Public Expenditure Reforms and Rural Poverty in Sri Lanka[1]

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Abstract

Reducing the role of the state under the Structural Adjustment Programmes (SAP) has been subject to considerable criticism mainly due to its high social cost. Based on the data of the Household Income Expenditure Surveys (HIES) in 1990/91 and 2002 and fiscal data from 1975 to 2005, and qualitative evidence the study estimated the impact of public expenditure reforms under SAPs on rural poverty in Sri Lanka. The article argues that SAPs do not seem to have made profound effect on social and economic public spending except on food subsidy. The study estimated poverty elasticities with respect to different expenditure categories based on the simultaneous equation system which allows to appraise direct and indirect effects to get a clear picture of public spending on rural poverty. This article concludes that the poverty reduction effects of government spending on rural roads and education is particularly high compared to other socio-economic expenditure categories. It is worthy to note that targeting government spending is more important to reduce poverty in era of fiscal adjustment when the government is under pressure to cut its budget deficit from various fronts.

Key Words : Agriculture - Human Development - Public Expenditure
Rural Poverty - Structural Adjustment Programmes

Introduction

Fiscal and public sector reforms were designed and
performed as a part of structural adjustment programmes (SAP)
with the aim of achieving macroeconomic balance.[2] In the late 1970s
Sri Lanka undertook a radical reform programme which principally
followed the SAP blueprint designed by the IMF and the World Bank;
including elimination of subsidies, opening up to trade and capital
flows, floating the exchange rate, and reducing the role of the state
in the economy. Originally, this wide range of policy reforms was
accompanied by high foreign exchange inflow through both grants
and loans. It has been the subject of much controversy (IMF, 2003)
because it imposes increasingly high social costs.[3] The component
of public expenditure reduction of fiscal adjustment has generally
attracted greater attention as its effects are both more direct and
more visible than other adjustment measures (Woodward, 1992).
Szekely (2001) argues that SAPs resulted in the dismantling of the
previous social development strategy, whilst the restraints of
government spending, the removal of subsidies, cost based pricing
for publicly provided goods and services and cuts in social spending
disproportionately affected the poor.[4] However, based on African
experience, some scholars hold views against the widely accepted
proposition that the poor have suffered from cuts in public spending
in line with adjustment programmes (Sahn, 1992; Ferroni and Kanbur
1991).

2. "... A sound fiscal position is key to achieving macroeconomic stability, which is
increasingly recognized as a critical ingredient for sustained growth and poverty
reduction. Good quality fiscal adjustment can also mobilize domestic savings,
increase the efficiency of resource allocation, and help to meet development
goals..." IMF (2006:4).
3. Based on middle income Latin American countries some claimed that drastic
cuts in government spending had a deleterious impact on the poor (See Cornia,
et al. 1987; Helleiner, 1987).
4. It is apparent that many countries with adjustment programmes have reduced
public expenditure on social services. See Zuckerman (1989).

The main aim of this paper is to explore the impact of public expenditure cut under the banner of fiscal adjustment of liberalised economic reform on the rural poor. Accordingly, this paper deals with the matter of government expenditure cuts and their impacts on social and economic infrastructure and thereby on the well-being of the rural poor in Sri Lanka during and the post adjustment era.[5]

The social implications of, especially on the poor, have received increasing attention over the past period. In any case, the government expenditure rationalism under the structural adjustment needs to be explored with a closer scrutiny of all the aspects of these implications

Like most of the developing countries, even in Sri Lanka, agriculture and poverty are closely interlinked. Consequently, changes in public policy and expenditure on agriculture can make a substantial impact on poverty, in particular rural poverty, because a larger portion of rural poor are engaged in agriculture for their livelihood. Meanwhile, agriculture is also dependent on non-agricultural policy and decisions; for instance, spending on rural infrastructure (roads, irrigation), land development, health and education services, which can exert an influence on agricultural development (Akroyd, 2004). Therefore, curtailment of public expenditure can have direct and indirect effects on rural poverty through different channels

Until the mid 1980s the focal point of the International Monetary Fund (IMF) was to create an overall ceiling of public spending. When assessing the poverty impact of public expenditure reduction, we need to consider the changes in composition of government expenditure. It is, generally, believed that social spending can affect the poor far more than the non poor. In the case of Sri Lanka, public

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5. The more crucial change of economic policy in Sri Lanka occurred with the initiation of enhanced structural adjustment programme (ESAP) in 1989. In this adjustment period (1989-1993) much emphasis was given to the fiscal reforms; during this period elimination of subsidies and price controls, public sector rationalization, and privatisation was intensified

spending on the social sector highly contributed to bloated government expenditure in the pre adjustment era. In order to gain a deeper insight into the impact of public expenditure reforms on rural poverty, we need to establish better link between rural poverty and different expenditure categories. During the past period, the country experienced a modest decline in rural poverty (see Table 1). In this context, it is more important to explore the magnitude of the role played by the government to reduce the incidence of rural poverty.

In recent years, there has been increasing use of mixed methods in poverty appraisals and poverty impact evaluations. However, a recent study by Kanbur and Shaffer (2007) discuss the tensions of combining quantitative (QUAN) and qualitative (QUAL) methods on poverty analysis. They draw our attention to epistemological differences between empiricism and critical hermeneutics[6] using units of knowledge and truth or validity criteria. According to them the critical hermeneutic approach largely hinges on dialogue techniques, such as focus group discussions and semi-structured interviews in order to better understand on poverty. The premise for using both approaches in the same study is grounded in the fact that neither QUAN nor QUAL methods are sufficient to capture the real plight of poverty profile (Ivankova et al., 2006). Integrating both QUAN and QUAL methods complement each other and allows for a more in-depth analysis, taking advantage of strengths of each (Green et al. 1989; Miles and Hurberman 1994). Mixed methods play a pivotal role in assessing poverty and social impact analysis (PSIA) of policy reform[7]. In this study, all the related public expenditure and information on welfare benefits generated by different public activities in the rural sector will be collected through

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6. *"Hermeneutics is generally defined as the interpretative understanding of intersubjective meanings. Critical hermeneutics adds two dimensions . . .(i) understanding entails critical assessment of given beliefs and perceptions involving some underlying conception of truth or validity; (ii) emancipation, enlightenment or empowerment is essential part of the process of enquiry."* Kanbur and Shaffer (2007:185).

7. PSIA refers to the analysis of intended and unintended consequences of policy interventions on the well-being or welfare of different income groups, with a specific focus on the vulnerable and poor (Robb, 2003).

relevant public institutions in Sri Lanka. In addition, key informant interviews (a popular tool in impact evaluations) are the main source of QUAL data.

The paper is structured as follows. Section 2 reviews the changes in the poverty profile in detail. Section 3 explains the trends and determination of various social and economic public expenditures. In Section 4, an attempt is made to establish better linkage between rural poverty and various government expenditures using an analytical framework. Section 5 presents interpretation of the results using qualitative evidence, while Section 6 presents concluding remarks.

Poverty Dynamics in Sri Lanka

There are three indicators of poverty that we are interested in measuring: *incidence* produces the percentage of individuals living below the poverty line - this is often referred to as the index of headcount, *depth* or intensity which indicates how far each household's expenditures fall below the poverty line-this is called the poverty gap index; and *severity* that provides the information on the distribution of income among poor people - this is the well known squared poverty gap index.

We are interested in understanding poverty changes over time, geographical location or socio-economic groups. Table 1 using the Foster, Greer, Thorbecke (FGT)[8] index clearly describes the nature of poverty in Sri Lanka between 1990/91 and 2007. The poverty rate (headcount index)[9] for the country as a whole is 26.1, indicating that in 1990 about one quarter of the households lived below the poverty line or 4.3 million people lived below the poverty line. The poverty gap index and squared poverty gap index are also quite high, with an average expenditure shortfall of rural sector equal

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8. See Foster et al. 1984.

9. The headcount ratio measures the incidence of poverty; simply it computes the percentage of individuals living below the poverty line. Note that if a household is identified as poor, then all members of that household are deemed to be poor.

to 5.6 per cent of their household subsistence needs in 2002. We find that overall poverty diminished relatively slightly over the period between 1990 and 2002, from 26.1 to 22.7. We can come to a similar conclusion by looking at the poverty gap and squared poverty gap indexes.

Table 1 - Poverty Indices by Sectors

Poverty Indices		1990	1995	2002	2007
Head - Count Index	Rural	29.5	30.9	24.7	15.7
	Urban	16.3	14.0	7.9	6.7
	Estate	20.5	38.4	30.0	32.0
	Country	26.1	28.8	22.7	15.2
Poverty Gap Index	Rural	6.3	7.2	5.6	3.2
	Urban	3.7	2.9	1.7	1.3
	Estate	3.3	7.9	6.0	6.2
	Country	5.6	6.6	5.1	3.1
Squared Poverty Gap Index	Rural	2.0	2.5	1.8	1.0
	Urban	1.3	0.9	0.5	1.3
	Estate	0.9	2.5	1.8	1.8
	Country	1.8	2.2	1.6	0.9

Source: Household Income Expenditure Survey, 1990/91, 1995/96, 2002 and 2006/07 using Official poverty lines, Department of Census and Statistics.

Using alternative poverty lines approach, we can test the robustness of the above findings. Using poverty dominant conditions,

we can conclude whether poverty has increased or decreased between 1990 and 2002.[10] Figure -1 in Appendix depicts the cumulative distribution function (CDF) of the per capita expenditure for the two survey periods.[11] This is called the first order dominance curve. The 1990 CDF lies unambiguously above that of 2002 indicating that there are a larger number of households at the high real income levels in 2002 than in 1990. As Figure 1 in Appendix shows, because consumption expenditure in 2002 dominates expenditure in 1990, we can come to the conclusion that national poverty in Sri Lanka has distinctly decreased between 1990/91 and 2002, but not as anticipated. It may be that the low income groups, mainly in rural areas, did not benefit from economic growth realised during this period.

Let us turn to investigate the change in poverty at the sectoral level. It can be seen from the data in Table 1 that the decline in poverty in urban areas has been more impressive than in rural areas (the incidence fell from 29.5 per cent in 1990 to 15.7 per cent in 2007). Figure 2 in Appendix, the cumulative distribution function for the rural sector, apparently corroborates this result. Surprisingly, the estate sector in the country experienced a dramatic increase in the incidence of poverty (the incidence increased from 20.5 per cent in 1990 to 32 percent in 2007). Moreover, the decrease in the poverty gap and severity indices implies that the expenditure distribution improved for the poor. The evidence of these poverty estimates suggests that poverty in Sri Lanka is predominantly a rural

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10. It is obvious that poverty will fall between two points of time, if the cumulative distribution function (poverty incidence curve) for the later time lies above the former time. This dimension is identified as First-Order Dominance condition. Based on depth of poverty (poverty gap measure) we can test Second-Order Dominance Condition. Hence, the poverty deficit curve represents by the area under the cumulative distribution, is nowhere lower than that of earlier date at all points up to the maximum poverty line. Using the sensitive poverty measures, like squared poverty gap measure we can test Third-Order Dominance Condition. For more details of the theory of stochastic dominance, see Ravallion (1992, 1994); Deaton (1997).
11. The cumulative distribution of expenditure in 1990 was expressed in 2002 prices.

phenomenon and rural people gained slightly from the economic growth realized over the past reform period.

Change in Rural Poverty by Sources of Income

In this sub-section, we examine rural poverty dynamics by sources of income of the household head. It is obvious that welfare levels of individuals are apparently correlated with their occupations. The rural poor commonly possess multiple sources of income from agriculture, non agricultural employment and transfers (private and public). In the current study, the households are categorized under four income groups, which are: agriculturalist, wage employee, self employee, and subsidy recipients. Table 2 demonstrates that households headed by agriculturalists have a very high poverty rate. In fact, income of households headed by agriculturalists changed only slightly due to the lack of substantial agricultural growth and slow process of diversification in agriculture. Poverty incidence for these households fell slightly, from 28 per cent to 23 per cent, whilst the poverty depth and severity measures also showed a small drop. Yet more than 30 per cent of the workforce in Sri Lanka is known to be agriculturalists.[12] Paddy is the main peasant crop in Sri Lanka, and it provides seasonal employment for half of the labour force in rural areas. Real income from paddy production has stagnated over the past period.

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12. By 1990, the agricultural sector accounted for 47 % of the total employment in Sri Lanka, while this share dropped to 35% in 2002 (see DCS, 2005).

Table 2 - Poverty Estimates (by Occupation and Income Source)

Occupation and Income	Population Share 1990 2000	HeadcOunt Index 1990 2000	Poverty Gap Index 1990 2000	Squared Poverty Gap Index 1999 2000
Agriculturalist	60.62 47.88	27.98 22.90	7.78 5.97	3.02 2.36
Wage Employee	27.06 37.02	27.88 16.48	7.54 4.81	3.06 2.12
Self Employee	11.07 14.59	21.05 06.92	5.65 1.78	2.17 0.75
Subsidy Recipients	54.59 30.50	29.23 21.24	7.27 5.29	2.74 2.02

Source : Authors Calculation Based on Household Income and Expenditure Survey, 1990/91 and 2002, Department of Census and Statistics.

It is the poorest households that rely heaviest on food subsidies.[13] A large proportion of rural households are receiving food subsidies, as evidenced by HIES in 1990, 54 percent of rural households were receiving food subsidies, and by 2002 this ratio slightly dropped to 30 percent. The poverty rate for this household group fell sharply, poverty incidence declined from 29.2 per cent in 1990/91 to 21.24 per cent in 2002. However, still a large bulk of this social group falls below the poverty line. In this context, the question here is that how effective is this measurement to move individuals out from poverty level. Perhaps, the most serious drawback of this food subsidy programme is that there are many recipients of food

13. The food stamp programme, implemented to satisfy the food consumption needs of low income families, was replaced in 1989 by a new subsidy programme, namely "*Janasaviya*". Having identified some shortcomings, this programme was replaced by the "*Samurdi*" programme in 1995. This programme was expected to cover one third at the population of the bottom of the income scale.

subsidies amongst the non-poor and many non-recipients amongst the poor (Datt and Gunawardane, 1997).[14]

Meanwhile, a substantial decline in the poverty rate can be seen from households headed by wage employees[15] and self employees. In contrast to formal sector employees, however, daily paid workers appear to be the vulnerable group of the rural sector. The increase in non-farm employment coincides with a sustained increased in rural wages since the 1980s. Thus, it seems likely that rural poverty declined over the past period in question largely due to an increase in rural wages, which in turn were induced by the expansion of rural non-farm employment. It is noteworthy that Sri Lanka's small and medium scale enterprise sector can have a positive contribution into employment generation and poverty reduction (Chandrasiry, 2003).

Public Expenditure Reform : Agriculture, and Physical and Human Development

The impact of SAPs on the level of public spending in infrastructure has received a great deal of attention. Before moving to analyse the impact of public expenditure reforms on rural poverty, it is important to explore the changes in composition of public expenditure on social and economic infrastructure and the impact of the presence of SAPs on the level of various infrastructure items (all other factors being the same). This section models the determination of public expenditure composition.

Let us move to investigate the trends in infrastructure spending in Sri Lanka over the period in question. In this regard

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14. Even though, the food subsidy programme has been implemented as a key component of the government's poverty alleviation strategy, these targeting errors influence its cost-effectiveness. The wide spread of income transfers across the population and poor targeting draw resources away from the most needy. See World Bank (2002). Since our interest is limited to explore the poverty impact of the subsidy, this is beyond the scope of the current study.
15. The Wage employee category represents household head working in public and private sector and daily paid workers in irregular employment.

here we examine the changes in composition of public spending on infrastructure, which represents spending priorities. As Table 3 shows, public spending on infrastructure in Sri Lanka exhibits an erratic pattern over the period concerned. In terms of economic structure, the agricultural sector receives a prominent place in the Sri Lankan economy. Moreover, a large number of poor people in the rural sector engaged mainly in agriculture. Therefore the role of the state is more important with respect to poverty reduction in rural areas.

Table 3 - Government Expenditure on Economic and Social Infrastructure (As a % of GDP)

Year	Agriculture and Irrigation	Education	Health	Transport & Commu- nication	Electricity and Water	Food Subsidy
1975	2.0	2.7	1.6	2.6	5.1	3.0
1980	2.4	2.8	2.0	3.9	3.2	2.0
1985	6.7	2.7	1.3	3.1	2.1	1.2
1990	1.9	3.1	1.5	2.1	3.7	2.4
1995	1.2	2.8	1.6	3.1	4.4	0.9
2000	2.7	2.5	1.6	1.7	3.3	0.7
2005	0.2	2.6	1.8	1.9	4.1	0.4
2009	1.4	2.8	1.5	3.5	1.3	0.2

Source: Various Issues of Annual Reports of Central Bank, Sri Lanka.

It is interesting to note that before the introduction of SAPs, the government has been involved in the agricultural sector to a greater extent. But we can observe apparently the sharpest cuts in expenditure on agriculture since 1990, indicating that the adjustment programme has made a strong impact on agriculture.

It should be noted that drastic cuts in agricultural research and development spending can have an adverse impact on agricultural productivity and thereby income of the farmers. The public spending on agriculture and irrigation went up from 2.4 per

cent of GDP in 1980 to 6.7 per cent in 1985. The marked acceleration of this rate in 1980 – 1985 was mainly due to massive public sector investment in one of the leading projects, the multipurpose *Mahaweli* river project, which was involved in large scale irrigation and land settlement, and power generation, aimed at enhancing growth in the rural economy and agricultural production.[16] In general, over the post-independence period, successive governments have long targeted the agriculture and irrigation sector as the main source for growth and alleviation of rural poverty. Most public investments are directed towards the construction of new dams for power generation and surface irrigation systems. We can observe, however, that public spending on agriculture has decreased markedly (see Table 3) to 0.2 percent of GDP in 2005 from 1.9 per cent in 1990.

Social policy and expenditure in Sri Lanka were said to have been affected by SAPs initiated in 1977. Its general emphasis on investment and restriction of recurrent expenditure resulted in foreign debt and aid becoming readily available for new infrastructural projects (Alailima, 1997). It is noteworthy that in the first phase of SAPs (1978-1982), however, this public expenditure reform did not create compression of social sector expenditure. The food subsidy was the only major social expenditure category which was drastically cut by the expenditure reform in 1977.[17] For instance, public expenditure on food subsidy dropped from 5 percent of GDP in 1977 to 2 percent in 1990. On average, as revealed by Table 5.1, there seems to be no apparent impact of SAPs on public spending on education and health. Government expenditure on education remained almost the same before and after the adjustment era at around 2.7 percent of GDP, while the proportion of health expenditure to GDP hovered around 1.5 percent. Note, however, that public spending on health, and transport and communication show a slight decrease in 1980s and 1990s.

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16. Between 1978 and 1982, this project solely accounted for 45 % of total public investment. See Atapattu (1997).
17. In 1979, however, the food subsidy programme of the government was confined only to needy households and the food stamp scheme was initiated in its place.

The decline in expenditure adversely affected the quality of publicly provided services (Alailima, 1997). It can be seen that repairs and maintenance of existing services were ignored. Recurrent expenditure on consumables and training was limited.

Model Specification and Results

It is argued that if a rapid economic growth is to be achieved and the level of poverty is to be reduced, adequate infrastructure facilities should be available. A number of studies have conducted to examine the growth effects of infrastructure facilities (Röller and Waverman, 2001; Fernald, 1999). So far, however, the studies to determinate the composition of government spending is inadequate. Mainly, fiscal condition, political and economic factors may influence the public spending. In this section we make an attempt to assess the determinants of government spending on infrastructure using a model suggested by Fan and Rao (2003), which allows us to gain insights into whether SAPs have altered the government spending on infrastructure (all the other factors held constant).[18] In terms of infrastructure (INS) i^{th} category to total spending, can be formally expressed as:

$$INS_i = f(TEXY_{t-1}, YPC_{t-1}, SAP_t) \qquad (1)$$

Here, TEXY denotes total public expenditure as a percentage of GDP, YPC is per capita GDP, SAP is the structural adjustment programme, and "t" denotes time period. In the current study, five infrastructure expenditure categories, which are highly related to the well-being of the rural poor, are selected to model, i.e., agriculture (AGRI), health (HEAL), education (EDUC), food subsidy (FSUB), and transport and communication (TRCOM). We estimated the model based on the government expenditure data (annual) from 1975 to 2005.[19] The investigation of the stationarity (or non-

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18. Using cross country data, Fan and Rao (2003) modelled the composition of government spending.
19. Descriptive statistics of the dependent variables are presented in Table 1 in Appendix.

stationarity) in time series will be established by testing unit roots. Unit root tests are important in examining the stationarity of a time series to avoid spurious regressions. Accordingly, here we use the Augmented Dickey-Fuller (ADF) test to establish the order of integration in the data set. Table 4 presents the estimated t- values from ADF tests on each variable in the level and first difference.

Table 4 - Unit Root Tests

Variable	Lags	Level	First Difference
EDUC	1	-2.4449	-5.5975***
HEAL	1	-1.9587	-5.9448***
FSUB	2	-1.7007	-4.4518***
TRCOM	1	-2.6542	-5.4760***
AGRI	1	-1.7150	-3.5534*
TEXY	1	-1.2096	-4.0623**
YPC	2	-1.7756	-5.3693***

Notes : Mackinnon (1991) critical values are used for rejection of hypothesis of a
        unit root.
        *** Hypothesis of a unit root can be rejected at the 1 per cent level.
        ** Hypothesis of a unit root can be rejected at the 5 per cent level.
        * Hypothesis of a unit root can be rejected at the 10 per cent level.

The results of unit root tests show that all of the series are integrated of order one [I (1)], (i.e., first difference stationary). Thus a variable which must be differenced once to become stationary is said to be [I(1)]. Accordingly, first differences of the variables were used to estimate the regressions. Estimated results for model (1) are presented in Table 5.

Table 5 - Estimates of Determinants of Social and Economic
Public Expenditure Categories

	EDUC	HEAL	FSUB	TRCOM	AGRI
Intercept	-4.1456	-0.2435	0.2746	-1.8205	-0.5804
	(-2.324) ***	(-0.937)	(1.969) *	(-3.164) ***	(-2.455) **
TEXYt-1	0.5885	0.5241	0.3069	0.4274	1.3025
	(3.803) ***	(2.383) **	(2.020) *	(1.896) *	(3.718) ***
YPCt-1	0.5441	0.0286	-2.1417	-0.0631	3.6665
	(2.317)**	(1.165)	(-2.249)**	(-1.990)*	(1.804)*
SAP*	-0.0038	-0.905	-0.1461	-0.1654	-0.0154
	(-0.655)	(-1.187)	(-2.087)**	(-1.786)*	(-0.166)
R^2	0.28	0.21	0.396	0.29	0.27
DW	2.25	2.71	1.81	1.89	2.47
F	6.08	4.09	3.86	3.38	7.03

Note : Figures in parentheses are t-values.
*** indicates significant at 1% level,
** indicates significant at 5% level, and
* indicates significant at 10% level.
The dummy variable for SAP = 1 in 1978-93(first reform wave of
liberalisation) and
1989-93(second reform wave of liberalisation), and = 0 in subsequent years.

Education:

As the results show, total government expenditure is
positively correlated with education expenditure. In short, the results
show that as the economy grows and income increases, government
spends more on education. The level of public expenditure on
education and its efficiency can have a strong influence on human
capital development. Almost every country in South Asia has
increased their proportion of government expenditure on education
over the past two decades. More especially, Pakistan and India's
public spending on education increased sharply. Bangladesh

increased its expenditure share, which was 1.1 percent in 1980 as a percentage of GDP to 2.3 percent in 1995, while India increased it from 3.0 percent to 3.8 percent in 1995 and to 3.7 percent in 2005. However, in Sri Lanka, which dedicated a larger amount of its national income to education, 4 percent in 1960 dropped to 2.6 percent in 2005. The implementation of public expenditure cuts during the period of economic recessions adversely affected the education expenditure share over the past three decades. Apart from that, the high level of defence expenditure negatively influenced all the other expenditures including education.[20]

Public investment in education is well known in the economic literature and it is justified by different notions. Those who advocate public investment in education argue that education is a merit good and a basic human right, enabling people to access the world's knowledge and information, and empowering individuals to fulfil their innate potential. At the same time some argue that in economies with imperfect capital markets and high set up and transaction costs of education, private investment in education often tends to lower social optimal levels. In this context, in a developing economy like Sri Lanka public investment in education, in particular primary and secondary level schooling which is deemed to be highly benefited by low income individuals can be justified on economic grounds.

The formal education system of the country is overwhelmingly managed by the public sector. It accounted for 98 percent of schools and 97 percent of pupils in 2005.[21] Moreover, the formal tertiary education system is also dominated by the government; all national universities and several high technical institutions are owned and operated by government. It should be noted that real per capita expenditure on education shows erratic patterns over the past period. This was largely due to the education spending failing to keep pace with inflation (Aturupana, 2004).

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20. In the year 2005, the defence expenditure was approximately 63 percent greater than education expenditure.
21. In 2005, 105,048 students were enrolled in 85 private schools, while 4,102,739 students were enrolled in 10464 public schools.

Now we turn to examine the impact of SAPs on government expenditure on education. In terms of the regression results, the coefficient for education is not statistically significant indicating that SAPs had no influence on education spending in Sri Lanka. Although the adjustment programme directly or indirectly called for a freeze or cut in social spending, Sri Lanka did not attempt to cut public spending on education. As revealed, however, by the evidence, some countries, such as Zimbabwe, Hungary and Mexico experienced marked downward trends in government expenditure on education (SAPRIN, 2002). Based on empirical study, Fan and Rao (2003) show that, as a whole, education in many African and Latin American countries has suffered from SAPs. In the case of Sri Lanka, surprisingly, during the ESAPs era (1989–1993) public spending on education increased (3 % of GDP) compared with the situation without a programme.

However, the extent to which this increase in spending substantially improved the access to this service by the poor, who are largely rural, will depend on how well that spending is targeted. In terms of the student enrolment over major grade cycles, this shows that investment in primary and secondary education benefits by and large students from low and middle income families[22] and investment in tertiary education tends to benefit students from rich families. As evidenced by government statistics, since 1990 public spending on education slightly inclined towards tertiary education, indicating investment in education to a greater extent benefited students from high income families.[23]

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22. The Sri Lankan public education system is categorized into three main cycles: primary education (Grade 1 to 5), secondary education (Grade 6 to 13), and tertiary education (University and higher education).

23. The proportion of education expenditure dedicated to tertiary education increased from 14.4 per cent in 1990 to 15.4 per cent in 1995 and to 17.1 per cent in 2003.

Health:

The results show that with the increase of total government expenditure the health expenditure share of government spending rose (see Table 5). But the per capita income coefficient is not significant, indicating that there is no relationship between economic growth and health expenditure. It is interesting to note that SAPs showed no influence on health spending. Sri Lanka has achieved dramatic improvements in health related indicators compared to other countries in the region.[24] These remarkable records in achievement are attributed to the steady policy of government intervention in the area of health (Anand and Kanbur, 1994). More especially, substantial declines in mortality rates were underpinned by an improvement in health indicators,[25] high literacy and female empowerment (De Silva, 2004). The free public healthcare system has made a significant contribution to improving health levels among the poor. As revealed by the evidence, over 80 per cent of births in Sri Lanka take place in public hospitals. Moreover, the child immunization programme of the government resulted in considerable reductions in diseases like whooping cough, diphtheria, polio and measles (Alailima, 1997, Aturupana, 1999).

Food Subsidy:

Now we turn to explore the determination of food subsidy, which is deemed to be highly beneficial to the poor households since 1942. Food subsidy is the most crucial from the perspective of poverty, both as the importance of food as a consumption item for the poor, and as the major role of the rural poor in food production (Woodward, 1992). Domestic market liberalization in the form of the removal of price distortions through removing or relaxing

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24. Life expectancy is 74.7 years for Sri Lanka in 2005, while that was 63.9 years for South Asia in a similar year. Sri Lanka's infant mortality rate (12/1000) and under 5 child mortality rate (14/1000) are good by international comparison (UNDP, 2007).

25. For instance, persons per doctor decreased from 7176 in 1980 to 2307 in 2003 (an increase of 68%); persons per nurse decreased in the similar period from 2157 to 1152 (an improvement of 47 %).

subsidies can have a disproportionate effect on the poor. This section focuses on the effect of food public expenditure reform on subsidies utilized by the poor which is considered to be a drastic cut in the adjustment era. Admittedly, food subsidy plays an important role before and during the era of adjustment to attack poverty in general and rural poverty in particular.

As revealed by the results, public spending on food subsidy to total government spending is negatively correlated with economic development. This is the major social expenditure component capitulating to a drastic cut with the initiation of SAPs. The food subsidy programme until 1979, when it restricted to needy households, i.e., households with an income of less than Rs. 300 per month, was put into practice universally.[26] What seems to have happened, then, is a major component of savings for the budget. However, public expenditure has made a positive impact on food subsidy. It is clear from the results that SAPs had a negative impact on the food subsidy; the coefficient is highly significant. It is reported that malnutrition in children increased markedly between 1978/79 and 1981/82, the first phase of the SAPs (Cornia et al., 1987).

It can be observed apparently that there was a marked decline of government expenditure on per capita food subsidy in real terms. It fell from Rs.62.29 in 1979 to Rs. 20.72 in 1982; this increased up to 29.64 slightly by 2005. In order to get a clear picture of the impact of this public expenditure cut on rural poverty, we need to explore the changes in the incidence of poverty among the rural food subsidy recipients (see Table 2).

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26. With the liberalization of the economy in the post 1977 period, this radical change of food subsidy programme was introduced. Some modification of the nature of the food subsidy programme was introduced in the late 1979. The rationing system which has been implemented since 1942 was replaced by the Food Stamp scheme. Since then, we can observe that some adjustments were made to provide this subsidy to well targeted households with the aim of reducing the compression on the budget.

Infrastructure:

One of the key conduits through which public policy reforms under SAPs can strongly impact on the rural poor households is the infrastructure. It is widely accepted that improved infrastructure is a powerful tool to lift the rural poor out of poverty. During the era of post independence, and the presence of an underdeveloped and nascent private sector, the public sector had to play a prominent role as the principal agent in nation-building and directing the economy towards sustained development. Several irrigation projects implemented mainly in the 1950s and 1960s contributed to increasing paddy production and human settlement, and thereby the level of well-being of the rural poor (Kalegama, 2006). In the late 1970s, the accelerated *Mahaweli* river diversion project contributed highly to providing an irrigation facility to some parts of the dry zone where largely rural people are living. Admittedly, improved infrastructure including agricultural irrigation, transport, communication, and electrification by massive government investment highly contributed to economic growth realized over the past period in Sri Lanka.

Under 'infrastructure', public spending on agriculture and irrigation, and transport and communication to total government spending were modelled. Table 5 shows that the share of public spending on agriculture and irrigation is positively correlated with total government spending. Furthermore, as the economy grows, agricultural spending also tends to move up, indicating that, as a whole, over the past three decades the government made an attempt to protect the agricultural sector even within the financial stress. Note that in terms of the government statistics, expenditure on agriculture related to the period 1989 -2005, during and the post ESAPs period, recorded a considerable drop (see Table 3). In fact, compared to 1980s, during this period the government did not implement any large scale agricultural projects which needed massive investment, resulting in a significant drop in agricultural expenditure, but we can observe a continuing use of public resources for the provision of input subsidies (fertilizer, water, seeds). Another important finding was that SAPs had no impact on agricultural spending share.

In a developing economy like Sri Lanka, the improvement of transportation and communication is a significant component to leading the rural economy towards a sustained growth path. In particular, rural road development can yield a variety of economic consequences: (1) providing access to distant markets for producers; (2) attracting labour, cheaper inputs, and customers thereby increasing production efficiency; (3) making an impact on land prices and development patterns (Gunasekara et al.,2008). Note that a lack of better infrastructural development of the country, especially in rural areas, adversely affected the development of the rural economy.[27] Limited access by rural households to essential basic infrastructure and services leads to increasing transaction costs in the marketing of agricultural products and purchasing inputs which results in a lack of competitiveness and profitability of agriculture.

The results show that total government spending is positively correlated with transport and communication expenditure share, indicating that as spending power is enlarged, the government is likely to spend more on transport and communication. The most important finding was that SAPs had a substantial impact on transport and communication expenditure in Sri Lanka.

Measuring Effect of Government Spending on Rural Poverty

In this study, an attempt was made to establish a better linkage between rural poverty and government spending to quantify the poverty impact of different expenditure categories using the simultaneous equation system which allows us to appraise all the direct and indirect effects. This model was prepared by adapting the procedure used by Fan et al (2000).

In general, government spending can directly affect rural poverty through enhancing employment opportunities and increasing income of farmers by expanding agricultural productivity. At the same

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27. It has been estimated that only 10% of the paved road network is in a good condition due to a lack of maintenance. This caused increased road user costs, and poor quality of transport services. See World Bank (2004).

time, it can indirectly exert an impact on rural poverty through expanding investment in economic and social infrastructure, such as spending on agricultural research and extension, irrigation, transport and communication, power generation, health, and education. Estimating the following model we can quantify the impact of public expenditure reform resulting from SAPs on rural poverty. The structure of the equation system comprises 6 equations. Note that the major purpose of estimating this model is to capture the direct and indirect impact of different expenditure categories on rural poverty.

Simultaneous equation system

$$P = f(AGPPW, WAGAG, NFEM, LAND) \tag{2}$$

$$AGPPW = f(LEED, RROAD, AGIRE_{t-1}, ..., AGIRE_{t-m}, LAND) \tag{3}$$

$$WAGAG = f(AGPPW, LEED, RROAD, HEAE_{t-1}, ..., HEAE_{t-m}) \tag{4}$$

$$NFEM = f(AGPPW, LEED, RROADE) \tag{5}$$

$$LEED = f(EDUE_{t-1}, ..., EDUE_{t-m}) \tag{6}$$

$$RROAD = f(ROADE_{t-1}, ..., ROADE_{t-m}) \tag{7}$$

Where, P = rural poverty rate

AGPPW	= agricultural production per worker
WAGAG	= wage rates of agricultural labourers
NFEM	= non-farm employment in total employment
LAND	= cultivated land
RROAD	= rural road density
LEED	= level of education
AGIRE	= expenditure on agriculture and irrigation
HEAE	= expenditure on health
EDUE	= public spending on education

Equation (2) models the nexus between rural poverty (P) and its major macro level determinants. Accordingly, we assumed that the level of rural poverty will be determined by agricultural productivity, measured by agricultural production per worker (AGPPW), wage rates of agricultural labourers (WAGAG), ratio of non-farm employment in total employment (NFEM), and cultivated land (LAND).[28] Increased agricultural productivity directly leads to reduce rural poverty through increasing real income of farmers. Agricultural wage labourers account for a larger portion of the labour force in rural Sri Lanka. If the real wage rate of the agricultural sector had increased, it inevitably would reduce rural poverty. Non-farm income is the second most important income source of the rural sector. In order to represent the non-farm income here we use as a proxy the ratio of non-farm employment in total employment in the rural sector. Since agriculture is considered as the backbone of rural Sri Lanka, changes in total cultivated land area directly influence the level of well-being of rural residents in Sri Lanka.

Equation (3) models agricultural productivity. Agricultural production per worker is taken as the dependent variable, independent variables are level of education (LEED), rural road density (RROAD), total cultivated land area and public expenditure on agriculture and irrigation (including research and extension) (AGIRE). These explanatory variables represent the agricultural productivity improving effects of technologies, infrastructure and education.

Equation (4) determines the wage rate of agricultural labourers. In terms of the wage function, rural agricultural wages are determined by agricultural productivity, development of infrastructure, level of education and government expenditure on health (HEAE). Inevitably, cheaper and better transportation services would lead to market expansion, thereby stimulating local agricultural

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28. Land is the most important resource in the rural sector. In particular, the extent of cultivated land area determines the household welfare through altering income and employments.

production, resulting in increased wages in the rural agricultural sector.

Equation (5) captures determination of non-farm employment in the rural sector. In the case of Sri Lanka, as evidenced by recent development, non-farm sources make an important contribution to rural households' income. Rural non-farm employments are determined by agricultural productivity,[29] level of education and improved rural roads. Equations (6) and (7) represent the determination of levels of education and rural roads; these two equations model the relationship between lagged public spending on education ($EDUE_{t-1}$) and roads ($ROADE_{t-1}$) and level of education and length of rural roads respectively.

We can get a clear picture of public expenditure reforms on rural poverty by investigating poverty elasticities with respect to different expenditure categories. The main benefit of the method employed in this study is that it allows us to measure the direct and indirect impacts of each expenditure category on rural poverty. By totally differentiating equations (2) to (7), we can quantify the poverty elasticity of each public expenditure category.

Measuring the impact of government expenditure on agriculture and irrigation on rural poverty :

$$\frac{dp}{dAGIRE} = \left[\frac{\partial p}{\partial AGRPW}\right]\left[\frac{AGPPW}{\partial AGIRE}\right]$$ $$+ \left[\frac{\partial p}{\partial NFEM}\right]\left[\frac{\partial NFEM}{\partial AGPPW}\right]\left[\frac{\partial AGPPW}{\partial AGIRE}\right]$$ $$+ \left[\frac{\partial p}{\partial WAGAG}\right]\left[\frac{\partial WAGAG}{\partial AGPPW}\right]\left[\frac{\partial AGPPW}{\partial AGIRE}\right]$$

(8)

---

29. This variable was included in the model to capture the contribution made by agricultural productivity to improve the labour productivity of the non-farm sector.

The first expression of the right hand side of the above equation measures the direct impact of government spending on agriculture and irrigation. Apart from this, improved agricultural productivity through changes on agricultural wage and non-farm employment affect the poverty. These impacts are represented by the next two parts of equation (8).

Measuring the impact of government spending on rural roads on rural poverty:

$$
\begin{aligned}
\frac{dp}{dRROAD} ={}& \left[\frac{\partial p}{\partial AGPPW}\right]\left[\frac{\partial AGPPW}{\partial RROAD}\right]\left[\frac{\partial RROAD}{\partial ROADE}\right] \quad (9) \\
&+ \left[\frac{\partial p}{\partial NFEM}\right]\left[\frac{\partial NFEM}{\partial AGPPW}\right]\left[\frac{\partial AGPPW}{\partial RROAD}\right]\left[\frac{\partial RROAD}{\partial ROADE}\right] \\
&+ \left[\frac{\partial p}{\partial WAGAGE}\right]\left[\frac{\partial WAGAGE}{\partial AGPPW}\right]\left[\frac{\partial AGPPW}{\partial RROAD}\right]\left[\frac{\partial RROAD}{\partial ROADE}\right] \\
&+ \left[\frac{\partial p}{\partial NFEM}\right]\left[\frac{\partial NFEM}{\partial RROAD}\right]\left[\frac{\partial RROAD}{\partial ROADE}\right]
\end{aligned}
$$

The first three expressions of the right hand side of the equation (9) capture the impact of government spending on rural roads through agricultural productivity, and the non-farm employment, and agricultural wages. The last terms measure the direct impact of government spending on rural roads through changes in non-farm employment.

Measuring the impact of government spending on education on rural poverty:

$$
\begin{aligned}
\frac{dp}{dEDUE} ={}& \left[\frac{\partial p}{\partial AGPPW}\right]\left[\frac{\partial AGPPW}{\partial LEED}\right]\left[\frac{\partial LEED}{\partial EDUE}\right] \quad (10) \\
&+ \left[\frac{\partial p}{\partial NFEM}\right]\left[\frac{\partial NFEM}{\partial AGPPW}\right]\left[\frac{\partial AGPPW}{\partial LEED}\right]\left[\frac{\partial LEED}{\partial EDUE}\right] \\
&+ \left[\frac{\partial p}{\partial WAGAG}\right]\left[\frac{\partial WAGAG}{\partial AGPPW}\right]\left[\frac{\partial AGPPW}{\partial LEED}\right]\left[\frac{\partial LEED}{\partial EDUE}\right] \\
&+ \left[\frac{\partial p}{\partial WAGAG}\right]\left[\frac{\partial WAGAG}{\partial LEED}\right]\left[\frac{\partial LEED}{\partial EDUE}\right] \\
&+ \left[\frac{\partial p}{NFEM}\right]\left[\frac{\partial NFEM}{\partial LEED}\right]\left[\frac{\partial LEED}{\partial EDUE}\right]
\end{aligned}
$$

The first three terms of right hand side of equation (10) quantify the impact of public spending on education on rural poverty through changes in agricultural productivity, while the last two terms capture the impact of changes in agricultural wages and non-farm employment.

Measuring the impact of government spending on health on rural poverty:

$$\frac{dp}{dHEAE} = \left[\frac{\partial p}{\partial WAGAG}\right]\left[\frac{\partial WAGAG}{\partial HEAE}\right] \qquad (11)$$

In terms of equation (11), government expenditure on health affects the rural poverty through agricultural wages.

Model Estimation

Prior to presenting empirical results, we turn to discuss about the data and some methodological issues confronted in estimating the model. The model was estimated using the data between 1990 and 2005. The head-count ratio, which measures the average number of rural people who fall below the poverty line, was used to measure rural poverty. The head-count ratios we employed in the model estimation were compiled based on the poverty simulation method suggested by Datt and Walker (2002). Basically, this approach assumes that there is some equivalence between the micro-level household data and macro-level national account data. Hence it is surmised that household per capita consumption grows at the same rate as that of the per capita production growth rate of the sector where the household head is employed. Accordingly, we projected rural poverty using the HIES data for 1990. It is interesting to note that the simulated rural head-count ratio for 2002 is highly comparable with that ratio derived from HIES for 2002 (see Table-2 in Appendix). Government expenditure data on education health, rural roads, agriculture and irrigation were derived from various issues of the annual report of the Central Bank of Sri Lanka; all are

in real terms.[30] Since all public expenditures are reported at the national level, in order to obtain them at the rural level, following Fan et al (2000) government expenditure on health, education, and roads are scaled down by the rural population share. National wage rate index for agriculture was used to represent the agricultural wage rate. The rural road variable was defined as the length of "B" and "C" class roads.[31] The level of education was defined as the proportion of rural employees above grade 5. Meanwhile, non-farm employment was measured as the share of non-agricultural employees to total rural employment. An equation in the simultaneous equation system may be written

$$y_t = \sum_{i=1}^{g} \gamma_i Y_{i,t} + \sum_{i=1}^{k} \delta_i X_{i,t} + \sum_{i=0}^{m} Z_{t-i} + \varepsilon_t \qquad (12)$$

Where, y_t is the dependent variable, $Y_{1t} \ldots Y_{g,t}$ are endogenous variables, $X_{1,t} \ldots X_{k,t}$ are predetermined variables, Z_t is the variable to which the polynomial lag is applied, and ε_t is the error term.

A number of functional form specifications, including linear, semi-log, and double-log forms were tested to select the most appropriate functional form. Accordingly, we selected the double-log functional form to all equations in the system. We estimated the model using the first difference in logarithms of each variable. This transformation of variables allows us to alleviate potential autocorrelation and multicollenearity problems (see Fan et al., 2000). Also, in order to capture the long term impact of public spending a polynomial distributed lag (PDL) model was fitted. A second degree

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30. Data for real values of government expenditure was derived from deflating the Colombo Consumer Price Index (CCPI).
31. These two types of roads receive prominent place in the rural road network: B-class, main roads connecting another important town; C-class, other roads such as agricultural roads and local roads.

polynomial distributed lag model was found to be appropriate for the analysis.[32] The appropriate lag length of each expenditure category was derived based on the highest adjusted R^2 value. Hence, lags are determined as follows: 7 years for agriculture and irrigation, 4 years for health, 4 years for education and 6 years for rural roads. Given that multicollinearity is a common problem in the PDL model, to avoid serious multicollenearity problem here the Z variables in the above equation are expressed in the deviation form.[33]

Each equation in the model is over identified by the order condition of identification. The results for the estimated equation system are reported in Table 6. Most of the variables are statistically highly significant. The goodness of fit of the model tested by the R^2 is relatively high for many equations (ranging from 0.32 to 0.70).

Turning our attention to the estimated equation (1), it can be concluded that an increase in cultivated land area, growth in agricultural productivity, rise in agricultural wages, and expanded non-farm employment lead to reduced rural poverty. In general, the rural poor derive their income by and large from agriculture directly, or indirectly as agricultural wage labourers and non-wage workers engaged in processing and marketing of agricultural products (Sahn et al., 1996).

Estimated results for equation (2) show that cultivated land, level of education of employee, and government role of agriculture and irrigation are positively correlated with agricultural productivity. To observe changes in agricultural productivity with respect to public spending on agriculture and irrigation, we take the sum of the lag

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32. The constant term and all the PDLs in the PDL equations are significant, confirming that a second degree polynomial is more an appropriate fit to model the relationship.

33. Let us consider the polynomial regression model with one independent variable.
$\theta_i = \lambda_0 + \lambda_1 i + \lambda_2 i^2 + ... + \lambda_p i^p, \ i = 0, 1, ..., m$
In the polynomial model, the explanatory variables with different powers are likely to be highly correlated. Therefore, by transforming the variables are expressed as in deviation form, multicollenearity problem can be reduced. See Bradley and Srivastava (1979).

coefficients. The sum of the AGIR coefficients is 0.0475, suggesting that a one percent increase in public spending on agriculture and irrigation generally leads to an increase of agricultural productivity 0.0475 percent.

In the case of Sri Lanka, not only a bulk of the rural poor depends on agriculture for their livelihood but also a large share of their expenditure comprises food. This implies that growth in agriculture is the best potential source of alleviating poverty. But it is worthwhile to explore to what extent gains from agricultural spending by government would reach the poor. This matter will be discussed in the next section.

The estimated wage equation exposes that agricultural productivity and improvements in access to health care have contributed for higher agricultural wages. The variables for rural road development and level of education were not significant. A possible explanation for this result would be that a larger portion of agricultural wage workers is employed as daily wage employees.

Turning to the estimated non-farm employment equation, we can see that infrastructure development (rural roads, electricity and water supply) and increased levels of education have highly contributed to improvement of non-farm employment. Meanwhile, the results of equation (5) and (6) report that increasing public investment on education and rural road development does exert a positive impact on the level of education and rural roads.

In sum, it can be concluded that public spending on social and economic infrastructure can exert direct and indirect impacts on rural poverty. But to obtain a clear picture of the effect of each expenditure category on rural poverty, we need to estimate the total impact by taking into account all direct and indirect impacts of each expenditure category on the rural poor. Here the attempt was to measure the total impact of different expenditure categories using the above simultaneous equation system.

Table 6 - Estimated model

(1) P =	9.244 (2.024)**	-0.7893 LAND (-1.694)*	-0.0569 AGPPW (-1.508)	-2.9610 NFEM (-3.661)**	-0.0108 WAGR (-2.023)**	$R^2 = 0.56$, DW = 2.23
(2) AGPW =	1.7321 (0.597)	2.7013 LAND (3.323)*** 0.0083 $AGIR_{t-1}$ (0.409) 0.0046 AGIRt-5 (1.111)	0.7194 LEED (2.869)*** 0.0074 $AGIR_{t-2}$ (2.300)*** 0.0036 AGIRt-6 (0.789)	0.0001 RROAD (0.606) 0.0065 $AGIR_{t-3}$ (1.877)* 0.0025 AGIRt-7 (0.511)	0.0091 $AGIR_t$ (0.799) 0.0055 $AGIR_{t-4}$ (1.481)*	$R^2 = 0.61$, DW = 1.51
(3) WAGEAG =	0.4677 (1.211)	0.0553 AGPPW (1.850)** 0.04126 $HEAE_{t-1}$ (1.459)	0.00003 RROAD (1.179) 0.0316 $HEAE_{t-2}$ (1.088)*	0.396 LEED (0.947) 0.0223 $HEAE_{t-3}$ (0.734)	0.05131 HEAE (2.031)** 0.0132 $HEAE_{t-4}$ (1.039)	$R^2 = 0.58$, DW = 1.80
(4) NFEM =	0.0140 (1.845)	0.0228 AGPW (0.778)	0.2096 RROAD (1.431)*	0.0849 ELWAT (1.886)*	0.2602 LEED (2.196)**	$R^2 = 0.32$, DW = 1.91
(5) LEED =	-2.0056 (-2.034)**	0.0466 $EDUE_t$ (1.007) 0.0188 $EDUE_{t-4}$ (0.396)	0.1429 $EDUE_{t-1}$ ((2.216)**	0.0556 $EDUE_{t-2}$ (1.400)*	-0.0432 $EDUE_{t-3}$ (-0.983)	$R^2 = 0.44$, DW = 2.91
(6) RROAD =	-0.9456 (-2.911)**	-0.0964 $ROADE_t$ (-1.989)** 0.0708 $ROADE_{t-4}$ (3.041)***	-0.0205 $ROADE_{t-1}$ (-1.014) 0.0558 $ROADE_{t-5}$ (2.667)**	0.0327 $ROADE_{t-2}$ (2.303)** 0.1798 $ROADE_{t-6}$ (0.652)	0.0631 $ROADE_{t-3}$ (2.944)**	$R^2 = 0.70$, DW = 2.21

Note: ***Indicate significant at 1%, ** indicate significant at 5%, and *indicate significant at 10%

Measuring Poverty Elasticity of Public Spending

This sub-section mainly focuses on the poverty elasticity of each component of public spending which allows us to examine who the beneficiaries are and, in fact, who would suffer if expenditure were cut. One of the major criticisms of SAPs is that they compelled governments to cut their spending on social services which are highly beneficial to the poor (Sahn et al., 1996). But the gap between the common perception and reality is considerable. The elasticity of poverty of a given expenditure component measures the percentage change in rural poverty with respect to a one percent change in public spending on that component. Since we applied a double-log functional form to model estimation, we can directly derive the elasticity values using the derivatives in equations (8) to (11).

Let us move to investigate the results of Table 7. In terms of the results, we can come to a decision which public expenditure item can have a strong impact on rural poverty. As results show, the elasticity of rural poverty with respect to public spending on agriculture and irrigation is -0.00417, suggesting that the role of the state in the agricultural sector exerts only a marginal impact on reducing rural poverty.

Table 7 - Rural Poverty Effect of Public Spending

Expenditure Variable	Poverty Elasticity
Agriculture and irrigation	-0.0042
Education	-0.4348
Health	-0.0017
Rural road	-0.8429

Source : *Authors' Calculation*

Agricultural expenditure can contribute to poverty alleviation in rural sector only by addressing the problems of small-scale farmers. It can benefit the small farmers mainly through increasing their incomes by enhancing their yields and marketable surplus. In reality, the improved infrastructure can play an important role in enhancing the returns of poor agricultural households. Even in the post adjustment era, we can observe that a larger bulk of public spending was continuously directed towards agricultural subsidies, such as fertilizer, while there was government withdrawal from investment on productivity-enhancing activities, like research and extension services, and development of infrastructure including irrigation. Studies show that government expenditure on rural infrastructure and agricultural research can generate higher agricultural productivity resulting in positive impact on the poor (Akroyd, 2004). Fan et al. (2000) show that public spending on agricultural research and development has provided a strong contribution to alleviate poverty in India. In another major study, Mosley (2004) found a strong relationship between poverty and agricultural expenditure. Further, he showed that access to agricultural extension services is a more important component in enhancing agricultural productivity and thereby moving out of poverty. Apart from this, lack of transparency, corruption, and political and economic instability led to irrational use of public expenditure in the agricultural sector. In the meantime the government spending on agricultural activities was not well-targeted. Better targeted expenditure programmes to poor farmers are more important to help them raise their productivity.

As revealed by Table7, public spending on rural roads is the most important expenditure item for rural poverty reduction. If the government expenditure on roads had increased by one percent, rural poverty would be reduced by 0.84 percent. Based on a study of Africa, public spending on infrastructure (mainly roads) has been identified as more productivity-enhancing than investment in agriculture (Diao, X. et al 2003). It is argued that reductions in transaction costs in agricultural markets lead to crucial reductions in consumer food prices on the one hand and to increased producer income in the longer term on the other (Akroyd, 2004). It is thus

clear that investment in infrastructure that leads to a reduction in transportation costs has the potential to benefit a wide range of agricultural and non-agricultural activities. The work by Gunasekara (2008) states that the ratio of transportation costs to total cost is noticeably higher in Sri Lanka than it would be in a developed country. Public expenditure on rural roads in real terms has decreased from Rs. Million 2965.4 in 1990 to 2918.2 in 2005, adversely affecting the effort to reduce poverty in rural areas.

Public spending on education has the second highest impact on rural poverty alleviation. If the government had increased expenditure on education by one percent, rural poverty would be decreased by 0.43 percent. It is the general consensus that multiple effects of education empower individuals to accumulate human capital, enhance labour productivity, increase life cycle earnings and economic welfare. Public investment in education is now widely-known in the economic literature because of its higher social benefits. Most specially, public investment in primary and secondary education which is more likely to benefit low income groups can generate more social benefits. In terms of the education budget, on average, currently, of total education expenditure 32 percent and 53 percent are dedicated to primary and secondary education respectively (Aturupana, 2004).[34]

In terms of the results, education expenditure reduces poverty mainly through non-farm employment and growth and increase in wages. What is surprising is that during the period, between 1990 and 2005, public spending on education in real terms, has been fairly even. The major conclusion from this analysis is that public expenditure cuts under the adjustment programmes, have not affected general education from which the rural poor benefit much.

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34. It is apparent that use of primary education of the children in schooling age is approximately evenly spread across expenditure deciles all but first decile in 2002. But use of secondary and tertiary education by children from the lowest income deciles seems to be less than that of children from higher income groups, particularly for tertiary education (See HIES for 2002).

Government expenditure on health in the rural sector has a slight impact on rural poverty reduction. Note that the ratio of government expenditure on health to GDP in Sri Lanka has always been low compared to international standards (De Silva, 2004). What is surprising is that despite low spending on health, Sri Lanka is cited as a success in achieving better health indicators compared to other regional countries.[35] Although government expenditure on health has remained almost the same over the post adjustment period, provision of some medical services, for example provision of certain medical drugs for non-communicable diseases to the hospital, has been curtailed. Consequently, patients are compelled to purchase them outside. This caused a huge financial burden on the poor. The World Health Survey 2002 revealed that in Sri Lanka the poorest income quintile had spent 57.2 percent of total cost for medical drugs, whilst richest income quintile spent 36.1 percent. It is noteworthy that maldistrubution of public health staff,[36] equipments, and drugs have resulted in a low level of health care facilities in rural areas. The share of medical expenditure, incurred mainly on curative care, on hospitals in urban areas was higher than expenditure on primary and preventive medicine services, which are highly beneficial to the poor.

Integration of Quantitative Findings and Qualitative Findings on Public Expenditure Reforms

This section presents a synthesis of the findings of the study through quantitative (QUAN) results and insights gained from qualitative (QUAL) evidence. In the previous section, using different QUAN methods we attempted to quantify the impact of different expenditure items on rural poverty. Now we turn to examine the evidence of the QUAL phase, which allows us to explore what people see as the main trends in their lives and how they themselves perceive issues related to household expenditures, food security, as well as quality and access to publicly provided services. In fact,

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35. Key health indicators such as, life expectancy rate (74.7 in 2005), infant mortality rate (12 per 1000 in 2005), and under 5 mortality rate (14 per 1000 in 2005) are almost at the level of developed countries.
36. See IPS (2008).

QUAL techniques more often expose detailed and nuanced information than that available from QUAN surveys (Lundberg, 2005). We carried out in-depth interviews with 38 individuals, who comprised different socio-economic characteristics in two selected secretariat divisions, namely *Hakmana* and *Habaraduwa*. In this section, we focus on interpreting the results previously obtained quantitatively using QUAL evidence. The QUAL work, here basically focuses on two questions:

(1) What have been the principal changes affecting the standard of living of people in the study areas over the past period and what factors have influenced these changes?
(2) What factors stop poor people from accessing publicly provided services? – what they perceived to be the effects of public policy reforms on social and economic services?

The interviewees were selected in collaboration with village leaders and local government officers, *Samurddhi Niyamaka*, and stratified based on social and economic situations. In order to make a comparison of two periods, pre-adjustment and post-adjustment eras, individuals interviewed who were aged more than 60 years old were asked to describe the current situation and the situation under the high public intervention.

Most of the rural people traditionally engaged in agriculture as their main occupation. The survey findings indicate that this pattern has not changed remarkably. However, there is some indication of a changing pattern. We can observe that some farmers are moving away from agriculture as their main occupation to non-farm employments.

We got a mixed response on changes of their standard of living over the past period. The most striking finding was that many interviewees, engaged in non-farm employment expressed the view that they benefited from the current market- friendly economy. According to the views of traditional small paddy farmers they have either experienced little or no improvement in their living standards. Access to agricultural inputs including water, fertilizer, labour and credits, and machinery equipment (tractors) are the main

determinants of the productivity of paddy farming. Most of the respondents claimed that high input prices, mainly, labour cost, seed paddy cost, and tractor charges, and low prices for their products caused to lower their net income. Almost everyone claimed that a lack of government involvement in irrigation maintenance and extension services has adversely affected the productivity. In terms of the composition of governments' agricultural expenditure, a large portion is allocated to the fertilizer subsidy, but the fertilizer subsidy has only an insignificant role in reducing farmers' cost.

We found a mixed response with regards to changes in publicly provided services over the past period. Public policy reforms may affect education mainly in two different ways, either from the demand side by influencing household income and prices of commodities or from the supply side by reducing public spending on education. In the previous section we clearly showed the government education remained almost the same before and after the public expenditure reform – at around 2.8 percent of GDP. But around 74 percent claimed that compared to schools in town areas, quality of education in schools in rural areas is very low.

Yes there is a school in our village but there is not enough teachers as well as the facilities in comparison with the schools situated in the town areas to educate our children. Our schools are collapsing nowadays as the government is providing every support to the colleges in towns. Since we do not have much money and political power, we cannot get our children admitted into the better schools in towns. However, rich parents with the help of politicians get their children admitted to reputed national colleges. Not only that, under the present high competitive education system, we have to send our children to the private classes, which incurred high costs. Actually, this imposes a major burden on our monthly expenditure. (51 years old –small businessman)- Habaraduwa

The findings of the study provided evidence of increasing income of households derived from self-employment in the rural non-farm sector which account for about 40 percent of employment

in rural areas.[37] This implies affordability of education for their children.

There is a general consensus that considerable education attainment of rural people was completely entrusted through the public education system. QUAN evidence showed that government education expenditure remained almost the same during and after the era of SAPs and it appears to have had a strong impact on rural poverty reduction. Despite the marked disparity of quality of education between rural and urban areas, this finding seems to be consistent with the evidence gathered from the QUAL survey. Among households with above primary educated head we observed low levels of poverty.

From the QUAN data presented we showed that the proportion of national income dedicated to public healthcare remained almost unchanged over the study period (see Table 3). But QUAN data do not reveal changes in the quality of the public health service which resulted from public policy reforms. Public spending on basic healthcare, such as immunizations, which can have a relatively strong impact on the poor, generated remarkable social return over the past period. The public health system attained greater control over many communicable diseases. However, a rising trend of non communicable diseases (NCD) has been identified as a major challenge that the health sector faces today (IPC, 2008).[38] WHO (2007) confirms that NCD risk factors are highly concentrated in low-income individuals with the least power to reduce their risk of falling ill. To address this issue effectively, it is important to ensure an effective service delivering preventive health services and primary care.

The study found a mixed response to the public health service. Few individuals who were interviewed expressed the view that

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37. It is estimated based on 2002-2003 Sri Lanka rural investment climate survey. See Deininger et al. (2007).
38. In 2002, 110,700 out of 145,500 deaths were due to NCDs. See Department of Health services (2004).

government health care services had not declined over the past period. However, the majority of individuals were of the opinion that there had been a deterioration in the provision of public health services over the past period. The poor who have no form of medical insurance and who totally depend on the public provision of health care, suffered disproportionately by cuts in public health services.

The system in the past was better because we had a totally free health service. Now, when we go to hospital we have to spend long-time in the queue. Beside this, we are unable to get certain medical drugs from hospital. We have to purchase them from private pharmacies. Some times we are compelled to get some medical tests done from private medical centres. Since I have been suffering from chronic respiratory disease, I have to spend about Rs.350 for medicine drug per month. The poor people like us cannot bare such a burden. Some time we have to mortgage our belongings to get medicine. (70 years old-Farmer) - Hakmana

With the initiation of economic liberalization, we can see the emergence of a private health care market in Sri Lanka, especially, as consequence of permitting government medical officers the opportunity for private practice in their off-duty hours. It is noteworthy that individuals not only from high income groups but also individuals from low income groups have tended to use costly private medical service because of the perception of people that private health care services are better than the government health care service. This resulted in a massive financial burden on the rural poor.

The picture we got from our QUAN and QUAL analysis is that health protection to the rural poor has not been prevented by cuts in health spending. But this service has worsened by a deteriorating quality of services. The financial constraints of the government adversely affected primary health care provision.

Concluding remarks

In this paper, we analysed trends, determination and the impact on rural poverty of government spending on different social and economic services in order to capture the social impact of public expenditure reforms under the banner of SAPs. As revealed by the QUANT finding SAPs do not seem to have made a decisive difference to social and economic public spending except to food subsidy. The food subsidy was drastically cut in compliance with the IMF and the World Bank sponsored SAPs. However, there is little evidence of a shift in the composition of social spending towards primary level services, which is more beneficial to the poor. For instance, the portion of public spending on tertiary education which is most beneficial to the rich tended to increase; as well as the larger share of public spending in the health sector going to hospitals and administration, while relatively less was dedicated to primary health care which is more likely to reach the rural poor. The picture obtained from this analysis is that the government generally made an effort to protect social spending with the heaviest cuts falling on some capital expenditures. We found mainly from QUAL evidence, that there has been a substantial deterioration in publicly provided services over the past period (for example, schools without facilities and insufficient teachers, and clinics without medicine).

Despite the increasing importance of income from wages and self - employment, agriculture remains the most important income source for the poor. The sharpest cuts in agricultural capital expenditure made a strong negative impact on productivity of agriculture and thereby the level of well-being of farmers. Even though the government continued the agricultural subsidy programmes, like fertilizer and water, there is little evidence that they have reduced the incidence of poverty among the rural farmers.

Instead of the universal welfare strategy, i.e. provision of subsidised foods and inputs by the government, practised in the pre-adjustment era, the government attempted to implement market-friendly and a production-oriented welfare strategy emphasising on the building of self-reliance capacity of the poor through the operation of the private sector and NGOs. But private sector commitment in

the domestic food crop production sector was less successful. At the same time, NGOs played an important role in poverty alleviation intervention through the special self-employment creation and microcredit programmes.

To sum up, as far as the impact of public expenditure reforms on social and economic sectors in rural areas are concerned, one of the significant findings emerged from this analysis is that the poor have been inadequately targeted by all of these changes because of the fact that most of the public services were not well-targeted.

References

Akroyd, S. (2004). Effective policy and public expenditure reform for pro-poor agricultural development. Working Paper for the Renewable Natural Resources and Agriculture Team. Oxford Policy Management (OPM).

Alailima, P.J. (1997). Social Policy in Sri Lanka. In W. D. Lakshman (ed.), Dilemmas of Development: Fifty Years of Economic Change in Sri Lanka. Sri Lanka association of Economists, Colombo.

Anand, S. and Ravi Kanbur, S.M. (1994). Public Policy and Basic Needs Provisions:Intervention and Achievement in Sri Lanka. In Jean Dreze and Amartya Sen
    (eds.), The political economy of Hunger, Vol. 3, Oxford, Clarendon Press.

Atapattu, D. (1997). Capital formation and Its Financing. In W.D.Laksman (ed.), Dilemmas of Development; fifty years economic change in Sri Lanka. Sri Lanka Association of Economists, Colombo.

Aturupana, H. (1999). Macroeconomic performance, policy changes and poverty in Sri Lanka; a conceptual framework for poverty monitoring. Report Presented for Micro Impact Macroeconomic and Adjustment Policies (MIMAP) – Institute of Policy Studies, Colombo.

Aturupana, H. (2004). Public Investment in Education. In S. Kelegama (ed.), conomic Policy in Sri Lanka. Vijitha Yapa Publicatin, Colombo.

Bradley, R.A. and Srivastava, S.S. (1979). Correlation in Polynomial Regression. The American Statistician, 33 (1), 11-14.

Chandrasiri, S. (2003). Technological Issues in Small and Medium Enterprises in Sri Lanka. Sri Lanka Economic Journal, 4 (1), 59-96.

Cornia, G.A., Jolly, R. and Stewart, F. (1987). Adjustment with a Human Face. Vol. 2. Oxford: Oxford University Press.

Datt, G. and Gunawardane, D. (1997). Some Aspects of Poverty in Sri Lanka: 1985-90. Policy Research Working Paper, No. 1738,. Washington D.C., World Bank.

Datt, G. and Walker, T. (2002). PovStat 2.12: A Poverty Projection Toolkit-User's Manual. The World Bank.

DCS (2005). Statistical Abstract. Department of Census and Statistics, Colombo.

De Silva, A. (2004). Overview of the Health Sector (2004). In S. Kelegama (ed.), *Economic Policy in Sri Lanka*. Vijitha Yapa Publicatin, Colombo.

Deaton, A. (1997). *The Analysis of Household Surveys*: A Microeconometric Approach to Development Policy, John Hopkins University Press.

Deininger, K., Jin, S. and Sur, M. (2007). Sri Lanka's Rural Non-Farm Economy: Removing Constraints to Pro-Poor Growth. *World Development*, 35 (12), 2056-2078.

Department of Health Services. *Annual Health Bulletin 2004/05*. Colombo.

Diao, X.S., Dorosh, P., Rahman, S.M., Meijer, S., Rosegrant, M., Yanoma, Y. And Li, W.B. (2003). Market opportunities for African agriculture: an examination of demand-side constraints on agricultural growth. *DSGD Discussion Paper* 1, International Food Policy Research Institute (IFPRI).

Fan, S. and Rao N. (2003). *Public Spending in Developing Countries: Trends, Determination, and Impact*. EPDT Discussion Paper 99. International Food Policy Research Institute. Washington, D.C.

Fan, S., Hazel, P. and Thorat, S. (2000). Government Spending, Agricultural Growth, and Poverty in Rural India. *American Journal of Agricultural Economics*, 82 (4), 1038-1051.

Fernald, J.G. (1999). Roads to Prosperity? Assessing the link Between Public Capital and roductivity. *The American Economic Review*, 89, 619-38.

Ferroni, M.A. and Kanbur, R. (1991). *Poverty-conscious restructuring of public expenditures, Structural dimensions of adjustment-lending*. Working Paper 9. Washington, D.C., World Bank.

Foster, J. E., Greer, J. and Thorbecke, E. (1984). A Class of Decomposable Poverty Measures. *Econometrica* 52, 761-776.

Green, J. C., Caracelli, V. J. and Graham, W. F. (1989). Toward a conceptual framework for mixed-method evaluation designs. *Educational Evaluation and Policy Analysis*, 11 (3), 255-274.

Gunasekara, K., Anderson, W. and Lakshmanan, T.R. (2008). Highway-Induced Development: Evidence from Sri Lanka. *World Development*, 36 (11), 2371-2389.

Helleiner, G.K. (1987). Stabilisation, Adjustment and the Poor. *World Development*, 15(12), 1499-1514.

HIES (1990/91). *Household Income and Expenditure Survey 1990/91*. Department of Census and Statistics, Colombo.

HIES (2002). *Household Income and Expenditure Survey 2002*. Department of Census and Statistics, Colombo.

IMF (2003). Fiscal Adjustment in IMF-Supported Programs. Washington, D.C. Inter national Monetary Fund.

IMF (2006). Fiscal Adjustment for Stability and Growth Washington, D.C. Inter national Monetary Fund.

IPS (2008). *Sri Lanka: State of the Economy*. Institute of policy studies of Sri Lanka (IPS). Colombo.

Ivankova, N. V., Creswell, J. W. and Stick, S. L. (2006). Using Mixed-Methods Sequential Explanatory Design: from Theory to Practice. *Field Methods*, 18 (1), 3-20.

Kanbur, R. and Shaffer, P. (2007). Epistemology, Normative Theory and Poverty Analysis: Implications for Q-Squared in Practice. *World Development*, 35(2), 183-196.

Kelegama, S. (2006). *Development Under Stress:* Sri Lankan Economy in Transition. Sage Publication, New Delhi, Thousand Oaks, London.

Lunberg, M. (2005). Agricultural Market Reforms. In A.C.S. Paternostro (ed.), *Analysing the Distributional Impact of Reforms; A practitioners guide to trade, monetary and exchange rate policy, utility provision, agricultural markets, land policy, and educatio*n. The World Bank, Washington D.C.

Miles, M. B. and Huberman, A. M. (1994). *Qualitative data analysis: A sourcebook.* 2nd ed. Thousand Oaks, CA: Sage.

Mosley (2004). *Severe poverty and growth: a macro-micro analysis.* CPRC Working Paper 51, Chronic Poverty Research Centre, University of Manchester.

Ravallion, M. (1992). *Poverty Comparisons: A guide to Concepts and Methods.* Living Standards Measurement Study (LSMS) Working Paper 88, Washington D.C., World Bank.

Ravallion, M. (1994). *Poverty Comparisons.* Fundamentals of Pure and Applied Economics, Volume 56, Chur, Switzerland: Harwood Academic Press.

Robb, Caroline, M. (2003). *Poverty and Social Impact Analysis – Linking Macroeconomic Policies to Poverty Outcomes: Summary of Early Experiences.* Working Paper, WP/03/43. Washington D.C., International Monetary Fund.

Röller, L.H. and Waverman, L. (2001). Telecommunications Infrastructure and Economic Development: A simultaneous Approach. *American Economic Review*, 91, 909-23.

Sahn, D.E. (1992). Public expenditure in sub-Saharan Africa during a period of economic reforms. *World Development*, 20 (5), 673-693.

Sahn, D.E., Dorosh, P. and younger, S. (1996). Exchange Rate, Fiscal and Agricultural Policies in Africa: Does Adjustment Hurt the Poor? *World Development*, 24 (4), 719-747

SAPRIN (2002). The Policy Roots of Economic Crisis and Poverty. The Structural Adjustment Participatory Review International Network (SAPRIN).

Szekely, M. (2001).Where to from Here? *Generating Capabilities and Creating Opportunities for the Poor.* Research Network Working Paper 431. Inter-American development Bank.

UNDP (2007). *Human development Report.* United Nations Development programme.   Palgrave Macmillan, New York.

WHO (2007). Integrating Poverty and Gender into Health Programmes: Module on Non Communicable Diseases. World Health Organisation, Manila.

Woodward, D. (1992). *Debt adjustment and poverty in Developing countries: The impact of debt and adjustment at the household level in developing countries.* Pinter Publishers, London, Vol. 2.

World Bank (2002). Sri Lanka: Poverty assessment, Report No. 22535-CE

World Bank (2004) *Sri Lanka: Development Policy Review.* Poverty Reduction and Economic management Sector Unit, South Asian region. The World Bank.
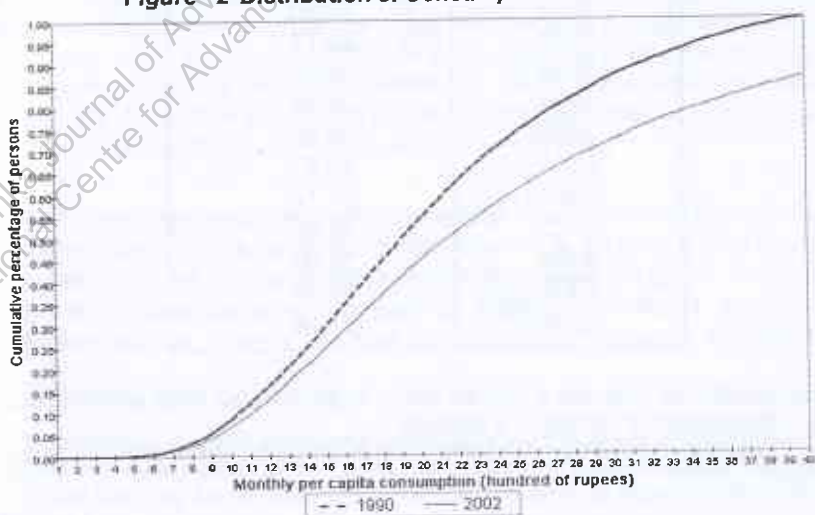
Zuckerman, E (1989). *Adjustment programs and social welfare.* World Bank
    Discussion Papers, 44 Washington, D.C. WorldBank.

Appendix

Figure -1 Distribution of Consumption: Sri Lanka
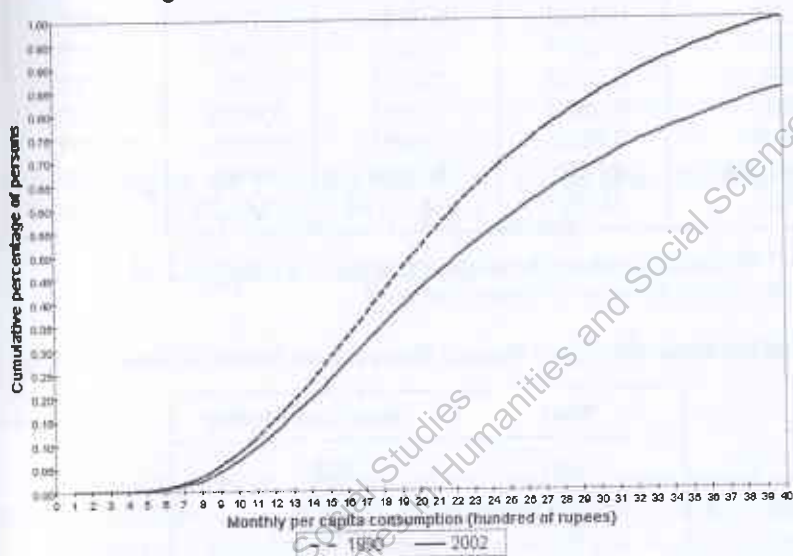
Figure - 2 Distribution of Consumption: Rural Sector

Table A-1 Descriptive Statistics for Variables in Model 1

Variable	Mean	Standard Deviation	Minimum	Maximum
TEXY	0.3013	0.0494	0.2280	0.4267
AGRI	0.0835	0.0812	0.0059	0.3133
HEAL	0.0520	0.0101	0.0337	0.0767
EDU	0.0882	0.0141	0.0628	0.1107
FSUB	0.0539	0.0402	0.0165	0.1577
TRCOM	0.0826	0.0230	0.0437	0.1495
YPC*	33039.77	34188.48	1969.25	124709.3

Note: * Per capita income in local currency (Rs.)
Source: Central Bank, Annual report (various)

Table A-2 Simulated Rural Poverty Rates (Using Sectoral Growth Rates)

Year	Headcount Index
1990	29.50
1991	26.40
1992	27.75
1993	25.88
1994	21.69
1995	24.35
1996	29.50
1997	24.71
1998	29.56
1999	22.49
2000	20.67
2001	20.47
2002	22.77
2003	20.05
2004	18.08
2005	16.40
2002*	**21.78**

Note: Headcount ratio was simulated based on the 1990/91 HIES survey data,
Department of Census and statistics.
  * Estimate from 2002 HIES survey data is shown for comparison purpose.