0	1	0	0	1
Owner of a textile shop	0	1	0	5	6
Vegetable farming	0	1	3	0	4
Vegetable selling	0	3	0	0	3
Not a job	1	1	2	1	5
Total	1	124	20	25	170

Source: Field survey on the beneficiaries of the SDP in the Ratnapura district, Sri Lanka  
(09.02.2009 -20.03.2009)

However, there is an external constraint that disturbs the progress of poverty alleviation process. That is there are a large number of landless households in the SDP. This reality is clearly shown by Figure 4.3. Figure 4.3 shows the fact that the possibility to get out of the poverty increases with the increase of land ownership of households of the SDP.



Source: Field survey on the beneficiaries of the SDP in the Ratnapura district, Sri Lanka (09.02.2009 - 20.03.2009)

**Figure 4.3: The relationship between land ownership and poverty status of beneficiaries of the SDP when 2009**

Another way of representing data in Table 4.4 is to use a transition matrix (Table 4.6). The rows in Table 4.6 indicate data for 1995 while columns indicate data for 2009 related to four poverty status. Data on the diagonal of the transition matrix in Table 4.6 indicates that households whose poverty conditions remained unchanged for the two time period concerned. Therefore, the lower triangular matrix (LTM) of Table 4.6 provides negative results regarding the progress in poverty alleviation while the upper triangular matrix (UTM) shows positive results. Negative results can be highlighted as follows: a vulnerable household in 1995 has become an extreme poor in 2009; 7 viable households in 1995 have become vulnerable households in 2009; a sustainable household in 1995 has become a vulnerable household in 2009 and 5 sustainable households in 1995 have become viable households in 2009. Positive results can be highlighted as follows: 6 and 8 vulnerable households in 1995 have moved to viable and sustainable categories in 2009 respectively; 3 viable households in 1995 have moved to sustainable category in 2009. According to the data on the diagonal of the transition matrix in Table 4.6, 116 vulnerable households remained vulnerable throughout 14 years from 1995 to 2009 while 9 and 14 households remained viable and sustainable categories for the same time period respectively.

**Table 4.6: Transition between poverty categories from 1995 to 2009**

No. of households in 1995	No. of households in 2009				
	Extreme poor	Vulnerable	Viable	Sustainable	Total
Extreme poor	0	0	0	0	0
Vulnerable	1	116	6	8	131
Viable	0	7	9	3	19
Sustainable	0	1	5	14	20
Total	01	124	20	25	170

Source: Field survey on the beneficiaries of the SDP in the Ratnapura district, Sri Lanka (09.02.2009 - 20.03.2009)

Using Table 4.6, it is possible to obtain a rough indicator for the net impact of the SDP on its poverty reduction achievements. However, there are some limitations of this indicator as the impact of a movement from extreme poor to sustainable (or from sustainable to extreme poor) is larger than a movement from vulnerable to viable (or from viable to vulnerable). Therefore, a large (small) number does not necessarily represent the size of the impact. Hence, it is possible to get a rough idea about the progress of the SDP in its poverty alleviation strategies based on the following index:

**Net impact of the SDP = number of beneficiaries of the UTM - number of beneficiaries of the LTM**

**Net impact of the SDP = 17-14 = + 3**

Using the above index, the SDP has shown a positive progress in its poverty alleviation process. However, as this number (with a positive sign) is very small it implies the fact that this positive progress of the SDP is indeed marginal or negligible. The above statement is further confirmed by the fact that there are still more than 68 percent of households (116 households in number) remained in vulnerable poverty even after 14 years implementation period of the SDP.

In this scenario, it is useful to discuss how developments of the five kinds of capital assets have helped beneficiaries of the SDP to move (transit) between poverty status'. Table 4.7 provides data regarding the relationship between poverty transition and the development of capital assets.

Data in Table 4.7 reveals that 101 households out of 154 households who were able to develop social capital are still in vulnerable poverty in 2009. This illustrates the lack of proper strategies of the SDP in utilising social networks in the poverty alleviation process. Although 14 households who were able to develop social capital remain sustainable, it does not indicate that social capital itself has helped those households to be in that category. Those households have had at least two or three other capital assets such as human, financial and natural capital assets. Furthermore, Table 4.7 reveals that 11, 18 and 22 households who were able to develop natural, human and financial capital assets respectively remain also in vulnerable poverty. This implies the fact that the limited livelihood options available for these households and low productivity of their existing assets.

**Table 4.7: The relationship between poverty transition and the type and development of capital assets (1995 – 2009)**

Transition of poverty	Type of capital assets				
	Natural	Human	Financial	Physical	Social
From vulnerable to extreme poverty	0	0	0	0	0
Remains in vulnerable poverty	11	18	22	7	101
From vulnerable to viable	5	5	5	2	6
From vulnerable to sustainable	2	8	8	5	8
From viable to vulnerable	3	4	7	2	7
Remains in viable	7	7	7	1	9
From viable to sustainable	0	2	3	3	3
Remains in sustainable	11	14	14	6	14
From sustainable to vulnerable	0	0	0	0	1
From sustainable to viable	1	4	4	3	5
Total	40	62	70	29	154

Source: Field survey on the beneficiaries of the SDP in the Ratnapura district, Sri Lanka (09.02.2009 - 20.03.2009)

Data in Table 4.8 shows the relationship between the transitions of poverty and one's inability to develop capital assets. Table 4.8 once again reveals that the majority of those who were unable to develop natural (105), human (98), financial (94) and physical (109) capital assets between 1995 and 2009 remain in vulnerable poverty. Furthermore, Table 4.8 reveals that more than 100 households out of 170 were not able to develop over four kinds of capital assets. This implies that the SDP had not implemented appropriate strategies to develop those capital assets of households and as a result those households continue to be vulnerable for long periods. According to Table 4.8, the poverty condition of one household who was not able to develop any kind of capital assets has worsened as that household had moved from vulnerable to extreme poor. Overall, data in both Table 4.7 and 4.8 indicate that there is a positive association between the transitions in poverty status of a household and the ability to develop its capital assets. This does not however relate to the development of social capital. The above matter is further confirmed by inspecting data in Table 4.9 as well.

**Table 4.8: The relationship between poverty transition and the inability to develop capital assets (1995 – 2009)**

Transition of poverty	Type of capital assets				
	Natural	Human	Financial	Physical	Social
From vulnerable to extreme poverty	1	1	1	1	1
Remains in vulnerable poverty	105	98	94	109	15
From vulnerable to viable	1	1	1	4	0
From vulnerable to sustainable	6	0	0	3	0
From viable to vulnerable	4	3	0	5	0
Remains in viable	2	2	2	8	0
From viable to sustainable	3	1	0	0	0
Remains in sustainable	3	0	0	8	0
From sustainable to vulnerable	1	1	1	1	0
From sustainable to viable	4	1	1	2	0
Total	130	108	100	141	16

Source: Field survey on the beneficiaries of the SDP in the Ratnapura district, Sri Lanka (09.02.2009 - 20.03.2009)

According to Table 4.9, there are 13 households in vulnerable poverty although they were able to develop more than three kinds of capital assets. As noted earlier, this can be mainly due to heavy dependency of households on one (or very few) livelihood activities and the low productivity of existing livelihood options. Data in the second last column in Table 4.9 shows that most of the positive directions in the transition of poverty are reported from those who were able to develop more than three kinds of capital assets. This feature seems to disappear with the reduction of number of capital assets developed. There are only a few households who had developed more capital assets had showed positive directions in the transition of poverty. This result is consistent with the theoretical framework developed of the study. However, as there are many households still remained in vulnerable poverty due to the absence of such capital assets, it is possible to stress that the SDP has not achieved a significant progress in its poverty alleviation process. This issue is formally verified in the later sections of the study with application of multinomial logistic regression for two models of the study.

**Table 4.9: The relationship between poverty transition and the development of capital assets**

Transition of poverty	Development of capital assets <sup>a</sup>					Total
	1	2	3	4	5	
From vulnerable to extreme poverty	1	0	0	0	0	1
Remains in vulnerable poverty	15	79	2	7	13	116
From vulnerable to viable	0	1	0	1	4	6
From vulnerable to sustainable	0	0	0	3	5	8
From viable to vulnerable	0	0	1	3	3	7
Remains in viable	0	1	1	0	7	9
From viable to sustainable	0	0	0	1	2	3
Remains in sustainable	0	0	0	2	12	14
From sustainable to vulnerable	0	1	0	0	0	1
From sustainable to viable	0	1	0	0	4	5
Total	16	83	4	17	50	170

Source: Field survey on the beneficiaries of the SDP in the Ratnapura district, Sri Lanka (09.02.2009 -20.03.2009)

a.1 Not any capital developed; 2 At least one capital developed; 3 Two kinds of capital developed; 4 Three kinds of capital developed; 5 More than three kinds of capital developed

It is also important to discuss how the transition of poverty status differs according to the type of employment of households. Table 4.10 provides data on the relationship between type of the employment and poverty transition. Accordingly, 93 households out of 116 vulnerable households are labourers while others employed as tea farmers, sellers, etc. As revealed from the survey, main reasons for those households being in vulnerable poverty could be: they do not have land for cultivation purposes other than land available for their homes; they heavily depend on one livelihood option; and the productivity of the existing livelihood activities is very poor as they do not have an aim to go out of the SDP. Table 4.10 indicates that there are 14 households who remain in sustainable poverty. Out of these 14, 8 households are tea farmers while others employed as carpenters, electrician, and salesman etc. The reason for the 8 tea farmers being in vulnerable poverty and another 8 tea farmers being in sustainable category could be the differences of average land holding (ALH) between these two groups. That is ALH for tea cultivation of the latter group is higher (1.36 acres) than the ALH for tea cultivation of the former group (0.42 acres). The other very interesting point revealed in the survey was that few households have had one additional livelihood activities (i.e. tea cultivation) in addition to their main employment (i.e. selling vegetable). Hence, those households are in sustainable category because their capacity to earn an additional income is high compared to those who have one livelihood activity. ALH of those who had additional livelihood activities is around 0.37 in acres, which is a considerable value compared to those who hold one livelihood activity.

**Table 4.10: The type of employment and the transition of poverty**

Type of Employment	Transition of poverty <sup>a</sup>										Total
	1	2	3	4	5	6	7	8	9	10	
Conducting a beauty salon	0	1	0	0	0	0	0	0	0	0	1
Broom making	0	1	0	0	0	0	0	0	0	0	1
Businessman	0	1	0	0	0	0	0	0	0	0	1
Carpenter	0	0	0	1	0	1	0	1	0	0	3
Electrician	0	0	0	0	0	0	0	1	0	0	1
Selling embellishments	0	0	0	0	1	0	0	0	0	0	1
Making flower pots	0	1	0	0	0	0	0	0	0	0	1
Hair cutting	0	1	0	0	0	0	0	0	0	0	1
Ion works	0	0	0	0	0	0	0	1	0	0	1
Ion moulding	0	0	0	0	0	0	0	0	0	1	1
Jaggery selling	0	0	0	0	0	0	1	0	0	0	1
Labourer	0	93	1	0	1	1	0	0	1	1	98
Masonry	0	1	0	0	0	0	0	0	0	0	1
Owner of a poultry farm	0	1	0	0	0	0	0	0	0	0	1
Selling prepared vegetables	0	0	0	0	0	0	0	1	0	0	1
Owner of a retail shop	0	1	0	0	0	0	1	0	0	0	2
Sawyer	0	0	0	0	0	0	1	0	0	0	1
Spices making and selling	0	1	0	0	1	0	0	0	0	0	2
Selling string hoppers	0	0	0	0	0	0	0	1	0	0	1
Sweets making and selling	0	1	2	0	0	0	0	0	0	0	3
Tailoring	0	0	0	0	0	0	0	0	0	1	1
Tea farming	0	8	1	2	2	6	0	8	0	0	27
Owner of a tea shop	0	1	0	0	0	0	0	0	0	0	1
Owner of a textile shop	0	1	0	5	0	0	0	0	0	0	6
Vegetable farming	0	1	2	0	0	0	0	0	0	1	4
Vegetable selling	0	2	0	0	1	0	0	0	0	0	3
Not a job	1	0	0	0	1	1	0	1	0	1	5
Total	1	116	6	8	7	9	3	14	1	5	170

Source: Field survey on the beneficiaries of the SDP in the Ratnapura district, Sri Lanka (09.02.2009 -20.03.2009)

a.1 from vulnerable to extreme poverty: 2 remains in vulnerable poverty: 3 from vulnerable to viable: 4 from vulnerable to sustainable: 5 From viable to vulnerable: 6 Remains in viable: 7 from viable to sustainable: 8 Remains in sustainable: 9 from sustainable to vulnerable and 10 from sustainable to viable

It is also useful to look at to what extent loans obtained by households from the Samurdhi bank have affected their poverty transition. Table 4.11 provides data related to this matter.



**Table 4.11: Transition of poverty and effectiveness of loans to improve earning capacity**

Transition of poverty	Loans helped to improve earning capacity				Total
	Helped very much	Helped considerably	Not helped at all	Not relevant	
From vulnerable to extreme poverty	0	0	0	1	1
Remains in vulnerable poverty	18	4	4	90	116
From vulnerable to viable	4	1	0	1	6
From vulnerable to sustainable	8	0	0	0	8
From viable to vulnerable	4	1	0	2	7
Remains in viable	6	2	0	1	9
From viable to sustainable	3	0	0	0	3
Remains in sustainable	13	1	0	0	14
From sustainable to vulnerable	0	0	0	1	1
From sustainable to viable	3	1	0	1	5
Total	59	10	4	97	170

Source: Field survey on the beneficiaries of the SDP in the Ratnapura district, Sri Lanka (09.02.2009 - 20.03.2009)

Data in Table 4.11 shows that loans have helped very much for 13 households out of 14 households who remain in sustainable category while it has helped considerably for the remaining sustainable household. Furthermore, loans have helped very much for all 8 households who had moved from vulnerable to sustainable category and for 4 households who have moved from vulnerable to viable. There are also some cases in which loans have helped some households who have moved from sustainable to viable (3) and from viable to vulnerable (4). This can be mainly due to the fact that although the loans obtained helped to maintain income conditions of such households, due to additional cost of living, it is possible to have a negative direction in the overall progress. A very interesting point shown in Table 4.11 is that 18 households out of 116 vulnerable households have been benefited very much from loans given by the SDP. This can be mainly due to the fact that households had satisfied with some income generated from loans as such income helped them to maintain the existing conditions over a long period. The other very interesting point reported from Table 4.11 is that there are 90 households who had never obtained loans remain still in vulnerable poverty. Furthermore, there are 4 households who did not receive any help from loans remain in vulnerable poverty. Overall, data in Table 4.11 reveal that there is a considerable positive relationship between a loan provided by the SDP and a household's ability to move up the socio-economic ladder.

What I have discussed thus far pertains to the four kinds of poverty status identified as extreme poor, vulnerable, viable and sustainable households and causes of each poverty status. I also discussed patterns of the transition of poverty of households from 1995 to 2009 and the causes of those directions. Therefore, it is useful to categorise households based on these directions of the transition in order to examine to what extent the SDP has been successful in its poverty alleviation process during the period from 1995 to 2009. To this end, I have identified households as being ‘unsuccessful’, ‘struggling’, ‘successful’ and ‘most successful’ households based their directions between the two poverty conditions from 1995 to 2009.

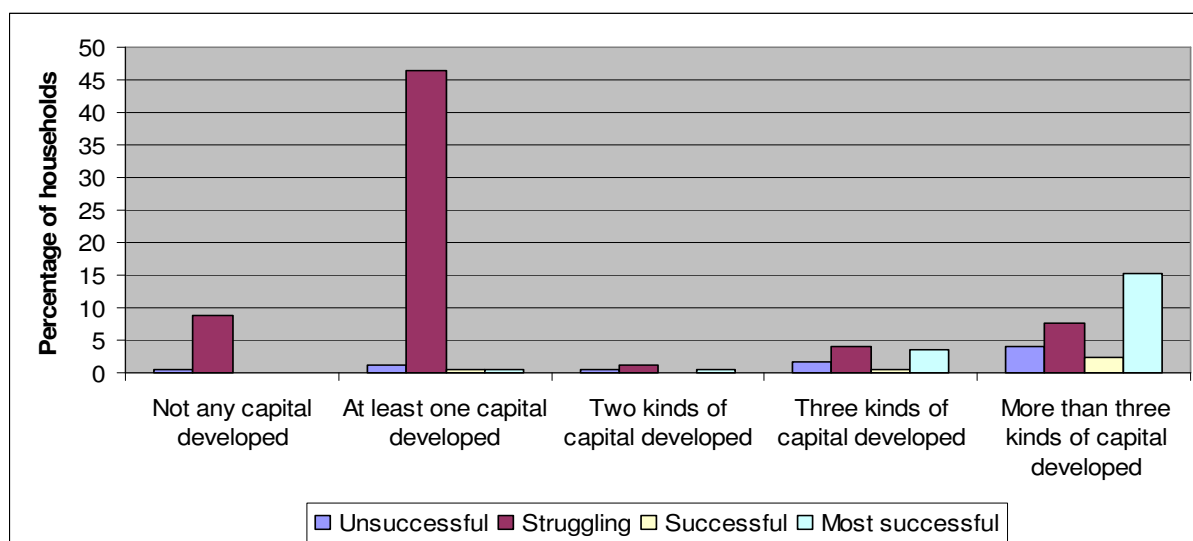
**Table 4.12: Households groups by the direction of movements of poverty status (1995-2009)**

Households group	Direction of the transition	Households in 2009	
		Number	Percentage
Unsuccessful	<b>From</b> viable/sustainable <b>to</b> vulnerable <b>or from</b> vulnerable/viable <b>to</b> extreme poor <b>or</b> remained in extreme poverty	14	8
Struggling	Remained in vulnerable	116	68
Successful	<b>From</b> extreme poverty <b>to</b> vulnerable/viable <b>or from</b> vulnerable <b>to</b> viable	6	4
Most successful	<b>From</b> extreme/vulnerable/viable <b>To</b> sustainable <b>or</b> remained in viable/sustainable	34	24
Total		170	100

Source: Field survey on the beneficiaries of the SDP in the Ratnapura district, Sri Lanka (09.02.2009 - 20.03.2009)

Table 4.12 shows how households were categorised into four groups mentioned above. According to the above categorisation of households shown in Table 4.12, there are 68 percent of households who are still struggling to get out of poverty while 8 percent of households have been ‘unsuccessful’ in their attempts to achieve higher living standards. However, there are 20 percent and 4 percent of households who have been ‘most successful’ and ‘successful’ in their poverty alleviation attempts respectively. As the sum of the percentages of successful (4) and most successful households (24) exceeds the percentage of unsuccessful households (8) in the study, there is a possibility to say that the SDP has shown a positive progress in its poverty alleviation process over 14 years period from 1995 to 2009. However, as there are a large percentage of households (68) are still ‘struggling’ to become ‘successful’ or ‘most successful’, it is increasingly more difficult to argue that, on the whole, the SDP has been successful in its strategies/policies to alleviate poverty in the Ratnapura district during 14 years of its implementation period.

In this background, it is also useful to discuss how the developments of capital assets of households have helped them to reduce their poverty levels. Figure 4.7 shows that around 46 percent of households who were able to develop at least one kind of capital assets fall into the category of ‘struggling’.



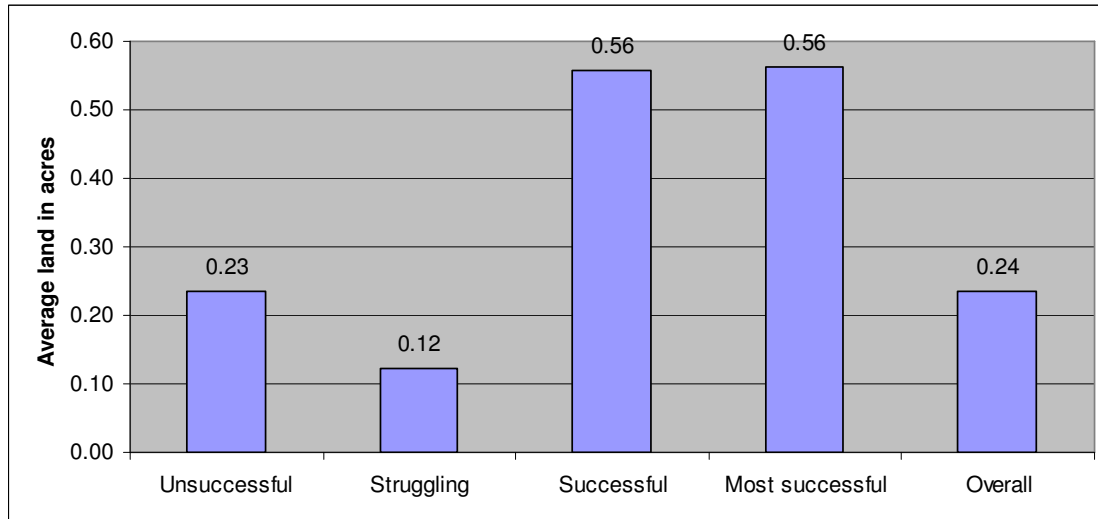
Source: Field survey on the beneficiaries of the SDP in the Ratnapura district, Sri Lanka (09.02.2009 - 20.03.2009)

**Figure 4.4: The relationship between developments of capital assets and the success in poverty alleviation**

According to Figure 4.4, 9 percent of households who were unable to develop any kind of capital asset are ‘struggling’ to move out of poverty. This implies that those who have developed less than one capital asset have fewer chances to improve their living conditions. Therefore, as the SDP has been unable to help those households to develop more than one capital asset, it implies a failure of the SDP in its strategies to alleviate poverty of its beneficiaries. However, there are 4 and 8 percent of struggling households who have developed three capital assets and more than three kinds of capital assets respectively. As noted earlier, this is an indication of the low productivity of the existing capital assets and the lack of motivation for households to have different livelihood options with an aim to reach higher living standards. Furthermore, this implies households’ willingness to stay in the SDP as their self-reliance has not been improved to utilize the existing resources effectively to reach higher living standards. Interestingly, Figure 4.4 shows that 15 percent of households who have been able to develop more than three kinds of capital assets have been ‘most successful’ in the poverty reduction process. On the whole, both theoretically and empirically, it seems that there is an association between the developments of capital assets and a household’s success in the poverty reduction process. However, this does not mean that the SDP has shown positive progress in managing the above relationship in appropriate ways. This issue is addressed in the following section.

Figure 4.5 shows the relationship between land ownership and success in the poverty reduction process of households of the SDP. It is very clear that there is a positive association between land ownership and a household’s success in the poverty reduction process. The average land ownership in acres for successful and most successful households is around 0.56 acres while it is for struggling and unsuccessful households are 0.12 acres and 0.23 acres respectively. The average land ownership for struggling households has been a low value compared to others. This

was mainly due to the fact that 93 households out of 116 households in that category are labourers whose average land ownership was very low (0.10 acres).



Source: Field survey on the beneficiaries of the SDP in the Ratnapura district, Sri Lanka (09.02.2009 -20.03.2009)

**Figure 4.5: The relationship between household groups and the average land ownership**

The main objective of the analysis of preliminary results was to find some background information supporting to the first and third hypotheses of the study based on the data for 170 beneficiaries of the SDP. To accomplish this goal I used a transition matrix, a UANOVA test, a Post Hoc test, and various figures and tables which contained data on income levels of households, poverty status and the causes of poverty. The results discussed so far confirmed that there is a positive association between development of capital assets and a household's success in poverty reduction process. The results also revealed that more than two thirds of households of the SDP in Ratnapura district are still in vulnerable poverty or in a struggling position. Furthermore, it was revealed that the contribution of social capital to poverty reduction process seemed negligible. Therefore, the SDP has not showed a significant progress in its poverty reduction process over 1995-2009. However, this is further formally confirmed by the application of multinomial logistic regression (MNL) method in the next section. The objective of the estimation of MNL is to find evidence to confirm the validity of both hypotheses noted above through identifying a meaningful relationship between poverty conditions of a household and development of capital assets.

#### 4.1.2 Multinomial logistic regression

Two models were constructed to capture the possible relationships between developments of capital assets and level of poverty of a household of the SDP. The first model concerned whether there is a relationship between development of capital assets and ‘poverty status’ of a household while the second model attempted to derive an association between the development of capital assets and a ‘household’s success’ in its poverty reduction process. Three multinomial logistic regressions were run for each model.

The results of model 1

The purpose of the estimation of this model was to understand how and to what extent the developments of five kinds of capital assets (natural, physical, human, financial and social capital) have affected on four kinds of poverty status of a household of the SDP.

Dependent variable (Y):

Dependent variable has four ‘poverty categories’ (poverty conditions) ( $m$ );

Category 1: Extreme poor

Category 2: Vulnerable households

Category 3: Viable households

Category 4: Sustainable households

Reference category: Sustainable households (category 4)

Independent variables:

$D_{NC} = 1$  (Those who have been able to develop natural capital asset)  
0 (Those who have not been able to develop natural capital asset)

$D_{PC} = 1$  (Those who have been able to develop physical capital asset)  
0 (Those who have not been able to develop physical capital asset)

$D_{HC} = 1$  (Those who have been able to develop human capital asset)  
0 (Those who have not been able to develop human capital asset)

$D_{FC} = 1$  (Those who have been able to develop financial capital asset)  
0 (Those who have not been able to develop financial capital asset)

$D_{SC} = 1$  (Those who have been able to develop social capital asset)  
0 (Those who have not been able to develop social capital asset)

Edu = Years of education  
Age = Age level  
Ndepend = number of dependents in the family  
D<sub>gender</sub> = 0 Female household head  
1 Male household head

Three multinomial logistic regressions were run for model 1.

The **first** MNLR of model 1 was a regression of poverty conditions of households on eight independent variables of model 1. The functional form of the first MNLR of model 1 is given below.

$$\text{Log} \left( \frac{P(Y_i = m)}{P(Y_i = 4)} \right) = f(D_{NC_i}, D_{PC_i}, D_{HC_i}, D_{SC_i}, Edu_i, Age_i, Ndepend_i, D_{Gender_i})$$

The **second** MNLR of model 1 was a regression of poverty conditions of households on four significant variables selected from the first equation of model 1. The functional form of the second MNLR of model 1 is given below.

$$\text{Log} \left( \frac{P(Y_i = m)}{P(Y_i = 4)} \right) = f(D_{NC_i}, D_{PC_i}, D_{HC_i}, Edu_i)$$

The **third** MNLR of model 1 was a regression of poverty conditions of households on six independent variables of model 1. This equation is different to equation one of model 1 since this equation attempted to measure the impact of financial capital by overcoming multicollinearity problem (higher correlation between independent variables- Pindyck and Rubinefld 1998) of the equation. There was a higher correlation between development of financial capital variable and the development of other three capital assets (natural, physical and human capital). Therefore, to overcome this problem, I estimated this equation by dropping categorical variables related to the development of natural, physical and human capital assets. The functional form of the third MNLR of model 1 is given below.

$$\text{Log} \left( \frac{P(Y_i = m)}{P(Y_i = 4)} \right) = f(D_{FC_i}, D_{SC_i}, Edu_i, Age_i, Ndepend_i, D_{Gender_i})$$

The results of the first MNL of model 1 are shown in Table 4.13 (a detail description of results is given in appendix 4). Table 4.13 indicates that the estimates attached to developments of natural, physical and human capital assets as well as the level of education of households are statistically significant at 0.05 level in the regression for 'vulnerable poverty' of the dependent variable. In the multinomial analysis, the coefficient of the regression is the log of the ratio of the probability of choosing one category over the probability of choosing the reference category and the anti-log of the ratio is called the odds ratio. The reference category is the sustainable category in Table 4.13. Accordingly, the odds ratio (i.e. the last column in Table 4.13) in the regression for 'vulnerable poverty' for those who were unable to develop natural capital is around 5.4. This indicates that the probability of those households who were unable to develop natural capital being in the vulnerable poverty category is five times larger than the probability of those same households being in the sustainable poverty category. The odds ratio of those who were unable to develop physical capital is around 5.04 as well. This indicates that the probability of households being in the vulnerable poverty category is five times larger for those who were unable to develop their physical capital assets than for those households who did. The highest significant odds ratio (25.69) is reported from those who were unable to develop human capital assets. This implies that the probability of being in the vulnerable poverty category is more than twenty five times larger than the probability of being in the sustainable poverty category for those households who were unable to develop their human capital assets (compared to those who did it). On the other hand, the odds ratios for those who were able to develop above three kinds of capital assets can be obtained from reciprocal of above three odds ratios. Accordingly, odds ratios for those who were able to develop natural, human and physical capital assets are around 0.2, 0.2 and 0.04 respectively. This indicates that the probabilities of being in the vulnerable poverty category for those who were able to develop above three kinds of capital assets are five times and twenty five times less than relative to the probabilities of being in the sustainable poverty category for the same households. These findings illustrate the importance of the development of capital assets in order to alleviate the poverty of households of the SDP. It further implies that the more (less) chances to develop natural, physical and human capital assets, fewer (more) chances are for households to fall in vulnerable poverty. The development of human capital in the form of building confidence of households is the most influential variable in poverty reduction process of the SDP as those who were unable to develop it are more prone to be in vulnerable poverty. On the contrary, those who were able to develop human capital have the least probability to be in vulnerable poverty compared to those who developed natural and physical capital assets.

The significance of the education variable with a negative sign in explaining vulnerable poverty indicates that when education levels of households increased, there is a less chance for them to be in vulnerable poverty. However, this variable seems significant with a negative sign at 0.10 levels in the determination of viable poverty. It means that when the education levels of households increase, there is a less chance for them to be in viable poverty relative to the probability for them to be in sustainable poverty. It is true that when the level of education of a household increase, there are more chances for the household to become 'sustainable' than to become 'viable'.

**Table 4.13: Parameter estimates of the first MNLR of model 1**

Poverty Status	Explanatory variable	Estimates ( $\hat{\beta}_{mk}$ )	Significance of estimates (Prob. value)	Odds ratio Exp ( $\hat{\beta}_{mk}$ )
<b>Extreme poor</b>	Intercept	-70.545	.999	
	[D <sub>NC</sub> =.00]	8.357	1.000	4260.6
	[D <sub>NC</sub> =1.00]			
	[D <sub>PC</sub> =.00]	14.040	.999	1251302.7
	[D <sub>PC</sub> =1.00]			
	[D <sub>HC</sub> =.00]	8.235	1.000	3769.2
	[D <sub>HC</sub> =1.00]			
	[D <sub>SC</sub> =.00]	44.613	.998	2.372E+19
	[D <sub>SC</sub> =1.00]			
	Edu	3.329	.999	27.908
	Age	.103	1.000	1.108
	NDepends	-12.644	.997	3.23E-006
	[Hgender]	0.078	1.000	1.081
<b>Vulnerable</b>	Intercept	-1.660	.556	
	[D <sub>NC</sub> = <b>.00</b> ]	<b>1.695</b>	<b>.028</b>	<b>5.444</b>
	[D <sub>NC</sub> = <b>1.00</b> ]			
	[D <sub>PC</sub> = <b>.00</b> ]	<b>1.617</b>	<b>.046</b>	<b>5.037</b>
	[D <sub>PC</sub> = <b>1.00</b> ]			
	[D <sub>HC</sub> = <b>.00</b> ]	<b>3.246</b>	<b>.004</b>	<b>25.699</b>
	[D <sub>HC</sub> = <b>1.00</b> ]			
	[D <sub>SC</sub> =.00]	15.447	.998	5111555.4
	[D <sub>SC</sub> =1.00]			
	<b>Edu</b>	<b>-.340</b>	<b>.040</b>	<b>.712</b>
	Age	.057	.179	1.059
	NDepends	-.033	.891	.967
	[Hgender]	.273	.698	1.313
<b>Viable</b>	Intercept	.791	.797	
	[D <sub>NC</sub> =.00]	-.253	.756	.777
	[D <sub>NC</sub> =1.00]			
	[D <sub>PC</sub> =.00]	.385	.633	1.469
	[D <sub>PC</sub> =1.00]			
	[D <sub>HC</sub> =.00]	1.374	.270	3.952
	[D <sub>HC</sub> =1.00]			
	[D <sub>SC</sub> =.00]	-2.902	.	.055
	[D <sub>SC</sub> =1.00]			
	<b>Edu</b>	<b>-.295</b>	<b>.085</b>	<b>.744</b>
	Age	.051	.278	1.053
	NDepends	-.244	.361	.784
	[Hgender]	-1.004	.194	.367

(a) The reference category is: Sustainable. Average Pseudo R-Square is **.54**



Table 4.13 indicates that the developments of natural, physical and human capital as well as the level of education of households have significant meaningful relationship in the regression for 'vulnerable poverty' of the dependent variable. This means that only these variables in the first equation of model 1 help to determine variations of 'vulnerable poverty' of households. It implies that the activities of the SDP have not been directed at the poor to develop their natural, physical, human and social capital assets in a way that households can move at least from vulnerable to viable in the long run. Instead, developments of natural, physical and human capital assets achieved over the past 14 years seem to help beneficiaries of the SDP to maintain their 'vulnerable poverty' status and not improve in the long run. In other words, as no evidence received regarding a meaningful relationship between developments capital assets and viable poverty, it implies the fact that the SDP has been unsuccessful in its aim to assure its beneficiaries are strong enough with a developed capital base to alleviate their chronic poverty conditions (especially 'vulnerable poverty').

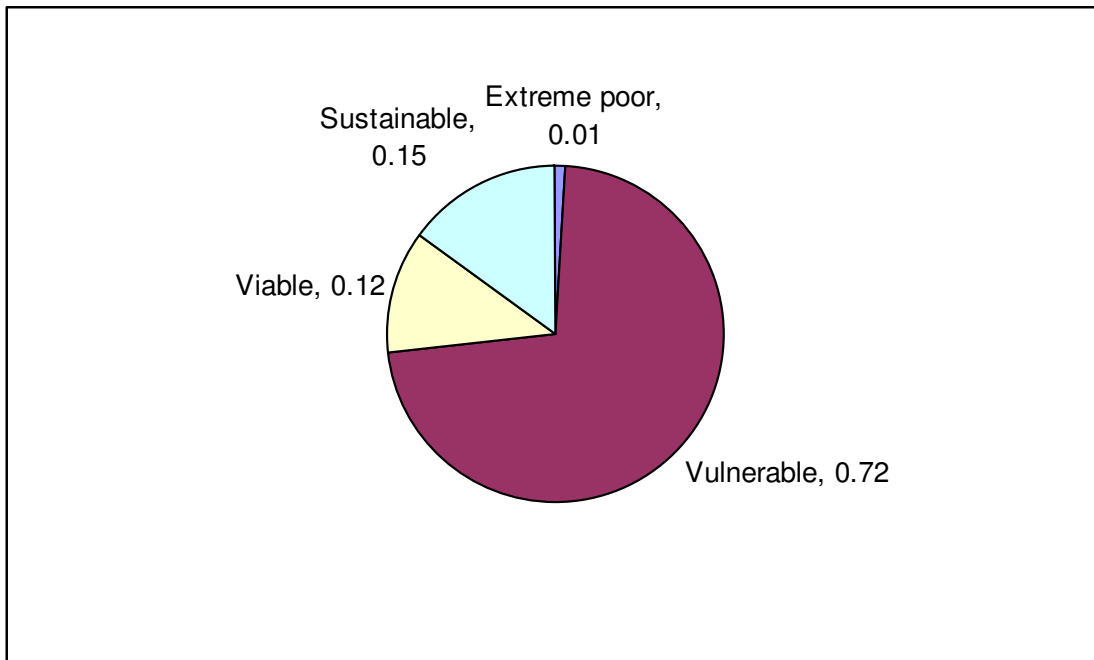
The results of the second MNLR estimated only for significant variables from the first MNLR are given in Table 4.14 (a detail description of results is given in appendix 5). The main objective of the estimation of the second MNLR was to examine the probabilities of each household falling within each of the four poverty categories. The reason for the selection of only significant variables was to improve the confidence about the accuracy of probabilities obtained from the original model. The results of the analysis are very similar to those given in Table 4.13. However, although the predictive power of the second MNLR has reduced from 54% to 47% (based on the R-Squared figure), the significance of coefficients attached to the natural, physical and human capital assets and level of education in the regression for 'vulnerable poverty' and level of education in the regression for 'viable poverty' are marginally improved. Once again, although coefficients attached to those three capital assets in the regression for 'extreme poor' are non-significant they hold theoretically expected signs. The coefficient attached to the level of education of that category is non-significant and not holding a correct sign as well. However, all the 'significant coefficients' bear the expected signs.

**Table 4.14: Parameter estimates of the second MNLR of model 1**

Poverty Status	Explanatory variable	Estimates ( $\hat{\beta}_{mk}$ )	Significance of estimates (Prob. value)	Odds ratio Exp ( $\hat{\beta}_{mk}$ )	
<b>Extreme poor</b>	Intercept	-54.542	.996		
	[D <sub>NC</sub> =1.00]	17.889	.998	58790934	
	[D <sub>PC</sub> =1.00]	17.884	.	58481796	
	[D <sub>HC</sub> =1.00]	19.166	.998	21068784.	
	Edu	.062	.905	1.064	
	Intercept	1.227	.461		
	[D <sub>NC</sub> =1.00]	<b>1.681</b>	<b>.025</b>	<b>5.371</b>	
<b>Vulnerable</b>	[D <sub>PC</sub> =1.00]	<b>1.788</b>	<b>.022</b>	<b>5.980</b>	
	[D <sub>HC</sub> =1.00]	<b>3.290</b>	<b>.003</b>	<b>26.856</b>	
	Edu	<b>-.376</b>	<b>.019</b>	<b>.687</b>	
	<b>Viable</b>	Intercept	2.305	.168	
		[D <sub>NC</sub> =1.00]	-.381	.629	.683
		[D <sub>PC</sub> =1.00]	.483	.536	1.622
		[D <sub>HC</sub> =1.00]	1.595	.188	4.929
Edu		<b>-.327</b>	<b>.047</b>	<b>.721</b>	

The reference category is: Sustainable. Average Pseudo R-Square is **.47**

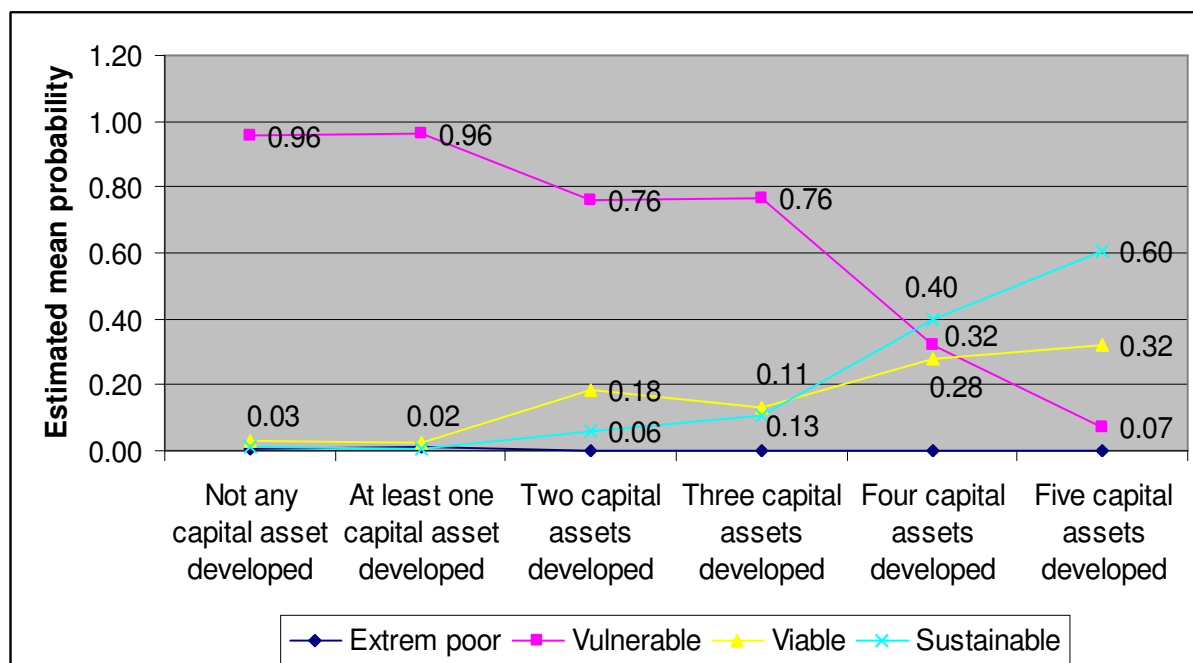
Figure 4.6 shows the mean probability of a household to fall within each poverty status. The estimated second MNLR was used to obtain probabilities for each household to fall within each poverty category. In the next step, the mean probabilities were calculated by dividing the sum of the 'estimated response probabilities' related to relevant poverty status by the 170 households in the sample.



Source: Author's calculations based on the 'estimated response probabilities' of the second MNL of model 1

**Figure 4.6: The mean probability of a household to fall in a poverty condition**

Figure 4.6 clearly shows that the probability of a household falling in the vulnerable poverty is very high (0.72). However, it seems that the probability of falling in extreme poor is very low for a household in the sample meaning that there are fewer chances of being in extreme poverty for households in the SDP. This is mainly due to the fact that the study sample had only one household in the extreme poverty. On the other hand, the mean probabilities of a household to fall within the sustainable or viable poverty conditions are 15 percent and 12 percent respectively. This implies that avenues created so far by the SDP for its beneficiaries to reduce their poverty status is insufficient. In addition, as these mean probabilities were calculated based on probabilities obtained from a MNL estimated to capture the relationship between developments of capital assets and poverty status of households, reporting a higher mean probability (0.73) to fall in vulnerable poverty for households is therefore theoretically a good indicator for the poor success of the SDP in its poverty reduction process. This implies that, on the whole, the SDP has not been successful in implementing its strategies to reduce especially vulnerable poverty of its beneficiaries as those are at the risk of being in vulnerable poverty over in the long run. Leaving conditions of these households seem move up and down around the poverty line over a long period. Hence, as the probability to fall in vulnerable poverty is higher compared to the probability to be in viable or sustainable conditions for households, they could be victims of any kind of idiosyncratic shocks as well. These results are very much consistent with results obtained from the previous findings of the study as well.



Source: Author's calculations based on the 'estimated response probabilities' of the second MNL of model 1

**Figure 4.7: The relationship between development of capital assets and the mean probability of a household to fall in a poverty condition**

Figure 4.7 shows the relationship between the development of capital assets and the mean probability of a household to fall in a poverty status (individual profile plots are given in appendix 6). Results in Figure 4.7 are based on the following main two assumptions. First, it was revealed that households who had developed more than two capital assets had also developed financial capital. Therefore, the development of financial capital was not included in the second MNL of model 1 due to its higher correlation with natural, physical and human capital assets. However, it was assumed that the estimated equation captured the impact of development of financial capital on poverty status of households due to its higher correlation with other three capital assets noted above. Second, it was assumed that the level of education (Edu) of households had made an equal impact on the four poverty categories. Figure 4.7 shows that there is less probability of being in vulnerable poverty for a household who tends to develop more capital assets. However, there is more probability of being in viable or sustainable poverty for such a household. That is there is a negative relationship between the probability of households to fall in a higher poverty status (vulnerable poverty) and developments of their capital assets while there is a positive relationship between the probability of households to fall in low poverty status (viable and sustainable) and developments of capital assets.

As it is important to compare this probability data with number of households in each asset category, I show those data in the following table for an easy comparison.

**Table 4.15: Classification of households based on the development of capital assets**

The number of assets developed	Number of households	Percent
Not any capital asset developed	17	10
At least one capital assets developed	83	49
Two capital assets developed	1	1
Three capital assets developed	15	8
Four capital assets developed	48	28
Five capital assets developed	6	4
Total	170	100

Source: Field survey on the beneficiaries of the SDP in the Ratnapura district, Sri Lanka (09.02.2009 -20.03.2009)

Figure 4.7 reveals that those who were unable to develop any capital asset (10 percent of households in the sample-Table 4.15) had the highest probability (0.96) of falling into vulnerable poverty. However, this probability remains unchanged although a 49 percent of households were able to develop one capital asset (Table 4.15). As these 49 percent of households had developed only social capital, the contribution of social capital to the poverty alleviation process seems negligible. According to Figure 4.7, the mean probability of households being in vulnerable poverty has declined by 0.20 points from 0.96 to 0.76 with the increase in their ability to develop up to three capital assets. However, as the sum of percentages of households in those four categories is 68 percent (Table 4.15), it implies that there is still a higher risk for such a large percentage of beneficiaries of the SDP to live in vulnerable poverty. On the other hand, there are very less probabilities for those 68 percent of households to be in viable (0.13) and sustainable poverty (0.11) conditions. This poor progress in poverty reduction can be mainly due to the following reasons: an insignificant contribution from the development of social capital; absence of more than one livelihood options; poor productive use of existing capital assets and low land ownership.

Furthermore, 28 percent of households who had developed four capital assets (Table 4.15) show a significant decline of probability of being in vulnerable poverty by 0.44 points from 0.76 to 0.32 while there is a significant increase in the probability for the same households being in sustainable and viable poverty conditions. The probability for those households being in sustainable poverty has increased by 0.27 points from 0.13 to 0.40 while it is for the households being in viable poverty has increased by 0.21 points from 0.11 to 0.28. Therefore, it seems that 28 percent of households who had developed four capital assets are more likely to be in sustainable poverty as the probability for those households being in that category (0.40) is larger than the probability of being in vulnerable (.32) or viable (0.28) poverty. This is the turning point of poverty reduction process of the SDP where the probability of households to fall in sustainable poverty dominates the probability of households to fall in vulnerable poverty. However, the probability of this turning point is somewhat a low value (around 0.40) for

households to fall in sustainable poverty while there is still a considerable probability for the same households to fall in vulnerable poverty (around 0.32) as well. The same reasons discussed before can affect households to have such a considerable probability for being in vulnerable poverty. However, on average, 28 percent of households of the SDP who had developed four capital assets have a higher probability (0.72) to be in a condition between viable and sustainable poverty any way. Furthermore, Figure 4.7 shows that around 3.5 percent of households who had developed all capital assets (Table 4.15) show the least probability to be in vulnerable poverty (0.07). The probability for the same households being in sustainable poverty has increased by 0.20 points from 0.40 to 0.60 while that is for households being in viable poverty remain unchanged around 0.32. However, although households in this category show the highest probability to be in sustainable poverty (0.60), it does not imply that the SDP has succeeded in developing livelihood of its beneficiaries as the percentage of households in that category is 3.5, which is a very small percentage.

**Table 4.16: Parameter estimates of the third MNLR of model 1**

Poverty Status	Explanatory variable	Estimates ( $\hat{\beta}_{mk}$ )	Significance of estimates (Prob. value)	Odds ratio Exp ( $\hat{\beta}_{mk}$ )
<b>Extreme poor</b>	Intercept	-56.615	.998	
	[DFC=.00]	32.136	.998	9E+013
	[DFC=1.00]		.	.
	[DSC=.00]	28.929	.999	4E+012
	[DSC=1.00]		.	.
	Edu	3.257	.999	25.976
	Age	.123	1.000	1.131
	NDepends	-12.834	.997	2.67E-006
	[Hgender]	.732	1.000	2.080
<b>Vulnerable</b>	Intercept	-.286	.910	
	[DFC=.00]	19.803	.995	398571623.7
	[DFC=1.00]			
	[DSC=.00]		1.000	1.365
	[DSC=1.00]	.311		
	<b>Edu</b>	<b>-.291</b>	<b>.059</b>	<b>.748</b>
	<b>Age</b>	<b>.067</b>	<b>.092</b>	1.069
	NDepends	-.115	.587	.891
	[Hgender]	.263	.685	1.301
<b>Viable</b>	Intercept	.160	.955	
	[DFC=.00]	17.336	.995	33812490.00
	[DFC=1.00]			
	[DSC=.00]	-18.569	.	8.62E-009
	[DSC=1.00]			
	Edu	-.239	.146	.787
	Age	.058	.193	1.059
	NDepends	-.287	.238	.751
	[Hgender]	-.901	.216	.406

(a) The reference category is: Sustainable. Average Pseudo R-Square is .47

Table 4.16 shows that the coefficient attached to the development of financial capital is not significant for any of the poverty status. It means that it is not possible to find a meaningful relationship between the development of financial capital and a poverty condition of a household. Table 4.16 shows that only the level of education and the age of households are statistically significant in the regression for vulnerable poverty. The significance of the coefficient attached to the level of education means that the probability of being in the vulnerable poverty category decreases with the increase of additional years of schooling of households relative to the probability of those households being in sustainable poverty category. The statistical significance of the estimator of age means that the probability to fall in the vulnerable poverty category increases with aging of households relative to those households being in sustainable poverty. Although coefficients attached to development of financial and social capital assets in regressions for extreme poor category and vulnerable poverty category were insignificant they hold theoretically expected signs.

#### The results of Model 2

The purpose of the estimation of model 2 was to find out how and to what extent the developments of five kinds of capital assets (i.e. natural, physical, human, financial and social capital) have had on the success of a household who had moved between the two poverty conditions over 1995-2009.

Dependent variable (Y):

Dependent variable has four 'household groups' ( $m$ );

Category 1: Unsuccessful households

Category 2: Struggling households

Category 3: Successful households

Category 4: Most successful households

Reference category: Most successful households (category 4)

Independent variables of model 2 are same as those of model 1.

Three multinomial logistic regressions were also run for model 2.

The **first** MNLR of model 2 was a regression of household categories on eight independent variables of model 2. The functional form of the first MNLR of model 2 is given below.

$$\text{Log} \left( \frac{P(Y_i = m)}{P(Y_i = 4)} \right) = f(D_{NC_i}, D_{PC_i}, D_{HC_i}, D_{SC_i}, Edu_i, Age_i, Ndepend_i, D_{Gender_i})$$

The **second** MNLN of model 2 was a regression of household categories on four significant variables selected from the first equation of model 2. The functional form of the second MNLN of model 2 is given below.

$$\text{Log} \left( \frac{P(Y_i = m)}{P(Y_i = 4)} \right) = f(D_{NC_i}, D_{PC_i}, D_{HC_i}, Edu_i)$$

The **third** MNLN of model 2 was a regression of household categories on six independent variables. The functional form of the third MNLN of model 2 is given below.

$$\text{Log} \left( \frac{P(Y_i = m)}{P(Y_i = 4)} \right) = f(D_{FC_i}, D_{SC_i}, Edu_i, Age_i, Ndepend_i, D_{Gender_i})$$

The results of the first MNLN of model two are shown in Table 4.17 (a detail description of results is given in appendix 8). The model two differs from model one regarding only from the dependent variable. The dependent variable of model two has four ‘household groups’ categorised based on their path of the transition between the two poverty conditions over the period 1995-2009. But the dependent variable of model one included poverty conditions of households categorised based on income data in 2009. Hence, the objective of the use of a new dependent variable was to examine whether there was a meaningful relationship between the developments of capital assets and households’ movements between the two poverty conditions over the period from 1995 to 2009. According to average Pseudo R-Square in Table 4.17, predictive power of the estimated regression is somewhat high (0.52).

The results in Table 4.17 show that only the coefficient attached to the development of human capital in the regression for ‘unsuccessful’ household group is statistically significant. The odds ratio for those who were unable to develop human capital is 6.137. This implies that the probability of unsuccessfully improving their poverty position is more than six times larger relative to the probability to be most successful in improving their poverty position for households who were unable to develop human capital asset compared to those who did it. On the other hand, the odds ratio for those who had developed human capital is 0.16 meaning that the probability of unsuccessfully improving their poverty position is less than six times the probability to be successful in improving their poverty position for those households who had developed human capital asset. Once again this indicates the importance of developing human capital to eradicate poverty. However, coefficients attached to other capital assets in the regression for ‘unsuccessful’ household group bear theoretically expected signs although they are not statistically significant at any levels.



**Table 4.17: Parameter estimates of the first MNLR of model 2**

Households group (a)	Explanatory variable	Estimates ( $\hat{\beta}_{mk}$ )	Significance of estimates (Prob. value)	Odds ratio Exp ( $\hat{\beta}_{mk}$ )
<b>Unsuccessful</b>	Intercept	-7.490	.024	
	[DNC=.00]	1.082	.211	2.949
	[DNC=1.00]			
	[DPC=.00]	.296	.750	1.344
	[DPC=1.00]			
	<b>[DHC=.00]</b>	<b>1.820</b>	<b>.059</b>	<b>6.173</b>
	<b>[DHC=1.00]</b>			
	[DSC=.00]	16.878	.997	21391171
	[DSC=1.00]			
	Edu	.241	.221	1.273
	Age	.068	.130	1.070
NDepends	-.258	.337	.773	
[Hgender]	1.128	.165	3.091	
<b>Struggling</b>	Intercept	-3.218	.180	
	<b>[DNC=.00]</b>	<b>1.917</b>	<b>.006</b>	<b>6.798</b>
	<b>[DNC=1.00]</b>			
	<b>[DPC=.00]</b>	<b>1.655</b>	<b>.036</b>	<b>5.233</b>
	<b>[DPC=1.00]</b>			
	<b>[DHC=.00]</b>	<b>2.569</b>	<b>.001</b>	<b>13.047</b>
	<b>[DHC=1.00]</b>			
	[DSC=.00]	15.925	.997	8243467.1
	[DSC=1.00]			
	<b>Edu</b>	<b>-.204</b>	<b>.065</b>	<b>.815</b>
	Age	.028	.465	1.028
NDepends	.256	.237	1.292	
[Hgender]	.751	.235	2.120	
<b>Successful</b>	Intercept	.356	.947	
	[DNC=.00]	-1.861	.206	.155
	[DNC=1.00]			
	[DPC=.00]	-.723	.538	.485
	[DPC=1.00]			
	[DHC=.00]	.529	.732	1.697
	[DHC=1.00]			
	[DSC=.00]	-.119	.	.888
	[DSC=1.00]			
	Edu	-.238	.232	.788
	Age	.055	.491	1.056
NDepends	-.655	.195	.519	
[Hgender]	-1.399	.340	.247	

(a) The reference category is: Most successful. Average Pseudo R-Square is **.52**

The results in Table 4.17 further reveal that parameter estimates of the developments of natural, physical and human capital assets are strongly significant in explaining variations of the 'struggling' position. All significant coefficients attached to capital assets for the regression of the 'struggling' group bear theoretically expected signs. The odds ratio attached to the development of natural capital for the 'struggling' poverty group is 6.798 meaning that the probability of falling in the struggling poverty position is more than six times larger the probability of being in the 'most successful' poverty position for a household who was unable to develop its natural capital asset compared to one who did it. The odds ratio attached to the development of human capital is 13.047, meaning that the probability of falling in the 'struggling' poverty position is thirteen times larger than the probability of being in the 'most successful' poverty position for a household who was unable to develop its human capital asset. This once again confirms that the development of human capital in the form of building confidence of households is more important in the poverty reduction process of the SDP. However, in this case it has helped households to stay in 'struggling poverty position' and in an 'unsuccessful poverty position' meaning that the acquired human development is insufficient for households to move to a high poverty position (i.e. to become at least successful households). This interpretation is also valid for households who developed natural and physical capital assets as well.

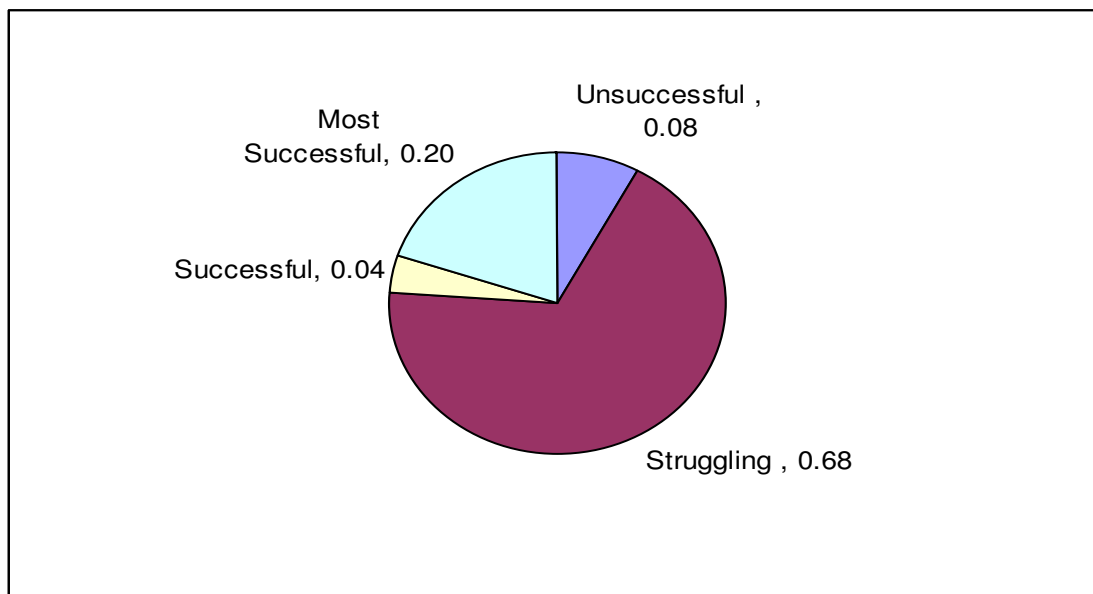
Furthermore, the results in Table 4.17 show that the estimator attached to the development of social capital is non-significant in the three poverty positions concerned. The coefficient attached to the level of education for the 'struggling' poverty group is significant meaning that the probability of being in this poverty category is less than the probability of being in the most successful poverty category for a household who had an additional year of schooling. Furthermore, although most of the estimates are not significant at any levels they hold theoretically expected signs in the regression for 'struggling' poverty position. For example, Table 4.17 shows that an increase in number of dependents in a family increases the probability of becoming struggling poverty. Another example is the estimator attached to the gender. As the odds ratios attached to gender for both 'unsuccessful' and 'struggling' positions were greater than one, it means that the probability of becoming unsuccessful or struggling for females compared to males is higher relative to the probability for females being in the 'most successful' poverty position. However, the coefficients attached to natural capital, physical capital, social capital and gender and number of dependents in the regression for 'successful' position are neither significant nor holding expected signs.

**Table 4.18: Parameter estimates of the second MNLR of model 2**

Poverty Status(a)	Explanatory variable	Estimates ( $\hat{\beta}_{mk}$ )	Significance of estimates (Prob. value)	Odds ratio Exp ( $\hat{\beta}_{mk}$ )
<b>Unsuccessful</b>	Intercept	-3.726	.057	
	[D <sub>NC</sub> =.00]	1.291	.122	3.635
	[D <sub>NC</sub> =1.00]			
	[D <sub>PC</sub> =.00]	.642	.467	1.900
	[D <sub>PC</sub> =1.00]			
	<b>[D<sub>HC</sub>=.00]</b>	<b>1.697</b>	<b>.065</b>	<b>5.459</b>
	<b>[D<sub>HC</sub>=1.00]</b>			
	Edu	.153	.374	1.165
<b>Struggling</b>	<i>Intercept</i>	-0.833	.494	
	<b>[D<sub>NC</sub>=.00]</b>	<b>1.928</b>	<b>.004</b>	<b>6.876</b>
	<b>[D<sub>NC</sub>=1.00]</b>			
	<b>[D<sub>PC</sub>=.00]</b>	<b>1.668</b>	<b>.024</b>	<b>5.302</b>
	<b>[D<sub>PC</sub>=1.00]</b>			
	<b>[D<sub>HC</sub>=.00]</b>	<b>2.631</b>	<b>.000</b>	<b>13.892</b>
	<b>[D<sub>HC</sub>=1.00]</b>			
	<b>Edu</b>	<b>-.213</b>	<b>.047</b>	<b>.808</b>
<b>Successful</b>	Intercept	.653	.711	
	[D <sub>NC</sub> =.00]	-1.661	.200	.190
	[D <sub>NC</sub> =1.00]			
	[D <sub>PC</sub> =.00]	-.475	.653	.622
	[D <sub>PC</sub> =1.00]			
	[D <sub>HC</sub> =.00]	1.176	.376	3.240
	[D <sub>HC</sub> =1.00]			
	Edu	-.223	.200	.800

a The reference category is: Most successful. Average Pseudo R-Square is **.46**

Table 4.18 shows the results of the second equation of model 2 (a detailed description of results is given in appendix 9). This equation was estimated using only the significant variables identified in the first equation of model 2. The main objective of the estimation of this equation was to examine how the probabilities of each household to fall within each of the four household poverty groups are different depending on their capital developments. The reason for the selection of only significant variables was to improve the confidence about the accuracy of probabilities obtained from the original model. According to the results in Table 4.18, although the predictive power of this equation has declined somewhat from 52% to 46% (based on the Pseudo R-squared), it is clear that the significance of those variables for the ‘struggling’ position has improved with the exclusion of the non-significant variables from the first equation.



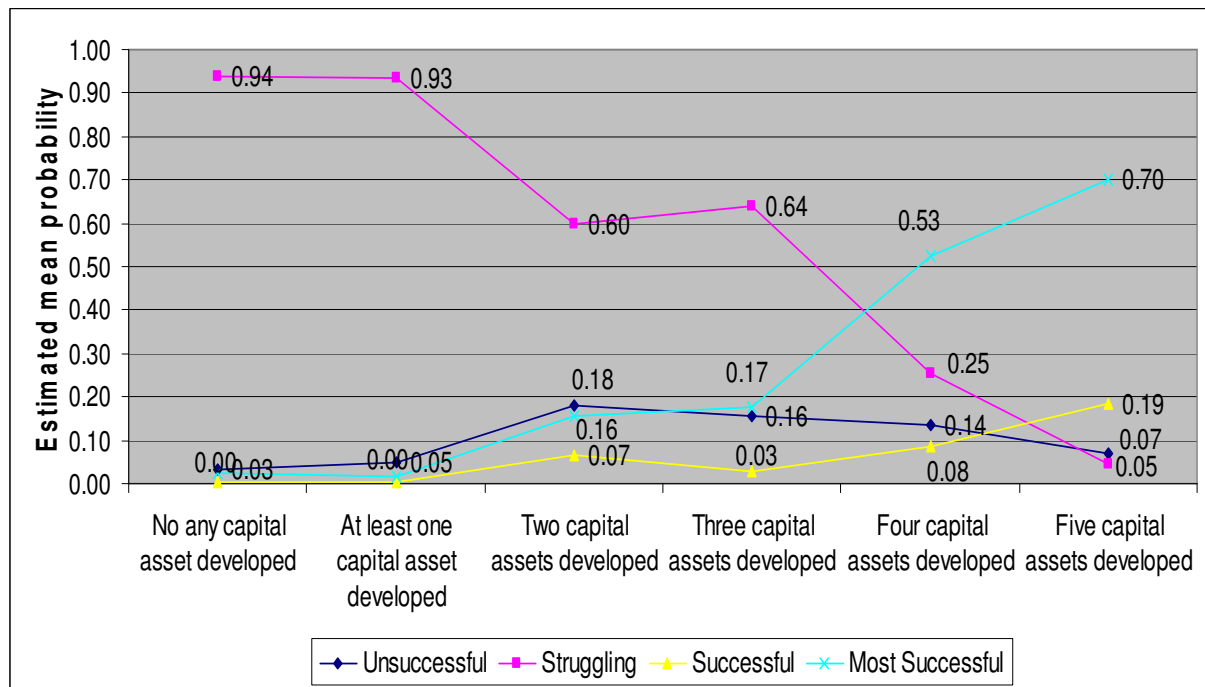
Source: Author's calculations based on the 'estimated response probabilities' of the second MNL of model 2

**Figure 4.8: The mean probability of households falling into certain poverty positions**

Figure 4.8 shows the mean probability of each household to fall into one of the four poverty household groups. Figure 4.8 clearly shows that the probability of a household falling into the 'struggling' poverty position is very high (0.68). Furthermore, the mean probability of a household falling into the successful or most successful poverty positions is 0.04 and 0.20 respectively. This implies that on the whole households have made poor progress in the direction of movements between poverty conditions. This is because, for example, in the study, a household was categorised as 'struggling' if he/she remained in vulnerable poverty for a 14 year period from 1995 to 2009. The mean probability to fall in this category is 0.68 which means that there is a higher probability for any household in the SDP being in vulnerable poverty for a long time. This means that there is a chance for 68 households out of each 100 households to fall in struggling position. Furthermore, as noted before, this study categorised a household as 'most successful' if he/she remained in sustainable poverty for a 14 year period from 1995 to 2009. This implies that the probability appeared in 'most successful' position (0.20) includes the chance of these households being in that category. It means that, as the sample had 9 percent of such households (Table 4.6), the above probability related to 'most successful' could be an overestimation for the probability of households who had moved from lower poverty conditions to higher living conditions.

In this scenario, it is important to look at how and to what extent developments of capital assets have affected the mean probability of households falling into a poverty household group. Figure 4.9 shows the relationship between the developments of a household's capital assets and the mean probability of it's to fall into a poverty household group (individual profile plots are given in appendix 10). Two assumptions made for Figure 4.7 are also applied for Figure 4.9. Figure 4.9 clearly shows that with the increase of households' ability to develop more capital assets, there is less probability for those households to have regress in terms of achieving higher living

conditions. On the other hand, households who had developed more than three capital assets have reported a speedy positive progress to become most successful households. Although a marginal positive progress is reported in the ‘successful’ poverty position from households who had developed up to five capital assets, the net progress seems negative for those households who had developed up to four capital assets as the probability to become ‘unsuccessful’ is greater than the probability to become ‘successful’ in that region.



Source: Author’s calculations based on the ‘estimated response probabilities’ of the second MNL of model 2

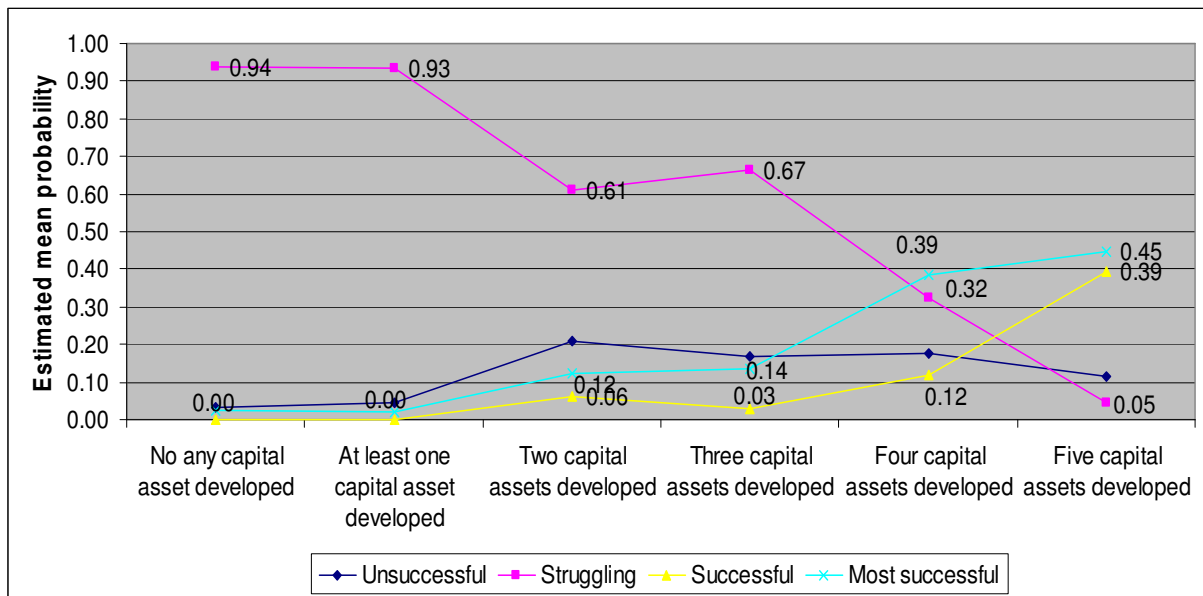
**Figure 4.9: The relationship between the development of capital assets and the mean probability of a household to fall in a poverty household group**

Figure 4.9 further reveals that those who were unable to develop any capital asset show the highest probability (0.94) of ‘remaining in vulnerable poverty’ (struggling) for a long period of time. However this probability remains unchanged around 0.93 although 49 percent of households were able to develop one capital asset (Table 4.15). As noted before, these 49 percent of households had developed only social capital. The development of social capital was identified especially in the form of developing networks (relationships) between members of the SDP themselves and community people. Therefore, it is possible to note that the development of social capital in the form of building networks between community members has given an extremely poor support (or no any contribution) for households of the SDP to reduce the number of households ‘remaining in vulnerable poverty’. This was further confirmed by the non-significance of the coefficient attached to the development of social capital ( $D_{SC}$ ) in MNLs of model 2. This implies that the SDP has not been aware of the effective use of social networks to

alleviate poverty. In addition, it seems that the probability of households 'remaining in vulnerable poverty' declines by 0.30 points from 0.94 to 0.64 with the increase in their ability to develop up to three capital assets. However, as the sum of percentages of households in those four assets categories is 68 percent (Table 4.15) it implies that there is still a higher risk for such a large percentage of beneficiaries of the SDP to 'remain in vulnerable poverty' over a long period. On the other hand, there are very less probabilities for those 68 percent of households to become successful (0.03) or most successful (0.17). This implies that those who had not developed any capital asset or those who had developed only one capital asset have shown an extremely poor progress while those who had developed two or three capital assets have shown a positive progress. It is important to look at why this kind of poor progress was reported from the SDP. There are many reasons for this. As noted earlier, there are a large number of beneficiaries in the programme are labourers. They do not have any kind of livelihood options other than selling their unskilled labour for a low salary. For example, in the study it was impossible to find any household who kept livestock. Although those who had two or three capital assets, they were not motivated to diversify their livelihood activities or to use existing assets effectively with an aim to go out of the programme. Poor knowledge on entrepreneurship and resource management, being fearful about taking risk to initiate a new business and the higher dependency on the food stamp of the SDP are other reasons that have affected those household to show weak progress of poverty reduction process. The SDP's inability to use the existing social networks to make an environment that could support building assets base of households has also been a source of this poor progress.

In addition, 28 percent of households who had developed three to four capital assets (Table 4.15) show a significant decline in the probability of staying in vulnerable poverty while the probability for the same households to become most successful has increased significantly. Overall 28 percent of households who had developed up to four capital assets are more likely to become 'most successful'. This is the turning point of poverty reduction process of the SDP where the probability of households to become most successful (0.53) dominates the probability of households to stay in vulnerable (struggling position) poverty (0.25). This indicates that one of the best path ways to eradicate the poverty of beneficiaries of the SDP is to implement appropriate strategies/policies that help its beneficiaries to develop their assets base.

As it was found in Table 4.6, there were 9 percent of households who remained in sustainable poverty over 1995-2009. Therefore, I concern those households as 'non-poor' or better-off households and hence they should not be in the SDP. Therefore, as noted before, it is useful to look at how results in Figure 4.9 could change with the exclusion of these 'most successful' households from the sample. To do this, I re-estimated the second equation of MNL of model 2 for a sample of 156 households and then obtained Figure 4.10 below.



Source: Author's calculations based on the 'estimated response probabilities' of the second MNL of model 2 for the revised sample

**Figure 4.10: The relationship between the development of capital assets and the mean probability of a household to fall in a poverty household group for the revised sample**

Figure 4.10 clearly shows that when 9 percent of households were excluded from the sample, the probability to become most successful for other households who had developed four capital assets has declined by 0.14 points from 0.53 (in Figure 4.9) to 0.39 (in Figure 4.10) while it is for those who had developed five capital assets has also decreased by 0.25 points from 0.70 (in Figure 4.9) to 0.45 (in Figure 4.10). It also appears that, with the leaving out of the impact of 9 percent non-poor households on the sample, the probability to become successful for households who had developed four to five capital assets has also increased marginally compared to results in Figure 4.9. This finding implies that the probability related to 'most successful households' in Figure 4.9 is to some extent an overestimation of the positive association between the development of capital assets and the mean probability of a household to become 'most successful'.

**Table 4.19: Parameter estimates of the third MNLR of model 2**

Households group (a)	Explanatory variable	Estimates ( $\hat{\beta}_{mk}$ )	Significance of estimates (Prob. value)	Odds ratio Exp ( $\hat{\beta}_{mk}$ )
Unsuccessful	Intercept	-6.493	.037	
	[DSC=.00]	17.587	.997	43440149
	[DSC=1.00]			
	[DFC=.00]	1.599	.150	4.949
	[DFC=1.00]			
	Edu	.265	.169	1.304
	Age	.067	.116	1.070
	NDepends [Hgender]	-.307 1.018	.224 .188	.736 2.769
Struggling	Intercept	-1.611	.460	
	[DSC=.00]	16.055	.997	9393218.4
	[DSC=1.00]			
	<b>[DFC=.00]</b>	<b>3.866</b>	<b>.000</b>	<b>47.744</b>
	<b>[DFC=1.00]</b>			
	<b>Edu</b>	<b>-.189</b>	<b>.073</b>	<b>.827</b>
	Age	.041	.265	1.041
	NDepends [Hgender]	.183 .716	.350 .224	1.201 2.047
Successful	Intercept	-2.304	.586	
	[DSC=.00]	-1.516	.	.220
	[DSC=1.00]			
	[DFC=.00]	.979	.490	2.661
	[DFC=1.00]			
	Edu	-.112	.522	.894
	Age	.061	.333	1.063
	NDepends [Hgender]	-.547 -.982	.170 .384	.579 .375

(a) The reference category is: Most successful. Average Pseudo R-Square is **.46**

Table 4.19 shows the results of the third MNLR of model 2 (a detailed description of results is given in appendix 11). The objective of this model is to determine the relationship between the development of financial capital and a household movement between poverty conditions. The results indicate that the development of financial capital is positively associated with the 'struggling' household group. The odds ratio for this variable is 47.7 meaning that the probability of a household falling into the struggling household group (or to remain in vulnerable poverty) is



47 times higher than the probability of becoming 'most successful' for a household who was not able to develop its financial capital asset compared to one who did it. This really stresses the importance of the development of financial capital asset in eradicating poverty of households of the SDP. No any other coefficients, except the coefficient attached to the level of education in the same regression, were significant.

On the acceptance or rejection of the first and third hypothesis of the study:

The first hypothesis of the study was that the poverty level of households of the SDP has been reduced due to the implementation of various activities by the SDP over 1995-2009. This hypothesis was supported by the theoretical framework of the study that underlied a negative relationship between poverty and the change of capital endowments. That was the poverty level of a household could be reduced only by developing the assets base of a household. The results of this study support this notion. However, although the estimated models displayed theoretical consistency, it is possible to conclude that the SDP, on the whole, has not been successful in improving the livelihoods of its beneficiary population in the Ratnapura district as more than two thirds of its beneficiaries are at a higher risk of being in vulnerable poverty or in a struggling condition. This has happened mainly due to the fact that the SDP has failed to give its attention to developing the assets base of households. The study found that around 70 percent of households have not been able to develop natural, human, financial and physical capital assets over the period from 1995 to 2009. Therefore, based on these empirical findings I reject the first hypothesis of the study.

The third hypothesis of the study was that the poverty level of households of the SDP has been reduced due to the activities implemented by the SDP to develop social capital of its beneficiaries. That is the SDP has been aware of the effective use of social networks to the formation of social capital through bridging the gap of the relationship between government and the community. Theoretical underpinning supported to this hypothesis was a negative relationship between poverty and the development of social capital. Although the estimated coefficient attached to the development of social capital asset in multinomial logistic regressions (MNLRs) held a theoretically accepted sign, it was not statistically significant at any levels in any of MNLRs. Furthermore, figures created to examine the relationship between development of capital assets and probability to fall in poverty conditions confirmed that no contribution had made from the development of social capital on the reduction of 'vulnerable poverty' of households of the SDP. Hence, based on these findings I reject the third hypothesis of the study. It means that the poor attention of the SDP to effective use of social networks to alleviate poverty has resulted with a poor progress in its poverty alleviation process.

## 4.2 Analysis of empirical results obtained from the qualitative approach

This subsection has two steps. In the first step, I examine the findings of the semi-structured interviews conducted for 17 randomly selected beneficiaries of the SDP in the Ratnapura district. The main objective of this part of the study was to inspect how beneficiaries themselves considered the importance of the SDP on the development of their own livelihoods. The second step tests the validity of the second and fourth hypothesis of the study using findings of the structured questionnaires and the semi-structured interviews.

In the semi-structured interviews (interview guide-appendix 3), households were given 7 questions to express their ideas openly. The first question investigated their overall idea on the SDP. All 17 households interviewed highlighted that the SDP is a 'good programme' for the poor as it helps the poor to get out of the poverty. When asked about whether they were benefited from the SDP, all of them said 'yes'. However, most of them were unable to give a clear answer about 'how' they were benefited. For example, some of the respondents (2) said that they were able to put their children to schools because of being members of the SDP and hence the SDP helped them to 'educate' their children. Some other respondents (2) highlighted that the food stamp of the SDP helps them to manage their food expenditure to some extent and hence the SDP helps them to maintain their living conditions. Only three respondents said that they were able to get benefits by improving their living condition via initiating or expanding their livelihood activities through loans from the SDP. This implies that most of respondents identify 'benefits' as something that the SDP gives them 'at no cost' rather than something that helps them to build up their assets base. However, 10 respondents accepted loan facility as 'most significant' activity of the SDP. This again highlights the fact that although households were aware of the importance of loans in building their assets base, they were not motivated by the SDP through providing them with guidance, training and other necessary facilities to build up their self-reliance.

This can be further confirmed by inspecting the following statement of a respondent,

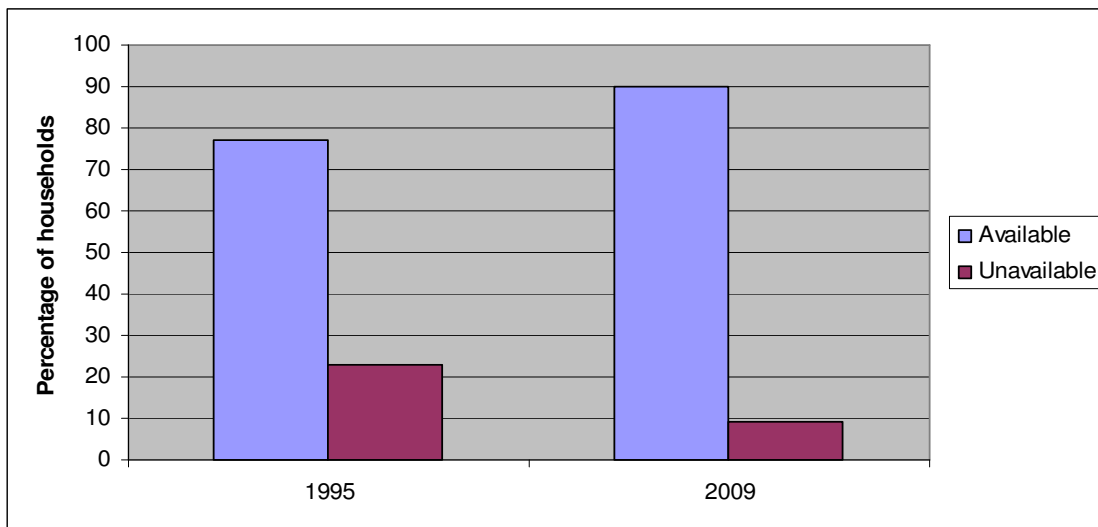
*"I am a labourer. Although I have been a member of the SDP for 14 years, I did not obtain a loan to initiate a new livelihood activity because I do not know what to do and how to do. Therefore, I am fear about taking a loan because inability to repay it well can cause me a further burden. But I think that the SDP helps the poor".*

Source: A statement of a respondent made on 20.02.2009 in the semi-structured interview, Kalawana DS, Ratnapura district, Sri Lanka

However, most of the respondents (12) suggested that the fundamental role of the SDP would be to equip them with appropriate skills and resources. Therefore, as a result of the lack of motivation to improve self-reliance of households of the SDP, most of households are reluctant to change the attitude they hold on the SDP. That is to stay a long period in the SDP to obtain only 'at no cost benefits'. In this background, it is impossible to expect a significant positive progress of the poverty reduction process of the SDP as most of households do not tend to develop their assets base with an aimed to get out of the SDP. In this scenario, it seems that the findings of the quantitative research are consistent with the findings of the qualitative research.

Let us turn to test the validity of the second and fourth hypothesis of the study. The second hypothesis of the study was that the increased environmental concerns of the SDP have resulted in decreased poverty levels of households of the SDP. This hypothesis was supported by the argument that there is a positive association between environmental degradation and poverty levels of a household. However, as noted in Chapter 3, since it is very difficult to obtain data on the above relationship within a very short period, I thought to concentrate only on the relationship between the sustainability of water sources and their use for livelihood and survival needs of households of the SDP. Much information was obtained from the structured questionnaire, in addition to the information obtained from the semi-structured interviews, to verify the validity of this hypothesis.

However, the study found that 166 households have used water only for drinking and other living requirements (i.e. survival needs) while four households have used water for vegetable farming in addition to survival needs. Those who used water for vegetable farming have never experienced a water problem in their livelihood activity due to the higher advantage of being in the wet zone of the country. Furthermore, those who used water for drinking and other requirements have had the same chance. In 2009, sixty three percent of households in the sample have used ‘tapped’ water for drinking and other living requirements while 27 percent of households have used ‘well water (protected)’ and ‘spring-water’ for those needs. However, there were still 10 percent of households who did not have a stable water source for their drinking and other living requirements (Figure 4.11).

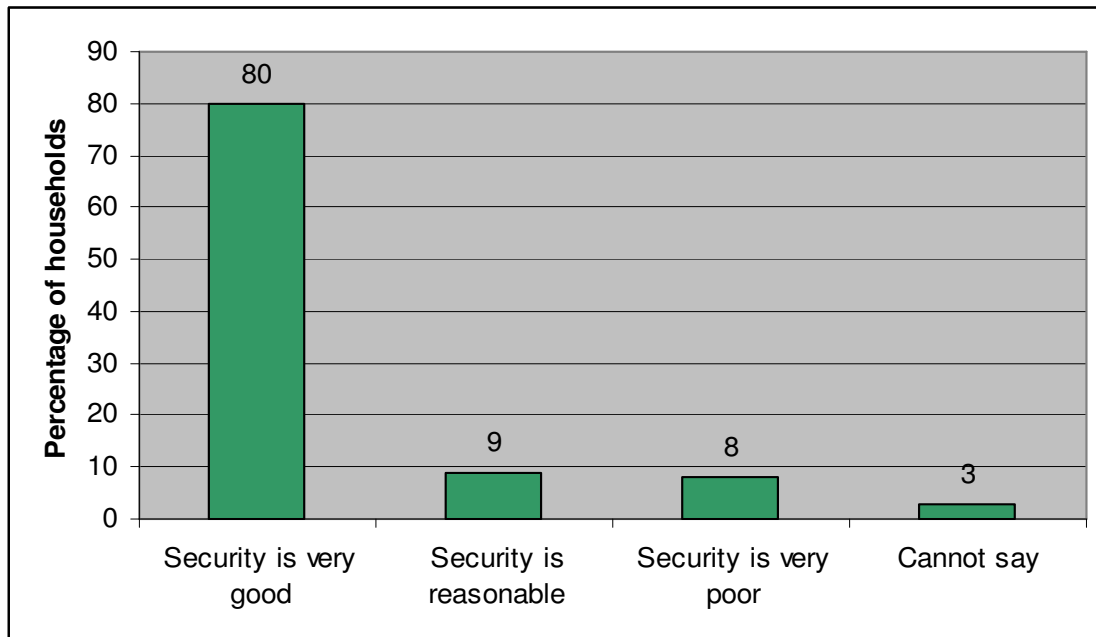


Source: Field survey on the beneficiaries of the SDP in the Ratnapura district, Sri Lanka (09.02.2009 -20.03.2009)

**Figure 4.11: Availability of a stable water source for drinking and livelihood activities for households of the SDP**

Figure 4.12 shows responses given by households about the security of their water sources. Eighty percent of households of the study noted that their water sources have been protected because of being in the wet zone but not activities of the SDP. Those who said ‘security is

reasonable' (9 percent) highlighted that some kind of interventions to protect catchment area (watershed) are essential. They highlighted that prohibiting deforestation and improving awareness of community people are crucial regarding this issue. Eight percent of households in the study gave a very negative response regarding the issue of security of their water sources. The main reason for such a negative response was that there were 'unclosed pits' in surrounding lands due to gem mining activities.



Source: Field survey on the beneficiaries of the SDP in the Ratnapura district, Sri Lanka (09.02.2009 -20.03.2009)

**Figure 4.12: Households' response on the security of water sources**

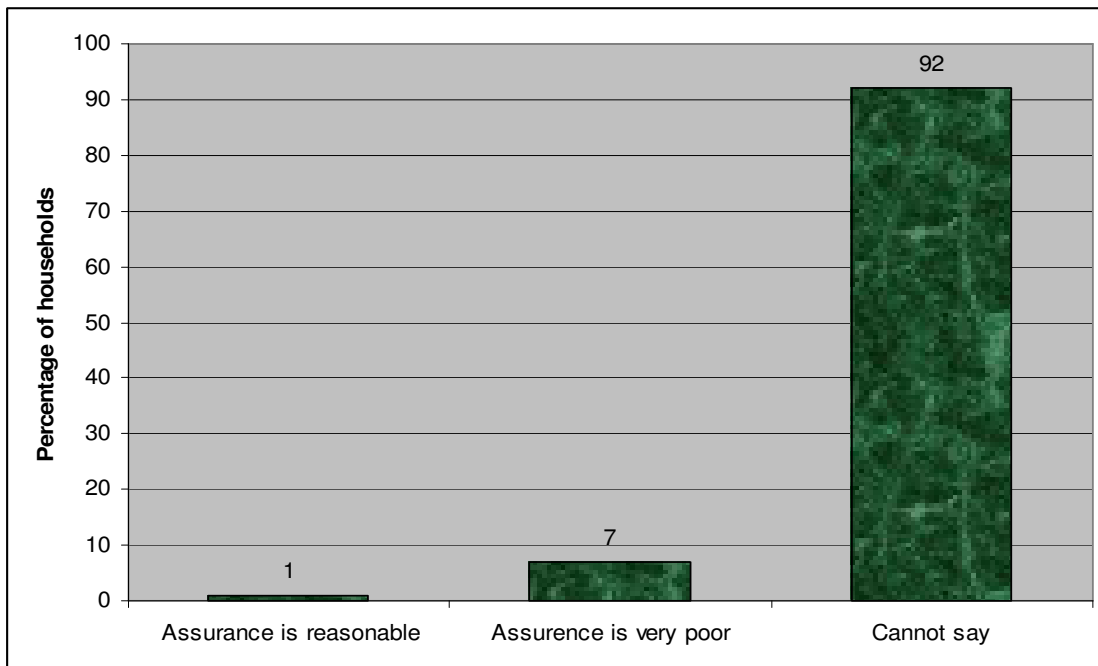
Figure 4.13 shows households' responses on the assurance of the SDP on sustainability of their water sources. A very large percentage of households (92 percent) in the study were unable to give a definite answer. The main reason for this is that they think their water sources are protected and hence the SDP has no role to do there. Those who said 'assurance is very poor (7 percent)' highlighted that the SDP has done nothing to protect catchment areas of their water sources and to inform community people to keep the environment clean (specially to close pits to save water sources and to maintain a good health). One respondent in the interview expressed that,

*“The SDP has several times distributed plants among our members to cultivate those in river-banks, catchment areas and public places of our village. We did it with our Samurdhi officer. But I do not think that it would success because after that we did not observe at least what has happened to those plants”.*

Source: a statement of a respondent made on 21.02.2009 in the semi-structured interview, Elapatha DS, Ratnapura district, Sri Lanka

This implies that the SDP has not been aware of the environmental concerns in its poverty alleviation process. However, this lack of attention could mainly due to the following reason;

Ratnapura district is situated in the wet zone of the country and therefore more than 90 percent of households in the district have water for livelihood and survival needs throughout the year. Therefore, the public awareness on the sustainability of water sources is also not in a considerable level. However, in the future, with the impact of the climate change, public awareness on this issue could be increased. Around 30 percent of households (including 1 percent of those who said 'accuracy is reasonable') noted that the SDP has indirectly helped them to have drinking water through its rendering free service for rural water development projects funded by various development agencies (i.e. Asian Development Bank).



Source: Field survey on the beneficiaries of the SDP in the Ratnapura district, Sri Lanka (09.02.2009 -20.03.2009)

**Figure 4.13: Assurance of the SDP on sustainability of water sources**

So far I discussed views of beneficiaries of the SDP on the actions taken by it to assure the sustainability of water sources for drinking and livelihood activities of its beneficiaries. However, it is very difficult to verify the link between sustainability of water sources and poverty levels of households in the study due to the absence of water based livelihood activities (even four vegetable farmers had never faced a water problem) on the one hand and the higher level of water availability on the other hand. On the whole, however, it is possible to note that an adequate attention has not been given by the SDP to assure the sustainability of water sources of its beneficiaries although it had not been a big issue for the region. This implies that the tendency of the SDP to identify the possible link between poverty and ecosystem degradation seems at a low level and therefore I reject the second hypothesis of the study.

The fourth hypothesis of this study was that the level of poverty of the society as a whole could not be at a low level due to the inability to include 'real poor' into the SDP. This hypothesis was based on the argument that if the SDP were unable to select most suitable households to the programme, actual poverty level of the society as a whole would not be reduced due to the implementation of the activities of the SDP. Therefore, the validity of this hypothesis is confirmed by inspecting to what extent the SDP has minimised 'under-coverage' and 'leakage' errors of the programme. The 'under-coverage' concerns the failure of the SDP to include poor who were in the disadvantaged in the community. This is verified by inspecting views of the respondents interviewed. The 'leakage' concerns the incorporation of better-off households into the SDP. This is also verified by inspecting views of respondents at the semi-structured interview. By testing this hypothesis based on the results for those two issues, it is also possible to verify the validity of the criticism about the SDP regarding its political affiliations in selecting households to the programme.

*Under-coverage (failure to include the poor) and leakage (inclusion of better-off households) errors of the SDP:*

Sixteen households interviewed highlighted the fact that the poorest households are indeed in the SDP. They also noted that they do not believe political affiliation has a bearing of the SDP. One respondent expressed that,

*"I think that the SDP has selected most suitable poor households in our village. They hold different political opinions. I am also a member of an opposition party"*

Source: a statement of a respondent made on 23.02.2009 in the semi-structured interview,  
Nivithigala DS, Ratnapura district, Sri Lanka

However, one household noted that there are many poor households out of the SDP and therefore the SDP is a 'political programme' rather than a 'development programme'. The SDP have used a set of indicators to select poor households to the programme. One of the indicators is the level of monthly per capita income. If the level of monthly per capita income of a household were below the official poverty line, he/she is selected to the programme. These criteria are set at the ministry level. What the Samurdhi officer does is collects information from poor households in the village according to those criteria and then forwards a list of names of poor households to the divisional secretariat officer of the respective DS division. The final decision about who should be in the SDP is taken by the divisional secretariat officer of the respective DS division. However, there are some stages in this process where a non-eligible household can be selected to the SDP or an eligible household can be excluded from the SDP. That is a Samurdhi officer can include (exclude) a name of a household to (from) the list by providing incorrect information about him/her. During the field survey, I observed that this influence of Samurdhi officers is very high. Therefore, some respondents were reluctant to express their negative feelings about the SDP. On the other hand, as this Samurdhi officer is appointed by the Minister of Samurdhi, the appointment is purely a political decision. Hence, there is a higher tendency to have political affiliations in selecting households to the SDP.

However, most of the beneficiaries accepted and highlighted that the many weaknesses could be overcome if households of the village were given the opportunity to select eligible persons to the SDP. One respondent expressed that,

*“I think that the SDP has selected suitable poor households in our village. But I think if we were given the opportunity to select poor households to the programme, we could do it best as we know who the poor households in our village are. Furthermore, since such a decision is taken according to the consent of the majority members of our village, transparency of the process would be very high and no opportunity for any kinds of political affiliations”*

Source: a statement of a respondent made on 01.03.2009 in the semi-structured interview,  
Ayagama DS, Ratnapura district, Sri Lanka

By inspecting the above statement, it is very clear that the SDP has never followed such a ‘people centred approach’ to minimise the negative impact of both ‘leakage’ and ‘undercoverage’ errors of the SDP. To verify this, I interviewed several poor households who are out of the SDP. They highly criticised the SDP saying that the SDP is ‘purely a political programme’ rather than ‘a development programme’. They came to that conclusion justifying that the SDP has included many better-off households because of political affiliations while they have been excluded because of holding different political views.

Hence, based on these empirical findings and my observations in the field, I accept the fourth hypothesis of the study. That is, poverty level of the society as a whole could not be at a low level due to the presence of both ‘leakage’ and ‘undercoverage’ errors of the SDP.

## Chapter 5: Conclusions

The Chapter has two sections. The first section provides conclusions drawn from the study conducted to verify the validity of four hypotheses of the research. Based on the acceptance or rejection of these hypotheses, I then provide answers for the main research problem and three sub problems of the research. The second section gives recommendations and some limitations of the study.

### 5.1 Conclusions

This research aimed to assess the impact of the Samurdhi (prosperity) development programme (SDP) on the livelihoods of its beneficiaries in the Ratnapura district of Sri Lanka. In order to conduct this assessment, I identified a main research problem and three sub problems that were directly related to the success of the SDP. The main research problem was to investigate whether the SDP has been successful in improving livelihoods of its beneficiaries in Ratnapura district over 1995-2009. The other three sub problems were to investigate whether the SDP was concerned with the link between the environment and poverty; to identify whether the SDP has bridged the gap in the relationship between the community and the government; and whether the SDP has identified the most eligible households as part of the SDP programme. Using the sustainable livelihood approach (SLA) I developed a theoretical framework whereby a poverty level of a household was directly and indirectly affected by the activities of the SDP through two channels; promotional and protective channels. In the first channel, the activities of the SDP first affected to the asset base (i.e. natural, physical, human and financial capital) of a household and then the impact transmitted to the level of a household through the asset base. The second channel was through the welfare component of the SDP on the poverty level of a household. This impact transmission mechanism of the SDP in the theoretical framework was mainly based on one major assumption about the zero influence from the external context of the household. From the theoretical framework I derived four hypotheses that underlied answers for the identified research problems of the study. The first hypothesis was that the poverty level of households of the SDP has been reduced due to the implementation of various activities by the SDP over 1995-2009. The second hypothesis was that the increased environmental concerns of the SDP have resulted in decreased poverty levels of its households. The third hypothesis was that the poverty level of households of the SDP has been reduced due to the development of social capital of its beneficiaries. The fourth hypothesis of the study was that the poverty level of the society as a whole could not be at a low level due to the presence of 'leakage' and 'undercoverage' errors of the SDP.

In order to verify the validity of these four hypotheses I used both quantitative and qualitative research approaches. The quantitative research was conducted to verify the first and the third hypotheses of the study while the second and the fourth hypotheses were tested by applying a qualitative component. The sample size of the quantitative research was 170 beneficiaries of the SDP. Households were randomly selected covering 17 DS divisions in the Ratnapura district to obtain data for a structured questionnaire that covered the information needed to analysis the first and third hypotheses. Two models were developed to capture the relationship between poverty level of a household and the development of capital assets. The dependent variable of the first



model had four poverty categories: extreme poor, vulnerable, viable and sustainable households. The households were categorised into those four groups for 1995 and 2009 based on subjective range of income differences around two official poverty lines of respective years. The dependent variable of the second model also had four poverty household categories: unsuccessful, struggling, successful and most successful based on the direction of the movement between the two poverty categories identified in the first model over 1995-2009. The independent variables of each model were five categorical variables for the development capital assets, one categorical variable for the gender and other three continuous variables such as education, age and number of dependents in the family. Three multinomial logistic regressions were run for each model. Regarding the qualitative approach, a semi-structured interview was conducted with an interview guide for 17 randomly selected beneficiaries of the SDP with a view to find evidence supporting the second and fourth hypotheses of the study.

The results found in the application of the primary method in the quantitative approach can be highlighted as following. The percentage of households who were able to develop social capital was 90 percent while the percentage for those who were able to develop other four capital assets was around 30 percent in the sample. This implied that the SDP has not focused on building the assets base of households as a way of eradicating poverty for beneficiaries. The study found that there was a positive association between the development of capital assets and a household's mean monthly income. The lowest average mean monthly income was reported from those who were unable to develop any kind of capital asset while the highest was reported from those who had developed more than three capital assets. The UANOVA test conducted to confirm the significance of the difference of mean monthly income between households who had developed different kinds of assets confirmed that the mean monthly income of a household depends largely on the number of capital assets developed. However, the results of Post Hoc tests confirmed that mean monthly income of those who had developed few capital assets were not significantly different among themselves but were significantly different from the mean monthly income of those who had developed more than three capital assets. On the other hand, there was not a significant difference of mean monthly incomes among households who had developed more than three capital assets. This highlighted the following points: the SDP has failed to identify the importance of the development of assets base of a household; households were not motivated to get out of the programme by improving their income capacity; households have had very limited (or one) livelihood options; differentiation and expansion of the existing livelihood activities were very limited; and there were external restrictions such as poor land ownership.

The results in the preliminary analysis also confirmed that the contribution of the social capital to the reduction of poverty level of a household was minimum or negligible. This indicated that the SDP has failed to utilise 'social networks' (identified as social capital) to strengthen income opportunities of beneficiaries of the SDP.

The results of the estimated transition matrix confirmed that although there was a positive progress of the overall direction of the poverty reduction of the SDP, the impact of this transition was indeed negligible as the number of households who showed positive progress was very few (3). This result was further confirmed by the fact that there were still more than 68 percent of households (116 households in number) remained in vulnerable poverty 14 years after the implementation period of the SDP. This has happened due to the absence of development of

capital assets of households. Therefore, it is possible to stress that the SDP has not achieved significant progress in its poverty alleviation process due to its poor attention to develop the assets base of a household. This was further confirmed by the fact that all labourers in the sample (54 percent of total households) were living in vulnerable poverty. They did not have any additional livelihood option or land for cultivation. They also did not have developed more than one capital asset. The only capital asset most of them were able to develop was social capital. However, as the contribution of social capital to reduce poverty was non-significant they remained in vulnerable poverty in a long period. The results also found that those who had developed at least one capital asset seemed to report poor progress in the transition of poverty and remained in vulnerable poverty for a long period. However, those who had developed more than three capital assets reported a good progress in the transition of poverty and remained in the sustainable category in the long run. However, as the percentage of the households (9 percent) in the sustainable category was a very low value compared to it in the vulnerable poverty (46 percent), it should be noted that the progress of the SDP in its poverty reduction process is considerably poor.

The results found in the application of advanced method in the quantitative approach can be highlighted as following. Results obtained from MNLRs of model one confirmed that the development of natural, physical and human capital assets were statistically significant with theoretically expected signs in explaining 'vulnerable poverty' of households of the SDP. This meant that those who had not developed these three capital assets compared to those who did were more likely to be in vulnerable poverty relative to the probability for those to be in sustainable poverty. The mean probability to be in vulnerable poverty for a household in the sample was very high (0.72) meaning that 72 households out of every 100 households of the SDP in Ratnapura district are at a higher risk of being in vulnerable poverty. The mean probabilities of falling in viable and sustainable poverty for a household in the sample were considerably low (0.12 and 0.15 points respectively) meaning that very few households of the SDP in Ratnapura district have been benefited from the SDP. Hence, on the whole, it is possible to stress that the SDP has not been successful in implementing its strategies to reduce poverty level of (especially vulnerable poverty) its beneficiaries as leaving conditions of a large number of households in the programme seemed move up and down around the poverty line over a long period. Therefore, they could be victims of any kind of idiosyncratic shocks as well.

The results in MNLR of model one also confirmed that there was a negative relationship between the probability of households to fall in a higher poverty status (vulnerable poverty) and developments of their capital assets. Results showed that a household who was unable to develop any capital asset had the highest probability (0.93 points) to be in vulnerable poverty while a household who had developed five capital assets had the lowest probability (0.07) to be in the same poverty category. On the contrary, there was a positive relationship between the probability of households to fall in low poverty status (viable and sustainable) and developments of capital assets. A household who had developed three capital assets had a considerably low probability (0.13 points) to be in sustainable poverty while it was a higher value (0.60 points) to be in the same category for a household who had developed five capital assets (3.5 percent of households). As the probability to be in vulnerable poverty for a household who had developed up to three capital assets is also very high (0.76 points), 68 percent of such households in the SDP are very more likely to be in vulnerable poverty. However, on average, 28 percent of households of the

SDP who had developed four capital assets had a higher probability (0.72) to be in a condition between viable and sustainable poverty any way.

Results obtained from MNLRs of model 2 confirmed that the developments of natural, human, physical and financial capital assets were significantly affected on the determination of 'struggling household group'. Those who were unable to develop these capital assets were more likely to become 'struggling poverty position' (remained in vulnerable poverty for a long period) than the probability to become 'most successful' households. The mean probability to fall in this category is 0.68 which means that there is a higher probability for any household in the SDP in Ratnapura district remained in vulnerable poverty for a long time. Furthermore, there was a 0.08 mean probability for any household of the SDP to be 'unsuccessful'. Altogether, this means that there is a higher likelihood to have negative progress rather than positive progress regarding the success of the SDP. The mean probabilities of falling in 'successful' and 'most successful' poverty positions for a household in the sample were considerably low (0.04 and 0.20 points respectively) meaning that fewer chances to have positive progress regarding the success of the SDP. A 68 percent of households who had developed up to three capital assets had a higher risk (over 0.64 probability) to 'remain in vulnerable poverty' (struggling position) over a long period. On the contrary, there were very less mean probabilities for these 68 percent of households to become 'successful' (0.03) or 'most successful' (0.17). Overall around 28 percent of households who had developed up to four capital assets are more likely to become 'most successful'. Therefore, based on this information I identify the development of four capital assets as the bench mark of the poverty reduction process of the SDP. However, as the percentage of households below this benchmark are more than two thirds larger the percentage of households above the benchmark, it is impossible to accept that the SDP has been successful in its poverty reduction process in Ratnapura district over 1995-2009.

Based on this discussion I reject the first and third hypotheses of the study. Hence I conclude that the livelihoods of households in the Ratnapura district have not been significantly improved due to the implementation of the SDP over 1995-2009. More specifically, the SDP has failed to identify the social networks necessary to build up social capital in a way that it could help the beneficiaries get out of the poverty.

The results of the qualitative study reveal that the SDP has paid a poor attention to assure the sustainability of the water sources of its beneficiaries mainly due to the advantage of being in the wet zone of the country. Based on this poor attention, I come to the conclusion that the SDP has not identified the crucial link between the poverty and the ecosystem degradation. Therefore, I also reject the second hypothesis of the study.

As it was revealed in the qualitative study, there were more opportunities in the selection system for better-off households to enter to the SDP (leakage) or for most eligible households to leave out from the SDP (undercoverage). This indicates the fact that the inability of the SDP to clearly identify development motives from political motives could have resulted a significant lost of substantial improvement of livelihoods of poor people. Therefore, based on these findings and my own observations, I accept the fourth hypothesis of the study. Hence, actual poverty level of the society as a whole could not be at a low level due to the presence of both leakage and undercoverage errors of the SDP. On the whole, it is possible to note that the SDP has paid its attention to find answers for the 'symptoms of poverty' rather than for the 'causes of poverty'.

## 5.2 Recommendations and limitations of the study

### Recommendations:

In order to reduce the level of poverty of a household, it is imperative to develop its assets base (i.e. developing natural, human, physical and financial capital assets). The benchmark of the poverty reduction process of the SDP was the development of at least four capital assets; therefore appropriate activities/policies/programmes should be implemented to build up these capital assets. For example, natural capital asset of a household can be improved by encouraging residents to start a livestock farm through facilitating required knowledge, inputs, access to financial requirements, access to markets etc. Before starting to any kind of intervention that focuses development of capital assets, it is essential to conduct an individual SWOT (strength, weaknesses, opportunities, and threats) analysis for every beneficiary of the SDP to identify how and who should be equipped with what or it can be conducted at the village level to prioritise the areas for which resources should be allocated. Furthermore, it is also vital to develop assets base of a household through increasing the productivity of assets that a household already holds.

Social networks existing among community members (including beneficiaries of the SDP) should be appropriately used to support the poverty reduction process. For example, some households can be experts in some areas and this expert knowledge can be distributed among households who have poor knowledge regarding the same field. This can be done without any additional cost due to the strong interrelationships between them. To effective use of social capital in poverty reduction process, it is also fundamental to have a mechanism that incorporates community people who could play a big role in designing and implementing their own poverty reduction strategies. Providing the correct information at the right time is also essential. For example, there were households who expected more information about markets available for their products (i.e. prepared vegetable). One household was disappointed about delayed process of the intervention of her Samurdhi officer regarding a disease spread in her vegetable farm. Ultimately she lost the farm and got a high risk for repayment of the loan.

It is essential to motivate a household to develop its asset base or expend the existing livelihood activity in a way that he or she should have a higher living standard to get out of the SDP within a specified period. As a result of the absence of this motivation households of the SDP tend to stay at the same living position only to have 'at no cost' benefits rather than to have long term benefits by forming or expanding the existing livelihood activity. It is also recommended that households should be directed to have different livelihood activities rather than depending one livelihood activity. For example, farm based households can be encouraged to have off-farm activities while off-farm households can be motivated to have farm based activities in addition to their main livelihood option.

It is also recommended that the introduction of 'people centred' selection process to select households to the SDP is also useful to reduce both 'leakage' and 'undercoverage' errors of the SDP. Samurdhi officers should be equipped with appropriate skills related to development, poverty, environment and other social issues. As most of the households are at a higher risk of being in vulnerable poverty or struggling passion, they should be provided with a continuous

welfare component with protective objectives while at the same time it is imperative to implement appropriate activities/policies that help them develop their assets base with promotional objectives. It is also recommended that the integration of the SDP with other mainstream and rural development projects would bring more benefits to the poor to develop their assets base. Furthermore, it is also recommended that the SDP needs to focus its attention on the crucial link between the poverty and the ecosystem degradation.

#### Limitations of the study:

The sample size of the study was very few (170 households in the quantitative study and 17 respondents in the qualitative study) compared to the beneficiary population of the SDP in the Ratnapura district and therefore the accuracy of the generalisation of findings could be limited. The study assumed that the external environment did not affect on the poverty level of households and their poverty levels were purely determined within the internal context of the theoretical framework. This is an oversimplification of the poverty level of a household which can be determined by various external factors such as inflation, economic growth, droughts etc. Furthermore, the study concerned only the one direction of the two way causation between poverty and livelihood developments. Therefore, it is also a limitation of the study. The study built five dummy (categorical) variables to capture the development of natural, physical, human, financial and social capital assets. As most of the data obtained were qualitative, a set of criteria were introduced for each capital asset in order to convert these qualitative information into measurable data. Therefore, there could be some limitation in capturing real development of these assets of households. In the structured interview, households were asked about their income levels in 1995 and 2009. I believe that they would not provide very much accurate data regarding their income levels due to the loss of being in the SDP. Notwithstanding these limitations, I believe that this study provides an important step in future research aimed at investigating poverty alleviation strategies in Sri Lanka.

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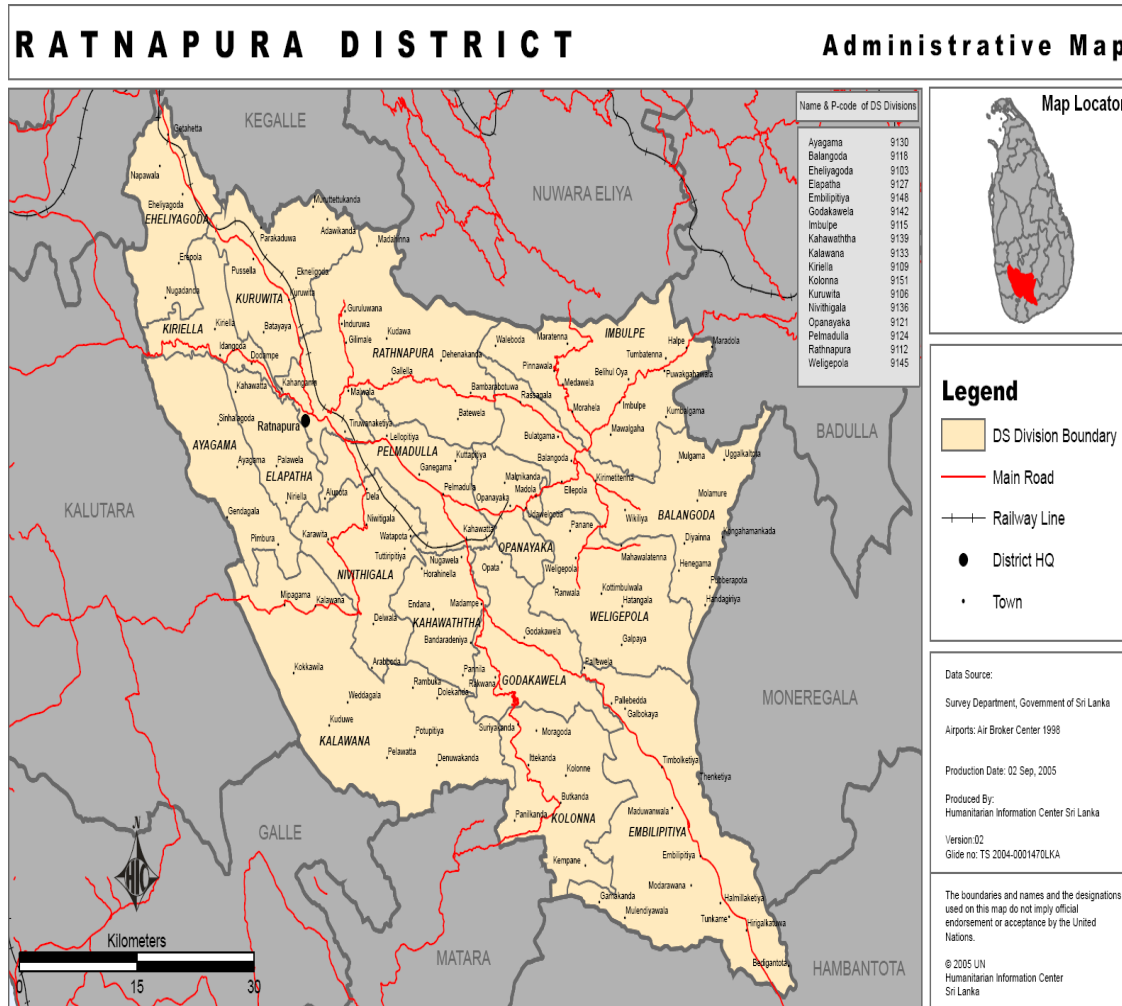
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# Appendices

## Appendix 1: Location of the Ratnapura district of Sri Lanka



Source: Humanitarian Information Centre in Sri Lanka

## Appendix 2: Structured questionnaire of the quantitative assessment

Structured Questionnaire for an Assessment of the Samurdhi (Prosperity) Development Programme: A case study from the Ratnapura District, Sri Lanka-2009

### 01. Basic Demographic Information of the household head:

	Name	Gender	Civil Status	Age	Religion	Education (years of schooling)	Employed/not
Household head							
Person 01	No need				No need		
Person 02							
Person 03							
Person 04							
Person 05							
Person 06							

Number of dependents:

### 02. Basic Socio-Economic Information:

Item		1995	2009
i. Food:	Most satisfactory		
	Satisfactory		
	No satisfactory at all		
	Cannot say		
	How many times a day		
ii. Housing status:	Permanent		
	Temporary		
	Constructing		
iii. Drinking water:	Available		
	Not available		
iv. Electricity:	Available		
	Not available		
v. Type of employment:			
vi. Monthly income:			
vii. Sources of income:			
viii. Monthly expenditure for food			
ix. Monthly expenditure for health			

Appendix 2 continued...

**03. Measurement of Livelihood Developments:**

**3.1 Natural Capital:**

		1995	2009
<b>3.1.1 Land</b>	Do you have a land?		
	If so, in acres?		
	Which kind of activities are in progress in the land?		
	How is SDP affected to activities of the land?		
<b>3.1.2 Crops</b>	Types of crop: Tea, Rubber, Rice, etc		
	How is monthly income from these sources?		
	Do you maintain a buffer stock of rice?		
	How is SDP affected to any improvements of crops?		
<b>3.1.3 Water Sources</b>	Do you have a stable water source for drinking and livelihood activities?		
	Do you believe that your water sources are secured?		
	How is SDP affected to have such a water source and its sustainability?		
<b>3.1.4 Livestock (in numbers):</b>	Cows		
	Goats		
	Pigs		
	Poultry		
	Any other (specify):		
	How are those affected by activities of SDP?		
	Name activities specifically:		

3.1.5 Do you have any kind of income generating activity for which inputs are obtained from natural environment?

3.1.6 If so, what is it?

3.1.7 Which kinds of inputs do you obtain?

3.1.8 How do you think its sustainability as a source of input?

3.1.9 Which steps do you think that the SDP has taken to improve/secure such source of inputs?

3.1.10 How is the market for your products?

Appendix 2 continued...

**3.2 Physical Capital:**

		1995	2009
<b>3.2.1 Utility services:</b>	Do you have following utility services? Piped water ( same as 2 .iii) Electricity ( same as 2 .vi) Fixed Telephone connection Rural road network		
	How does SDP help you to acquire such services?		
	What time do you spend to travel to the nearest urban centre?		
	Which kinds of benefits do you receive from your rural road network?		
		1995	2009
<b>3.2.2 Acquisition of equipments/tools:</b>	Do you have any kinds of equipments/tools (i.e. a tractor) that help generate income?		
	If so, what are those?		
	For which kind of activities are those used?		
	How is monthly income from these sources?		
	How does SDP help you to acquire those equipments/tools?		
		1995	2009
<b>3.2.3 Income generating properties</b>	Do you have your own income generating property (i.e. a retail shop)?		
	If so, what are those?		
	How is monthly income from these sources?		
	How does SDP help you to acquire such a property?		

**3.3 Human Capital:**

- 3.3.1 Do you believe that SDP's welfare component helps you to maintain your health/working capacity?
- 3.3.2 Do you believe that your working days depend on the welfare component of SDP?
- 3.3.3 How many days can you survive from the basket of food?
- 3.3.4 Were you able to improve any kind of your skills from programmes of SDP?
- 3.3.5 If so, name such skills (i.e. how to run a business, material resource management etc):
- 3.3.6 Specifically note such programmes:
- 3.3.6 Do you think that such programmes help you to increase your income or strengthen your sources of income/build up your confidence?
- 3.3.7 Do you think that SDP helps you to educate your children and maintain their health?

*Appendix 2 continued...*

**3.4 Financial Capital:**

- 3.4.1 Are you a member of Samurdhi Bank society?
- 3.4.2 Do you have a savings account?                      When?                      Fixed or current?
- 3.4.3 Do you save some money constantly per month?
- 3.4.4 Do you think that SDP motivates you for savings?
- 3.4.5 Which benefits can you obtain such a habit?
- 3.4.6 Have you ever taken a loan from Samurdhi Bank?
- 3.4.7 The amount of loan and reason:
- |             | Reason |
|-------------|--------|
| First loan  |        |
| Second loan |        |
| Third loan  |        |
- 3.4.8 How is your repayment capacity of such a loan?
- 3.4.9 Do you think that the loan you got helped you to increase your earning capacity?
- 3.4.10 Do you think that the loan facility is enough to conduct such a business?
- 3.4.11 Have you obtained any benefits from SDP's insurance scheme?
- 3.4.12 What are the areas you consider should be developed?

**3.5 Social Capital:**

- 3.5.1 Do you think that the SDP helps you build up relationships with community members?
- 3.5.2 Did you get any benefit from such a relationship in case of mobilization of labour, credit, machinery, crop residues, and milk etc?
- 3.5.3 Do you think that such a relationship helps you get out from some crises you face in your life?
- 3.5.4 Do you think that SDP helps to strengthen the relationship between local government authority and you?
- 3.5.5 Do you think that your Samurdhi society can solve its members' problems within a short period with the local authority?
- 3.5.6 How is the relationship with Samurdhi Officer at your village?
- 3.5.7 Can you deal with him/her effectively?
- 3.5.8 Does he motivate/encourage you for functions of SDP and to solve your problems?
- 3.5.9 Do you think that commitment and dedication of members of your group in your village for team works/social works improved due to SDP? Which kind of works have you done so far?
- 3.5.10 How many meetings do you have for a month? Which kind of meetings?
- 3.5.10 Do you think that SDP helps members in your society to abandon drug addictions that lost a large amount of money?

### Appendix 3: Interview guide of the qualitative assessment

#### Interview Guide for an Assessment of the Samurdhi (Prosperity) Development Programme: A case study from the Ratnapura District, Sri Lanka-2009

1. What is your overall idea about SDP?
2. Do you think that you were benefited from SDP?
3. What are the areas you were able to improve from SDP?
4. What are the most significant activities you identify in SDP?
5. What are the areas you think need to be developed?
6. Do you think that SDP is a failed development programme? Why?
7. Do you think that selection of beneficiaries to the programme is totally taken considering their political opinions? Why?



Appendix 4: The original results of the first MNLR of model 1

Poverty status in 2009(a)		B	Std. Error	Wald	df	Sig.	Exp(B)	95% Confidence Interval for Exp(B)	
Extreme poor	Intercept	-70.545	37726.416	.000	1	.999			
	Edu	3.329	2429.279	.000	1	.999	27.908	.000	.(b)
	Age	.103	575.234	.000	1	1.000	1.108	.000	.(b)
	NDepends	-12.6	3800.076	.000	1	.997	3.23E-006	.000	.(b)
	[DNC=.00]	8.357	15785.726	.000	1	1.000	4260.669	.000	.(b)
	[DNC=1.00]	0(c)	.	.	0	.	.	.	.
	[DPC=.00]	14.040	15934.731	.000	1	.999	1251302.	.000	.(b)
	[DPC=1.00]	0(c)	.	.	0	.	.	.	.
	[DHC=.00]	8.235	15879.480	.000	1	1.000	3769.228	.000	.(b)
	[DHC=1.00]	0(c)	.	.	0	.	.	.	.
	[DSC=.00]	44.613	19156.394	.000	1	.998	2E+019	.000	.(b)
	[DSC=1.00]	0(c)	.	.	0	.	.	.	.
	[Hgender=.00]	.078	12691.537	.000	1	1.000	1.081	.000	.(b)
	[Hgender=1.00]	0(c)	.	.	0	.	.	.	.
Vulnerable	Intercept	-1.660	2.821	.346	1	.556			
	Edu	-.340	.166	4.214	1	.040	.712	.514	.985
	Age	.057	.042	1.805	1	.179	1.059	.974	1.151
	NDepends	-.033	.242	.019	1	.891	.967	.602	1.554
	[DNC=.00]	1.695	.769	4.850	1	.028	5.444	1.205	24.596
	[DNC=1.00]	0(c)	.	.	0	.	.	.	.
	[DPC=.00]	1.617	.811	3.977	1	.046	5.037	1.028	24.677
	[DPC=1.00]	0(c)	.	.	0	.	.	.	.
	[DHC=.00]	3.246	1.122	8.367	1	.004	25.699	2.848	231.858
	[DHC=1.00]	0(c)	.	.	0	.	.	.	.
	[DSC=.00]	15.447	7708.613	.000	1	.998	5111555.	.000	.(b)
	[DSC=1.00]	0(c)	.	.	0	.	.	.	.

Appendix 4 continued...

Poverty status in 2009(a)		B	Std. Error	Wald	df	Sig.	Exp(B)	95% Confidence Interval for Exp(B)	
Viable	[Hgender=.00]	.273	.702	.151	1	.698	1.313	.332	5.199
	[Hgender=1.00]	0(c)	.	.	0	.	.	.	.
	Intercept	.791	3.069	.066	1	.797	.	.	.
	Edu	-.295	.171	2.972	1	.085	.744	.532	1.041
	Age	.051	.047	1.176	1	.278	1.053	.960	1.155
	NDepends	-.244	.267	.835	1	.361	.784	.465	1.322
	[DNC=.00]	-.253	.813	.097	1	.756	.777	.158	3.823
	[DNC=1.00]	0(c)	.	.	0	.	.	.	.
	[DPC=.00]	.385	.805	.228	1	.633	1.469	.303	7.120
	[DPC=1.00]	0(c)	.	.	0	.	.	.	.
	[DHC=.00]	1.374	1.246	1.217	1	.270	3.952	.344	45.412
	[DHC=1.00]	0(c)	.	.	0	.	.	.	.
	[DSC=.00]	-2.902	.000	.	1	.	.055	.055	.055
	[DSC=1.00]	0(c)	.	.	0	.	.	.	.
	[Hgender=.00]	-1.004	.773	1.688	1	.194	.367	.081	1.666
	[Hgender=1.00]	0(c)	.	.	0	.	.	.	.

a The reference category is: Sustainable.

b Floating point overflow occurred while computing this statistic. Its value is therefore set to system missing.

c This parameter is set to zero because it is redundant.

Appendix 5: The original results of the second MNL of model 1

Poverty status in 2009(a)		B	Std. Error	Wald	df	Sig.	Exp(B)	95% Confidence Interval for Exp(B)	
Extreme poor	Intercept	-54.542	11510.6	.000	1	.996			
	Edu	.062	.521	.014	1	.905	1.064	.384	2.953
	[DNC=.00]	17.889	8559.7	.000	1	.998	58790934.5	.000	.(b)
	[DNC=1.00]	0(c)	.	.	0	.	.	.	.
	[DPC=.00]	17.884	.000	.	1	.	58481796.9	5848179	5848179
	[DPC=1.00]	0(c)	.	.	0	.	.	.	.
	[DHC=.00]	19.166	7695.7	.000	1	.998	210687848.3	.000	.(b)
	[DHC=1.00]	0(c)	.	.	0	.	.	.	.
Vulnerable	Intercept	1.227	1.663	.544	1	.461			
	Edu	-.376	.160	5.492	1	.019	.687	.501	.940
	[DNC=.00]	1.681	.748	5.055	1	.025	5.371	1.241	23.257
	[DNC=1.00]	0(c)	.	.	0	.	.	.	.
	[DPC=.00]	1.788	.779	5.267	1	.022	5.980	1.298	27.541
	[DPC=1.00]	0(c)	.	.	0	.	.	.	.
	[DHC=.00]	3.290	1.102	8.914	1	.003	26.856	3.097	232.881
	[DHC=1.00]	0(c)	.	.	0	.	.	.	.
Viable	Intercept	2.305	1.671	1.904	1	.168			
	Edu	-.327	.165	3.943	1	.047	.721	.522	.996
	[DNC=.00]	-.381	.789	.233	1	.629	.683	.145	3.210
	[DNC=1.00]	0(c)	.	.	0	.	.	.	.
	[DPC=.00]	.483	.781	.383	1	.536	1.622	.351	7.494
	[DPC=1.00]	0(c)	.	.	0	.	.	.	.
	[DHC=.00]	1.595	1.211	1.734	1	.188	4.929	.459	52.955
	[DHC=1.00]	0(c)	.	.	0	.	.	.	.

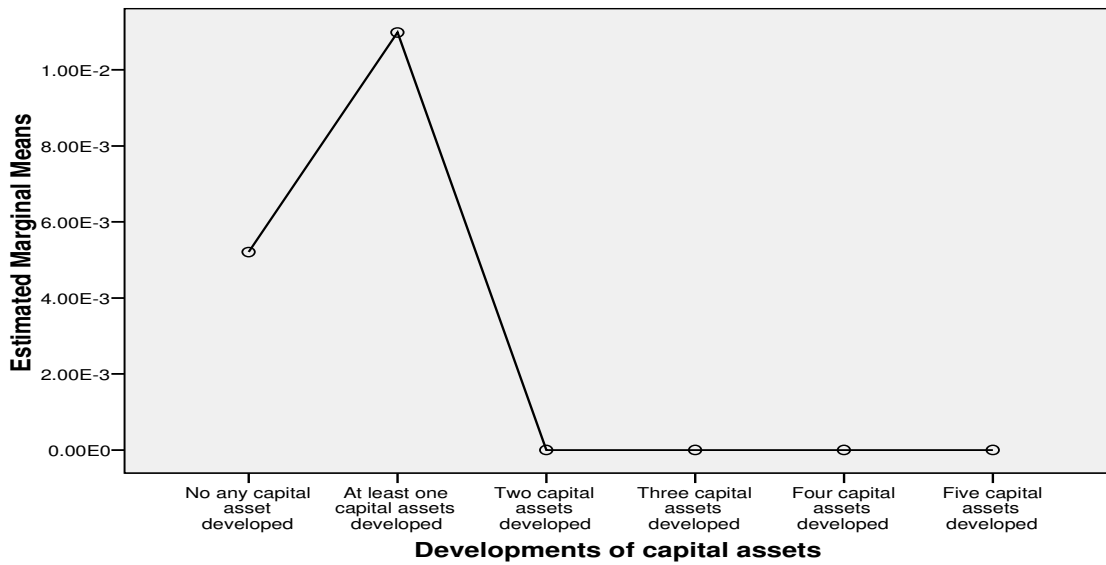
a The reference category is: Sustainable.

b Floating point overflow occurred while computing this statistic. Its value is therefore set to system missing.

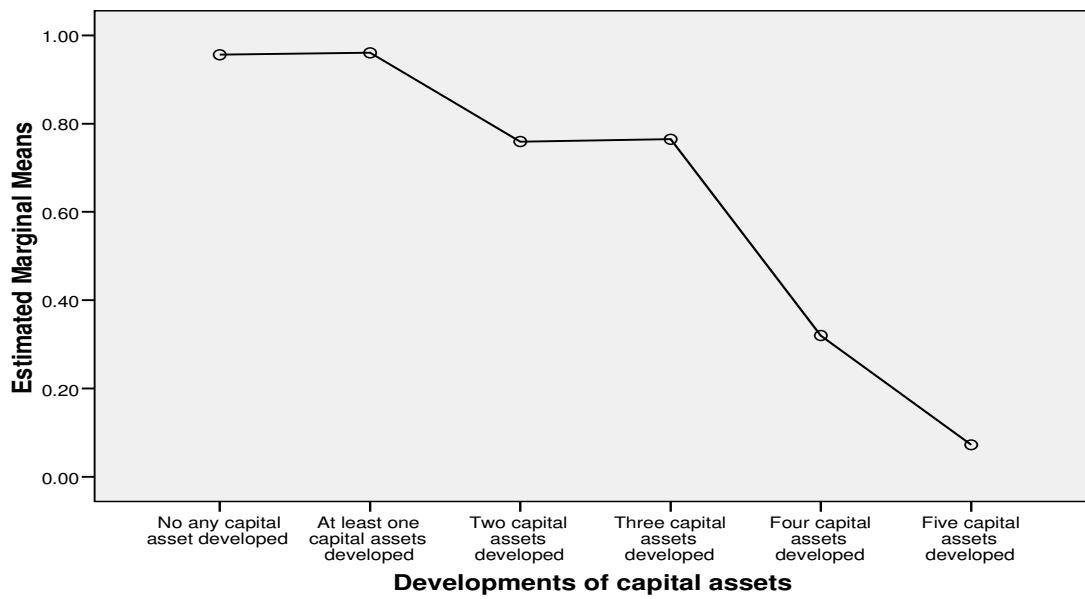
c This parameter is set to zero because it is redundant.

Appendix 6: Profile Plots of the relationship between the development of capital assets and the mean probability to fall in poverty conditions

**Estimated Marginal Means of Estimated Cell Probability for Response Category: 1.00**

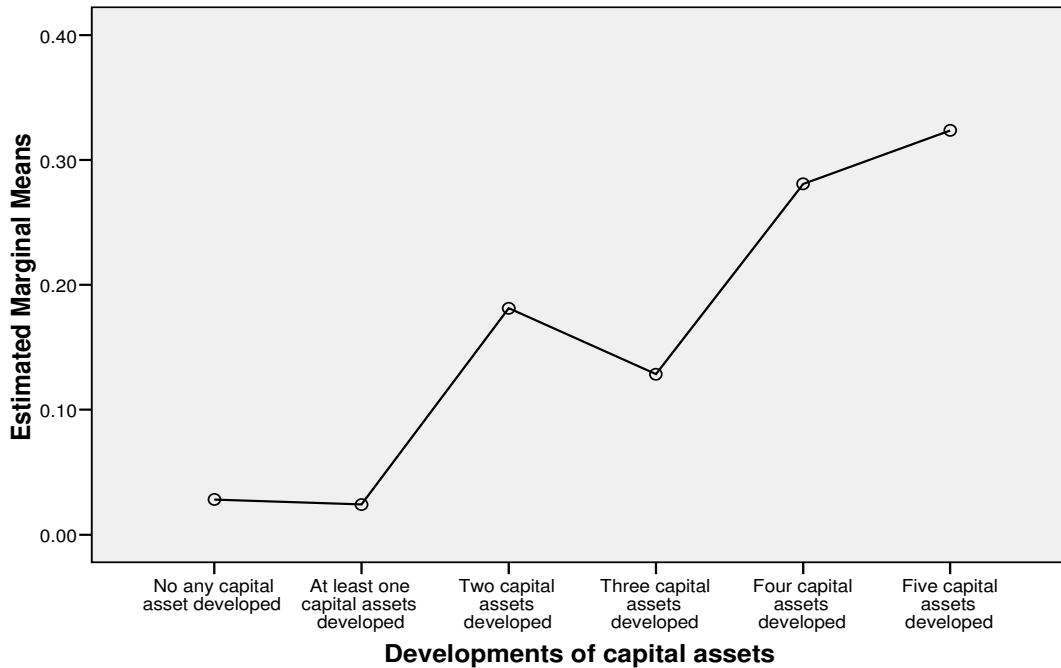


**Estimated Marginal Means of Estimated Cell Probability for Response Category: 2.00**

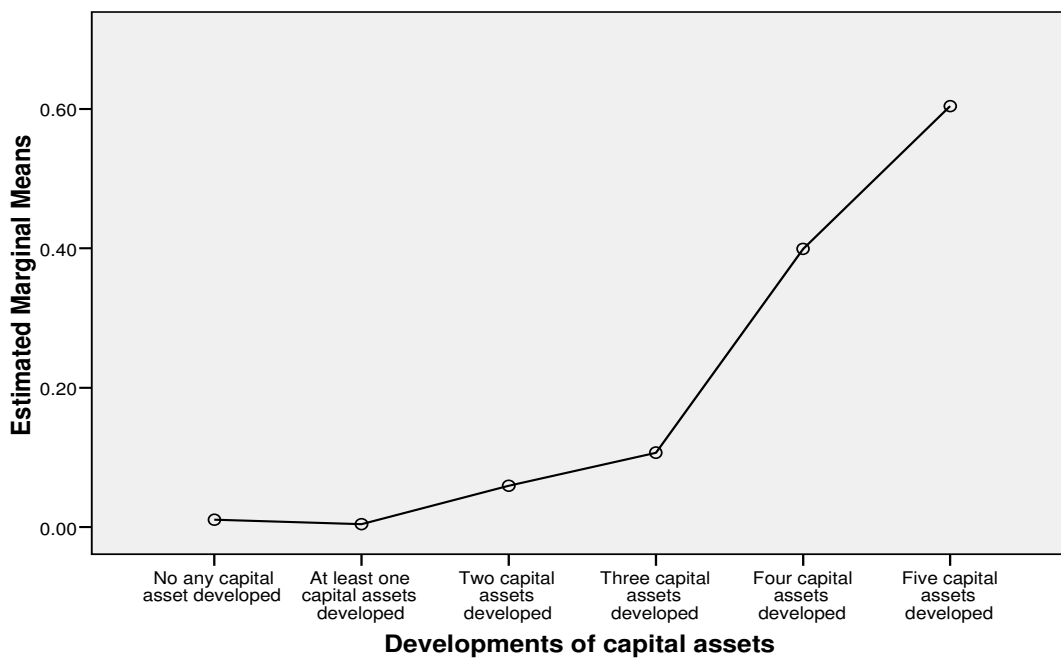


Appendix 6 continued...

**Estimated Marginal Means of Estimated Cell Probability for Response Category: 3.00**



**Estimated Marginal Means of Estimated Cell Probability for Response Category: 4.00**



Appendix 7: The original results of the third MNLR of model 1

Poverty status in 2009(a)		B	Std. Error	Wald	df	Sig.	Exp(B)	95% Confidence Interval for Exp(B)	
Extreme poor	Intercept	-56.615	29141.262	.000	1	.998			
	Edu	3.257	1992.802	.000	1	.999	25.976	.000	.(b)
	Age	.123	522.952	.000	1	1.000	1.131	.000	.(b)
	NDepends	-12.834	3552.905	.000	1	.997	2.67E-006	.000	.(b)
	[DFC=.00]	32.136	11464.344	.000	1	.998	9E+013	.000	.(b)
	[DFC=1.00]	0(c)	.	.	0	.	.	.	.
	[DSC=.00]	28.929	16103.922	.000	1	.999	4E+012	.000	.(b)
	[DSC=1.00]	0(c)	.	.	0	.	.	.	.
	[Hgender=.00]	.732	10717.256	.000	1	1.000	2.080	.000	.(b)
	[Hgender=1.00]	0(c)	.	.	0	.	.	.	.
Vulnerable	Intercept	-.286	2.527	.013	1	.910			
	Edu	-.291	.154	3.565	1	.059	.748	.553	1.011
	Age	.067	.040	2.832	1	.092	1.069	.989	1.156
	NDepends	-.115	.212	.295	1	.587	.891	.588	1.351
	[DFC=.00]	19.803	2954.446	.000	1	.995	4E+008	.000	.(b)
	[DFC=1.00]	0(c)	.	.	0	.	.	.	.
	[DSC=.00]	.311	7884.877	.000	1	1.000	1.365	.000	.(b)
	[DSC=1.00]	0(c)	.	.	0	.	.	.	.
	[Hgender=.00]	.263	.650	.164	1	.685	1.301	.364	4.647
	[Hgender=1.00]	0(c)	.	.	0	.	.	.	.

Appendix 7 continued...

Poverty status in 2009(a)		B	Std. Error	Wald	df	Sig.	Exp(B)	95% Confidence Interval for Exp(B)	
Viable	Intercept	.160	2.851	.003	1	.955			
	Edu	-.239	.164	2.113	1	.146	.787	.570	1.087
	Age	.058	.044	1.697	1	.193	1.059	.971	1.155
	NDepends	-.287	.243	1.393	1	.238	.751	.467	1.208
	[DFC=.00]	17.336	2954.446	.000	1	.995	3E+007	.000	.(b)
	[DFC=1.00]	0(c)	.	.	0	.	.	.	.
	[DSC=.00]	-18.569	.000	.	1	.	8.62E-009	8.62E-009	8.62E-009
	[DSC=1.00]	0(c)	.	.	0	.	.	.	.
	[Hgender=.00]	-.901	.729	1.529	1	.216	.406	.097	1.694
	[Hgender=1.00]	0(c)	.	.	0	.	.	.	.

a The reference category is: Sustainable.

b Floating point overflow occurred while computing this statistic. Its value is therefore set to system missing.

c This parameter is set to zero because it is redundant.

Appendix 8: The original results of the first MNLR of model 2

Households groups (a)		B	Std. Error	Wald	df	Sig.	Exp(B)	95% Confidence Interval for Exp(B)	
Unsuccessful	Intercept	-7.490	3.316	5.102	1	.024			
	Edu	.241	.197	1.501	1	.221	1.273	.865	1.874
	Age	.068	.045	2.294	1	.130	1.070	.980	1.169
	NDepends	-.258	.269	.921	1	.337	.773	.457	1.308
	[DNC=.00]	1.082	.864	1.566	1	.211	2.949	.542	16.047
	[DNC=1.00]	0(b)	.	.	0	.	.	.	.
	[DPC=.00]	.296	.928	.102	1	.750	1.344	.218	8.293
	[DPC=1.00]	0(b)	.	.	0	.	.	.	.
	[DHC=.00]	1.820	.966	3.554	1	.059	6.173	.930	40.963
	[DHC=1.00]	0(b)	.	.	0	.	.	.	.
	[DSC=.00]	16.878	4421.	.000	1	.997	21391170.	.000	.(c)
	[DSC=1.00]	0(b)	.	.	0	.	.	.	.
	[Hgender=.00]	1.128	.812	1.930	1	.165	3.091	.629	15.183
	[Hgender=1.00]	0(b)	.	.	0	.	.	.	.
Struggling	Intercept	-3.218	2.401	1.796	1	.180			
	Edu	-.204	.111	3.399	1	.065	.815	.656	1.013
	Age	.028	.038	.533	1	.465	1.028	.955	1.107
	NDepends	.256	.217	1.401	1	.237	1.292	.845	1.976
	[DNC=.00]	1.917	.700	7.505	1	.006	6.798	1.725	26.784
	[DNC=1.00]	0(b)	.	.	0	.	.	.	.
	[DPC=.00]	1.655	.790	4.393	1	.036	5.233	1.113	24.592
	[DPC=1.00]	0(b)	.	.	0	.	.	.	.
	[DHC=.00]	2.569	.788	10.619	1	.001	13.047	2.783	61.154
	[DHC=1.00]	0(b)	.	.	0	.	.	.	.
	[DSC=.00]	15.925	4421.1	.000	1	.997	8243467.173	.000	.(c)
	[DSC=1.00]	0(b)	.	.	0	.	.	.	.



Appendix 8 continued...

Households groups (a)		B	Std. Error	Wald	df	Sig.	Exp(B)	95% Confidence Interval for Exp(B)	
Successful	[Hgender=.00]	.751	.633	1.409	1	.235	2.120	.613	7.330
	[Hgender=1.00]	0(b)	.	.	0	.	.	.	.
	Intercept	.356	5.331	.004	1	.947	.	.	.
	Edu	-.238	.200	1.428	1	.232	.788	.533	1.165
	Age	.055	.080	.474	1	.491	1.056	.904	1.235
	NDepends	-.655	.506	1.680	1	.195	.519	.193	1.399
	[DNC=.00]	-1.861	1.471	1.601	1	.206	.155	.009	2.779
	[DNC=1.00]	0(b)	.	.	0	.	.	.	.
	[DPC=.00]	-.723	1.174	.379	1	.538	.485	.049	4.850
	[DPC=1.00]	0(b)	.	.	0	.	.	.	.
	[DHC=.00]	.529	1.543	.117	1	.732	1.697	.082	34.952
	[DHC=1.00]	0(b)	.	.	0	.	.	.	.
	[DSC=.00]	-.119	.000	.	1	.	.888	.888	.888
	[DSC=1.00]	0(b)	.	.	0	.	.	.	.
	[Hgender=.00]	-1.399	1.467	.909	1	.340	.247	.014	4.377
	[Hgender=1.00]	0(b)	.	.	0	.	.	.	.

a The reference category is: Most successful. b This parameter is set to zero because it is redundant.

c Floating point overflow occurred while computing this statistic. Its value is therefore set to system missing.

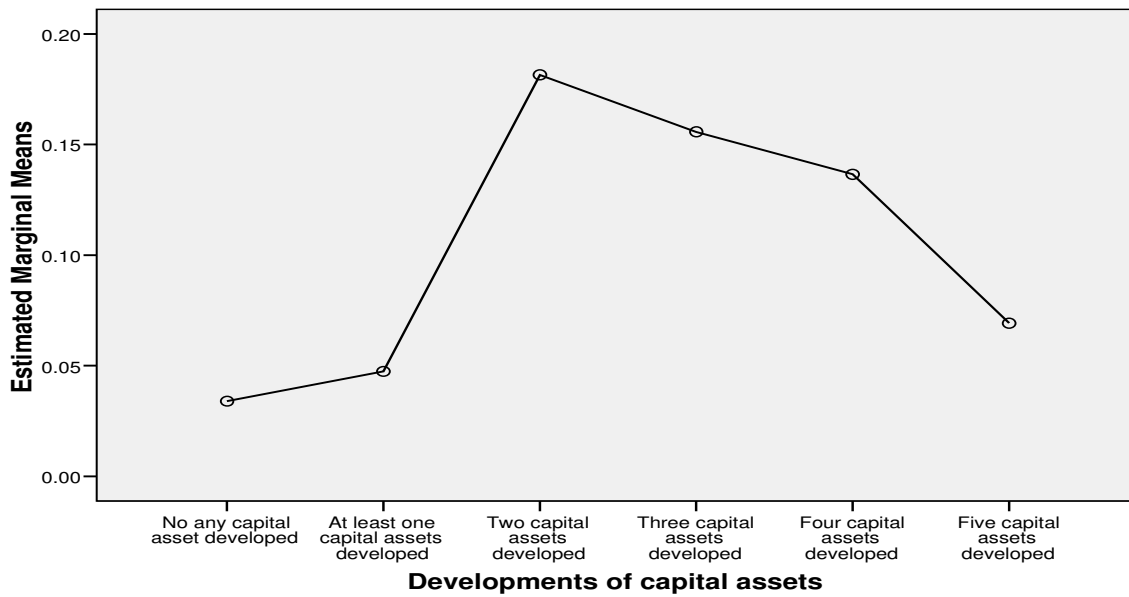
Appendix 9: The original results of the second MNLR of model 2

Households group based on the direction of the movement of poverty(a)		B	Std. Error	Wald	df	Sig.	Exp(B)	95% Confidence Interval for Exp(B)	
Unsuccessful	Intercept	-3.726	1.954	3.634	1	.057			
	Edu	.153	.172	.791	1	.374	1.165	.832	1.633
	[DNC=.00]	1.291	.834	2.395	1	.122	3.635	.709	18.633
	[DNC=1.00]	0(b)	.	.	0	.	.	.	.
	[DPC=.00]	.642	.883	.528	1	.467	1.900	.337	10.723
	[DPC=1.00]	0(b)	.	.	0	.	.	.	.
	[DHC=.00]	1.697	.921	3.398	1	.065	5.459	.898	33.175
Struggling	[DHC=1.00]	0(b)	.	.	0	.	.	.	.
	Intercept	-.833	1.217	.468	1	.494			
	Edu	-.213	.107	3.955	1	.047	.808	.655	.997
	[DNC=.00]	1.928	.675	8.159	1	.004	6.876	1.831	25.815
	[DNC=1.00]	0(b)	.	.	0	.	.	.	.
	[DPC=.00]	1.668	.740	5.079	1	.024	5.302	1.243	22.624
	[DPC=1.00]	0(b)	.	.	0	.	.	.	.
Successful	[DHC=.00]	2.631	.749	12.348	1	.000	13.892	3.202	60.276
	[DHC=1.00]	0(b)	.	.	0	.	.	.	.
	Intercept	.653	1.765	.137	1	.711			
	Edu	-.223	.174	1.642	1	.200	.800	.568	1.126
	[DNC=.00]	-1.661	1.296	1.642	1	.200	.190	.015	2.410
	[DNC=1.00]	0(b)	.	.	0	.	.	.	.
	[DPC=.00]	-.475	1.056	.202	1	.653	.622	.079	4.928
[DPC=1.00]	0(b)	.	.	0	.	.	.	.	
	[DHC=.00]	1.176	1.327	.785	1	.376	3.240	.240	43.650
	[DHC=1.00]	0(b)	.	.	0	.	.	.	.

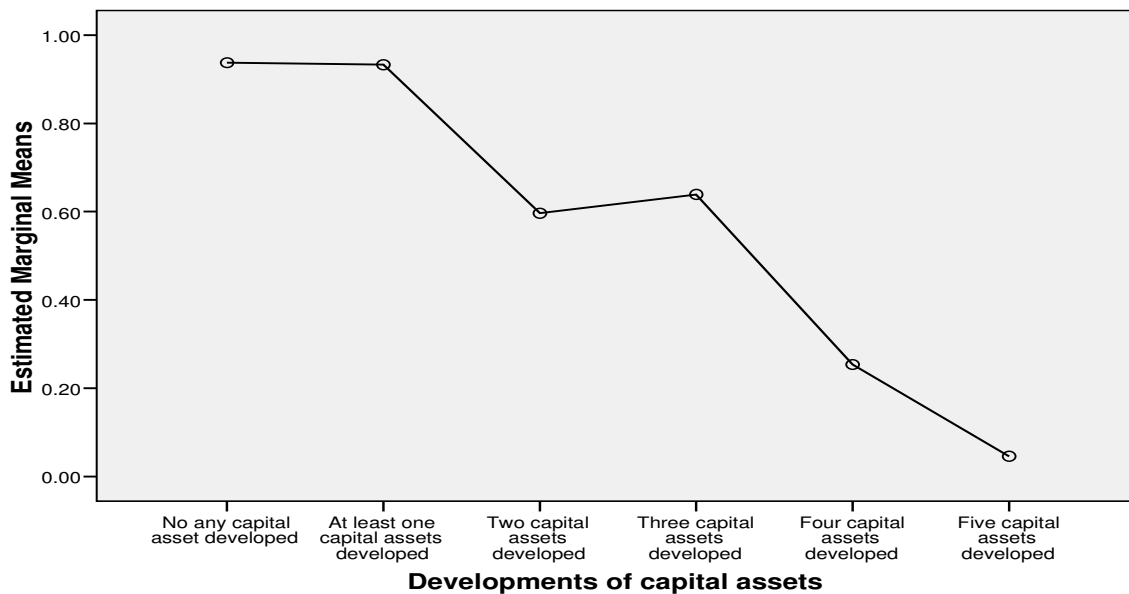
a The reference category is: Most successful. b This parameter is set to zero because it is redundant.

Appendix 10: Profile Plots of the relationship between the development of capital assets and the mean probability to fall in poverty household group

**Estimated Marginal Means of Estimated Cell Probability for Response Category: 1.00**

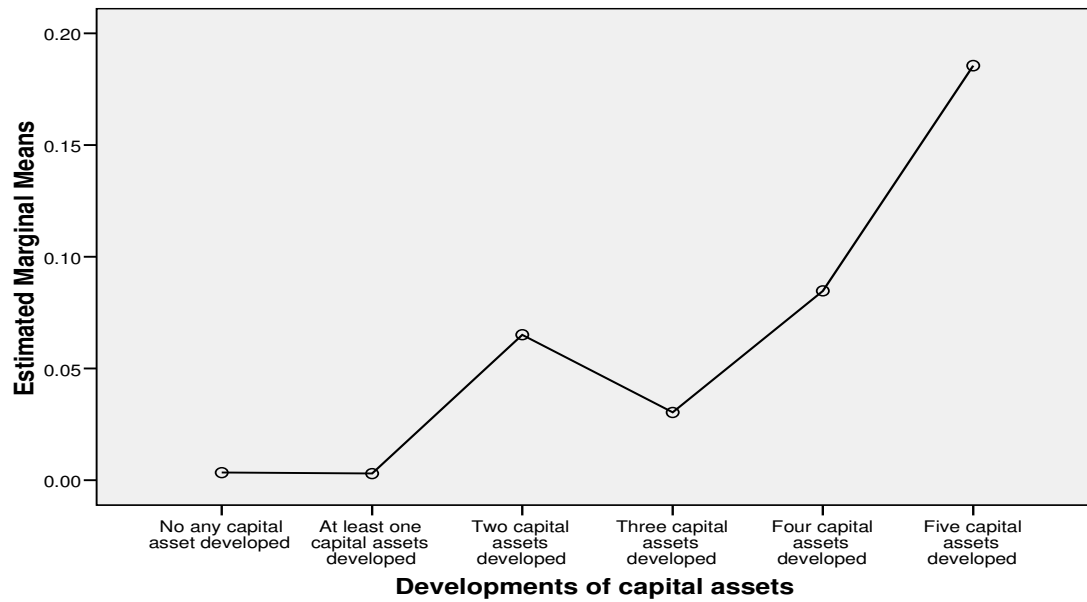


**Estimated Marginal Means of Estimated Cell Probability for Response Category: 2.00**

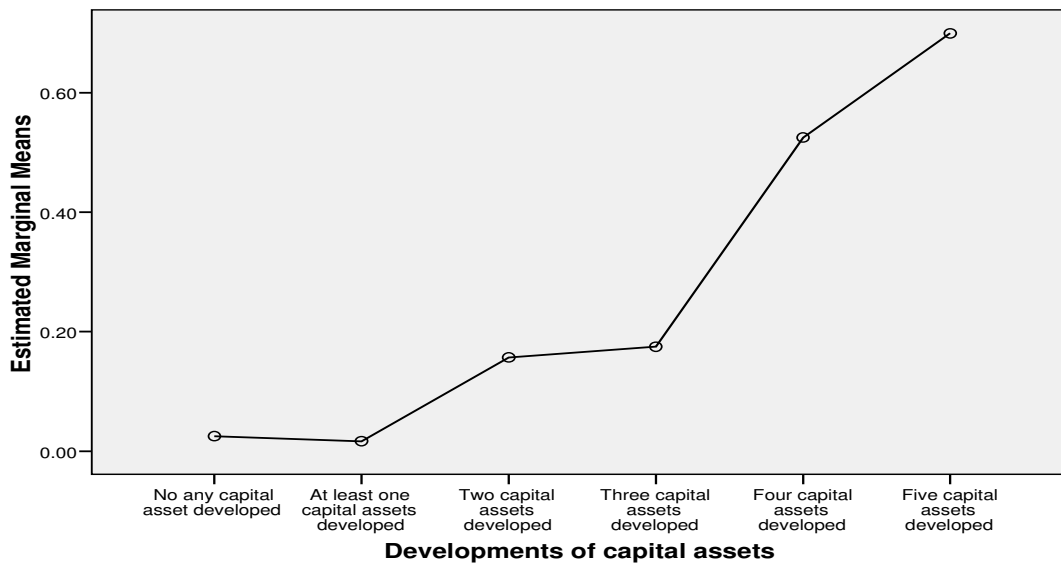


Appendix 10 continued...

**Estimated Marginal Means of Estimated Cell Probability for Response Category: 3.00**



**Estimated Marginal Means of Estimated Cell Probability for Response Category: 4.00**



Appendix 11: The original results of the third MNLR of model 2

Households groups (a)		B	Std. Error	Wald	df	Sig.	Exp(B)	95% Confidence Interval for Exp(B)	
Unsuccessful	Intercept	-6.493	3.108	4.364	1	.037			
	Edu	.265	.193	1.895	1	.169	1.304	.894	1.902
	Age	.067	.043	2.467	1	.116	1.070	.983	1.163
	NDepends	-.307	.252	1.480	1	.224	.736	.448	1.206
	[DSC=.00]	17.587	4398.	.000	1	.997	43440149.	.000	.(b)
	[DSC=1.00]	0(c)	.	.	0	.	.	.	.
	[DFC=.00]	1.599	1.111	2.071	1	.150	4.949	.560	43.702
	[DFC=1.00]	0(c)	.	.	0	.	.	.	.
	[Hgender=.00]	1.018	.774	1.731	1	.188	2.769	.607	12.624
	[Hgender=1.00]	0(c)	.	.	0	.	.	.	.
Struggling	Intercept	-1.611	2.179	.547	1	.460			
	Edu	-.189	.106	3.210	1	.073	.827	.673	1.018
	Age	.041	.036	1.244	1	.265	1.041	.970	1.118
	NDepends	.183	.197	.872	1	.350	1.201	.817	1.766
	[DSC=.00]	16.055	4398.	.000	1	.997	9393218.4	.000	.(b)
	[DSC=1.00]	0(c)	.	.	0	.	.	.	.
	[DFC=.00]	3.866	.805	23.063	1	.000	47.744	9.856	231.274
	[DFC=1.00]	0(c)	.	.	0	.	.	.	.
	[Hgender=.00]	.716	.589	1.482	1	.224	2.047	.646	6.488
	[Hgender=1.00]	0(c)	.	.	0	.	.	.	.
Successful	Intercept	-2.304	4.2	.297	1	.586			
	Edu	-.112	.175	.410	1	.522	.894	.635	1.259
	Age	.061	.063	.935	1	.333	1.063	.939	1.204
	NDepends	-.547	.398	1.883	1	.170	.579	.265	1.264
	[DSC=.00]	-1.516	.000	.	1	.	.220	.220	.220
[DSC=1.00]	0(c)	.	.	0	.	.	.	.	

Appendix 11 continued...

Households groups (a)	B	Std. Error	Wald	df	Sig.	Exp(B)	95% Confidence Interval for Exp(B)	
[DFC=.00]	.979	1.417	.477	1	.490	2.661	.166	42.7
[DFC=1.00]	0(c)	.	.	0	.	.	.	.
[Hgender=.00]	-.982	1.128	.758	1	.384	.375	.041	3.41
[Hgender=1.00]	0(c)	.	.	0	.	.	.	.

a The reference category is: Most successful.

b Floating point overflow occurred while computing this statistic. Its value is therefore set to system missing.

c This parameter is set to zero because it is redundant.