ADDIS ABABA UNIVERSITY
SCHOOL OF GRADUATE STUDIES

RURAL POVERTY AND HOUSEHOLD WELFARE DURING ADJUSTMENT: THE CASE OF SMALLHOLDER IN COFFEE PRODUCING HIGH LAND OF HARARGHIE, ETHIOPIA

BY
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Rural Poverty and Household Welfare During Adjustment: The Case of Smallholders in Coffee Producing High Lands of Hararghie, Ethiopia

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Abstract

The study attempts to measure the change in welfare and poverty that occurred in the wake of policy reform implemented in Ethiopia. For this purpose , two periods (1994/95 and 1996/97) were taken for the study. The data for 1994/95 were obtained from CSA while for 1996/97 were collected by the author.

Analysis of income transfer and real income effect of policy reform indicated that resources were taken out of agriculture and hence low real income (showing welfare losses) received by rural household compared to the real income that they would have to receive in the absence of intervention. Moreover, evidence pointed that over 90 per cent of welfare loss were due to direct tax levied on agricultural and non-agricultural goods.

During 1994/95 - 1996/97, the level of poverty (incidence, depth and severity) increased due to decline in mean per capita consumption. However, the rise in per capita consumption of the poor contributed in reducing the rate of increase in poverty. Decomposition of poverty changes further showed that the rise in poverty were attributed to decline in mean expenditure. However, the improvement in the distribution played the major role in decreasing the effect of decline in per capita expenditure on generation of poverty. Finally, the elasticity estimates emphasized the role of growth inducing policies than inequality reducing policies which plays a major role in reducing poverty since already stable distribution is attained in the area.

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CHAPTER ONE

INTRODUCTION

1.1. Overview of Ethiopian Economy

Ethiopia is among the poorest nations in the world (along with Mozambique, Tanzania and Somalia) with GNP per capita of USD120. This may be roughly attributed to poor economic performance due to inadequate policies implemented by previous governments.

In the 1960s, the real GDP grew at 22.1 per cent per half decade. However, in the 1970s growth in real GDP declined to grow at the rate of 14.9 per cent per half decade (table 1.1). In the 1970s and 1980s, on average, the economy recorded negative growth rate in real GDP that might reflect the poor performance of the economy and a decline in living standard of the people. Indeed, the two major killer famines of 1974 and 1984 occurred during these periods.

The Ethiopian economy in the past three decades was characterized by continuous deterioration of the real GDP and rise in public expenditure and budget deficit. Even the economy was not able to re-gain the growth rate attained in the 1960s. As for the agricultural sector, there was no time where, on average, the growth rate as the percentage of the GDP had gained positive performance. Rather, it was characterized by stagnation during 1960-1988. This might give a general clue about the development policy bias that went against the agricultural sector.

Table 1.1: Selected macro-economic indicators[1]

Rat of Growth(%)	61 - 65 to 66- 70	66-70 to 71-75	71-75 to 76-80	76-80 to 81-88	61-74 to 75-88
Real GDP	22.1	14.9	-25.0	-7.8	-14.4
Agricultural/GDP	-11.7	-11.3	0	-6.4	-16.7
manufacturing /GDP	25.4	19.0	0	5.8	27.4
Investment/GDP	9.0	-15.3	-20.3	57.3	-2.9
Public expenditure /GDP	3.8	9.2	54.8	52.2	118.5
Budget /GDP	52.2	68.0	169.2	67.7	597.2

Source:IMF Financial Statistics, Various year.

Agriculture employs over 85 per cent of the population, and provides more than 60 per cent of the foreign exchange that originates from smallholder production. However, sluggish growth rate and stagnant nature of the production system accompanied by urban biased government policies reinforced the worsening of extent of poverty in the rural area. It also intensified the extent and frequency of food insecurity in particular period of the year and shortened the cycle of famine. At macro level, it retarded the overall growth of the economy. As a result, the economy was not able to finance its expenditure and this in turn led to the increasing trend of trade deficit and balance of payment problem in the 1970s and 1980s.

[1] Adapted from the Proceeding of the Second Annual Conference on Ethiopian economy,pp 102,1995.

During 1974/75-1989/90 the rate of agricultural growth was only 0.2 per cent per annum against 2.9 per cent population growth. As a result, food production per capita declined by 14 per cent during the 1980s. Consequently per capita net grain consumption level fell to 143 kg per year that is equivalent to 1700 calories per day (MOPED, 1992).

The macroeconomic imbalance accompanied by the poor performance of the economy and the worsening of the living standard in the past three decades required launching of the Economic Reform in the spirits of SAPs.

The new economic policies are oriented in lessening the role of state in the national economy thereby promoting privatization, increasing the people's participation in economic development, mobilizing domestic and external resources and implementation of macro and sectoral policies. Thus, in an attempt at achieving the basic goals of the economic reform, the present government launched the IMF backed stabilization and structural adjustment program in October 1992. The economic reform would be executed in three phases. The first phase began right after the announcement of SAP. It consisted of stabilization of the economy. The economic stabilization program includes directing fiscal policies towards balanced budget and rationalization of expenditure, strengthening monetary policy and adjusting exchange rate. The second phases focused on structural reform aimed at generating supply response. It includes market liberalization and

privatization measures. The third phase focuses on financial, public sectors and civil service reforms.

In general, the program focussed on the removal of cost price distortions, improvement in market related incentives, promotion of private enterprise and exports and progressive liberalization of the economy, with the corresponding reduction in the size and role of public sector(TGE, 1992). Therefore, policies that cause changes in the price signals in the economy will affect household welfare as mediated by changes in structure and levels of income and consumption.

The immediate effects of structural adjustment program on households, both rich and poor, can come about through one of three avenues: changes in the price of goods and services consumed by household members, changes in the employment status of households and change in the provision of public services (including government transfer) to households(Glewwe and de Tray, 1988, 1989). In a country like Ethiopia where the majority of the poor are found in the rural area, any assessment of the short term effect should be able to look carefully at agricultural policy.

The major policy reforms were exchange rate devaluation and liberalization of food crops. Dercon(1995) reported that devaluation increased the price of exportable crops and liberalization accompanied by the abolishment of forced delivery system increased the average price received by the farmers. In

the comparative poverty analysis carried out by Dercon(1995) from 1989 and 1994 house hold survey data, he found the overall real consumption growth which allowed a large number of households to grow out of poverty (see Dercon, 1995).

Therefore, with the end of war that preceded the economic reform, the downward trends with the performance of the economy began to improve so that it managed to achieve the growth rate attained in 1960s. During 1994/95 - 97 period, the real GDP grew at 6.5 per cent per annum (table 1.3)

Similarly, the agricultural sectors grew at 6.27 per cent per annum during the same period although the contribution of this sector to the overall GDP stagnated or declined at 0.98 per cent annually. On the other hand, positive rates of growth were recorded in the manufacturing sectors. Generally, a significant improvement was observed in major macro-economic indicators.

Table 1.2: Selected indicators of recent macro economic performance

No.	Indicators	1989 -91/92	1992/93 -93/94	1994/95 -96/97
1	Real GDP	-6.585	6.8355	6.5
2	agricultural GDP	0.59	0.73	6.27
3	Industry(GDP)	-22.20	17.95	12.56
4	Agri. /GDP	7.9	5.59	-0.982
5	Industry/GDP	-16.81	10.32	2.656
6	Public expe./GDP	-18.30	13.7	-2.58
7	Budget Deficit/GDP	-7.13	10.99	-68.36
8	Real GDP per capita	-9.54	7.027	3.15

Sources: Action Aid Ethiopia (Unpublished), et.al, 1996.

Therefore, given the present improvement in mean income at the national level, the basic question would then be "Did the poor benefit from the attained growth?" The rise in the welfare of the poor and reduction in poverty follows if the recorded growth rates trickle down to the poor, especially to the rural poor where majority of the poor are found. At the national level, however, the real per capita GDP declined from 7 per cent in 1992-93/94 to 3 per cent in 1994/95-96/97.

1.2. Statement of the problem

In the past, the government discriminant policy associated with structural problems in the agricultural sector were the main causes for the deepening of rural poverty in Ethiopia.

The extent of poverty in Hararghie high land was not different from the trend at national level. Evidence in the early 1990s showed that Hararghie is one of the highly deprived regions that had an estimated 52.3 pre cent of ultra poor(MOPED, 1992;IFAD, 1989). The per capita crop production from average land holding size of less than a hectare estimated about 243 kilogram per year. It was unlikely that this level of production would support average family size of 6 persons in the region compared with minimum subsistence requirement (829 gm per adult equivalent (Dercon(1995)).

An effort that might bring the remedy for the above critical problems began with the implementation of economic reform

program since 1992. Since the program is primarily aimed at removal of cost price distortion, farmers may benefit by receiving higher farm gate price for their produce. As a result, the poverty level is expected to decline. In this respect, export crop producers may benefit more than food crop producers since the devaluation and market liberalization measures may cause the terms of trade to go in favour of tradable crops. In fact, the magnitude and direction of welfare and poverty changes depend on the degree to which the income gain due to rise in the farm gate price off set the fall in income as result of change in price of goods constituting the consumption basket.

1.3. Objective of the study

The main objectives of the study are:

1/ To measure price policy related transfer to rural sectors
2/ To measure the real income effect of policy intervention on rural households.
3/ To measure the welfare and poverty changes of the rural smallholder in the wake of the economic reform program.
4/ To investigate the change in poverty with its growth and inequality components.

1.4. Significance of the study

The study attempts to show the link between poverty and policy reform during 1994/95-1996/97 period, particularly, elucidates the contribution of the current economic reform to the change in

welfare and poverty level of rural household. The study explains how the changes in prices of agricultural and non-agricultural goods affect the cost of living and show how the welfare of poor and non-poor is affected by these changes. The study also provides the magnitude and direction of poverty incidence and attempts carefully to indicate what happened to the poorest section of the sample households during adjustment.

1.5. Limitation and Scope of the study

The study is confined to compare the level of poverty and household welfare between two periods of the adjustment process. In fact, lack of data for the pre-reform period is likely to limit the analysis of the research. Thus, the study is deficient in comparing the level of welfare before and after adjustment. Furthermore, the paucity of time series data restricted the analysis to look at short-run effects only. Due to the problem of determining non-price related changes at the local level, the study is confined to analyze the impact of price related changes on the welfare of the households. Finally, the study examines only the change on welfare and level of poverty based on expenditure data.

1.6. Sample design and Data collection

The *woreda* under consideration was chosen on the basis of the following considerations:

1/ The diversity in agricultural production that covers most of the major cropping system in the eastern high land.
2/ The socio-economic and cultural similarity of the farming community with the rest of areas in the highland. 3/ The researcher first hand knowledge of the area may add the advantage of understanding the data.
4/ Time and budget limitations.

1.6.1 Descriptions of the survey area

The survey site is located in Eastern Ethiopia, Hararghie region, Habro woreda. It is 375 km away from Addis Ababa. Census results in 1994 indicated that the woreda had a population of 124184 people of which 87.86 per cent were rural. Farming is the main economic activity of the people and sources of livelihood. They produce both annual and perennial crops but seldom rear livestock. The major cereal crops are sorghum and maize where as chat and coffee are the major export crops.

The average family size is estimated to be 6.44 persons which is higher than national average. On average, the density is 1000 people per square kilometer indicating the prevalence of high population pressure in the area. As a result, the average land holding is less than a hectare. Particularly, the high land supports a population beyond its capacity and most of the farm land has lost the fertile top soil due to serious erosion. The middle altitude and low land are relatively better than high land

in terms of soil fertility and degree of erosion. However, the lowland often faces the problem of rain shortage.

1.6.2. Sample Design

The study employed two stage random sampling. The primary sampling units (PSU) are *peasant associations*(PAs) and selected with the probability proportional to size. The second stage units are households with a fixed number of households per PSU usually 16 household (Gosh and Munoz, 1996). In this study, there are 8 PSUs distributed in 8 FAs that have approximately proportional number of households. Each of the PSUs has 12 households of which 4 of the PSUs with larger household size consists of 13 households. Thus, a total of 100 households were selected randomly and 12 or 13 households were interviewed for the survey out of the total households listed for each PAs. Indeed, there is no theoretical justification for selecting 12 households in each PSUs[2].

Although we used similar procedure with CSA, attempt was made to reduce the sampling error by increasing the sample size. Roughly speaking, and other things being equal, the sampling error is inversely proportional to the square root of the sample size. This means that with best design to reduce the errors of particular sample by half, the number of household visited must

[2]Mostly World Bank advises to use 16 households per PSUs. However, various countries use different work loads ranging from 8 in Guinea, 10 in Mozambique, 12 in Ethiopia and to 16 in Ghana and Mauritania.

be quadrupled (Grosh and Munoz, 1996). According to this statistical formulation, the sampling error that might arise by interviewing 100 household selected from 18185 households in the woreda is calculated as follow:

Let "p" be the value of proportion in a population that depicts either success or failure for selecting a given household and usually equals to 50 per cent. By doing so we are giving the same chance for all households to be included in the sample. Thus, the standard error(e) is estimated as

$$e = \sqrt{1-\frac{n}{N}}\sqrt{\frac{p(1-p)}{n}}$$

Where n = number of households in the sample

N = Total number of households.

This formula yields only 5 per cent error by interviewing 100 households. This is certainly acceptable level of errors and hence the interviewed households were representative of the woreda.

The study also used household expenditure survey of 1994/95 collected by Central Statistical Authority and price data from various ministries.

1.7. Organization of the study

Chapter two reviews the elements of structural adjustment policies and the controversies concerning its impact on poverty.

The chapter also reviews the concept and measurement of poverty. Chapter three is a discussion of the methodological approach of analyzing the impact of "policy induced" price change on welfare of rural households and explains the direction and magnitude of poverty change after the policy reform occurred. Chapter four and five discuses the empirical findings and chapter six is summary and conclusions.

CHAPTER TWO

LITERATURE REVIEW

2.1. Overview of Structural Adjustment Policy

The structural adjustment policies(SAP) aim at setting the economy of a country back on sustainable growth when it is faced with macro-economics crisis characterized by unsustainable internal and external balances (Ferroni and Grootaert, 1993). Recent adjustment programs emphasized achieving external balance through policies that ensure a satisfactory rate of economic growth i.e." Adjustment with growth" (Smith and Spooner, 1992). These policies include stabilization policies which work on the demand side to eliminate excess absorption in line with output and sustainable capital inflow (or level of living in line with available means) and structural or supply side (expenditure switching & efficiency enhancing) policies to increase output over the medium term (i.e. increase means in order to sustain improved level of living) (Smith and Spooner, 1992; FAO, 1992; World Bank, 1990). The stabilization policies which are usually contractionary in their effect consist of monetary and fiscal policies and the adjustment policies which are supposed to be expansionary in their effect include currency devaluation, trade and market liberalization, investment reallocation, improving public sector efficiency, privatization, price and institutional reform.

In general, SAP is supposed to promote sustained economic growth in adjusting countries and improve the living condition of the poor. Evidence to date indicates that these programs are beginning to pay off, and adjusting countries, particularly those that sustained the effort over a number of years, have begun to experience more growth than those that did not implement macro-economic reforms (Corbo, Fischer, and Webb, 1992). In the mean time, poverty and social conditions have continued to deteriorate in many countries especially in Africa (Cornia, Van der Hoeven and Mkandawire, 1992). Poverty measures declined in 1980s in South and East Asia, but increased in Sub-Saharan Africa (SSA), Middle East, North Africa and in Latin America and the Caribbean, though the extent of worsening varies by poverty measures and poverty line and there were an improvement in some countries (Chen et.al, 1994).

Evidence has shown that there exist a strong correlation among poverty, inequality and growth of the economy. Kuznet's(1955) explanations on the relation ships between inequality and growth shows that at the start of growth process, inequality may worsen though improves later on(World Bank, 1990; Anand and Kanbur, 1993). As a result, the level of poverty may rise and welfare may deteriorate. Contrary to Kuznet's and immeserising growth hypothesis, evidence from developing countries revealed that even when growth has been associated with rising inequality, it appears that poverty has typically declined (World Bank, 1990). Kakwani (1990) and Lipton and Ravalion(1995) elaborated that growth would unambiguously reduce poverty if it maintains the

same level of inequality. Thus, economic growth alone could not bring poverty reduction if not accompanied by the change in the distribution. Evidence from Malaysia suggested that due to improvement in inequality , poverty decreased even though mean income declined. In India the distribution shift helped to reduce the number of poor at constant level of income. However, in Brazil contraction in mean income associated with marked worsening of distribution in the 1980s caused the level of poverty to rise (Kakwani and Subbarao, 1990; Ravallion and Datt, 1991; Ravallion, 1992). Thus, World Bank (1990) concluded that in egalitarian economy (e.g. Indonesia) the distribution neutral growth is sufficient to reduce poverty while in inequitable economy (e.g. Colombia), change in inequality were an important complement to growth. In general, restoring economic growth is highly necessary to develop sustainable poverty alleviation strategy (Serageldin, 1989).

In many developing economies where poverty is a rural phenomenon, the promotion of growth in the farming sector does have a paramount importance not only in improvement of welfare but also complement the growth of other sector thereby fostering the growth of the economy as a whole. There is evidence that rural growth has helped to reduce rural and urban poverty in India (Ravallion and Datt, 1994).It has also been argued that agricultural growth can generate sizeable positive spillover effect on productivity in other sectors(Timmer, 1992).

The effect of structural adjustment is transmitted to the household through its impact on market and economic and social infrastructure. The World Bank introduced the meso-level to bridge the gap between macro and micro level[3]. The meso level consists of markets in where the households under take transactions and the economic and social infrastructure they use (Ferroni and Grootaert, 1993). The meso - economic effect of structural adjustment should first translate its impact on product, labor and credit market and on infrastructure. In the product market, the adjustment process alters the relative price in favour of tradable thereby changing the pattern of production to switch away from non - tradable.

Therefore, the household producing tradable faces a rise in real income due to favourable terms of trade whereas the non - tradable producing household may face welfare loss due to a fall in real income. The movement on price may also have significant effect on real wage. Under expenditure switching strategy, the short run effect on the real wage depends on the consumption behaviour of the household. That is, the household that consumes non - tradable may find their real income rising, in the short run, while those consuming mainly tradable will face a decline in real income(World Bank, 1990).

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[3] Macro - Economics and Micro - Economics lack theoretical integration since the former focuses on the aggregate construct without giving due emphasis to their linkage to the welfare of households where as the later deals with household decision making behavior. In order to link this gap, the World Bank introduced the notion of Meso - Economic level (Demry, et.al,1993).

In general for the adjustment policy to benefit the rural household a full transfer of benefit is required. However, in the context of recent adjustment efforts in Africa, there is evidence that some farmers are not receiving the full benefit of the economic reforms because of the activities of middlemen who fail to pass on the potential price increase to the producer (See, Thomas 1989 and Thomas and Weidemann, 1988).

2.2. Poverty and Structural Adjustment Program: controversies

In many cases, the outcome of SAP is disappointing in SSA. Smith and Spooner (1992) indicated that at least part of the fault lies with inadequate program design and implementation, and in particular, the failure to pay sufficient attention to the need of sequencing. Similarly Bevan and Ssewaya (1995) explained that in Uganda the deeper structural problems are problems of "implementation". The Indonesia experience also suggests that generalizations about the impact of economic adjustment must be tempered to take account of differential impacts depending on how an adjustment program is structured and implemented (Behrman and Deolikar, 1991).

The impacts of the supply side policies are supposed to bring growth in the economy by altering the production structure through change in relative price in favour of tradable goods. In Africa where agricultural sector constitutes the major component of tradable goods, it is found that farmers are price responsive which usually leads to switch in production pattern (e.g. cocoa

in Ghana and Ivory coast and tobacco in Malawi), however, the responsiveness of aggregate agricultural production to price change is very low owing to fragmented land size, dualism, lack of access to credit and other socio - economic factors (FAO, 1992). Thus, the key to the medium term price response in Africa lies in the implementation of non - price reform such as in marketing infrastructure, credit and the like (Sahn, 1989, pp 72 - 76). Uma Lele wrote that

> "To be successful, a peasant agricultural sector requires a far more sophisticated net work of service, e.g. research, transport, credit, which is at once more complex, decentralized, and enterprenurally intensive than required by modern sector"

Furthermore, evidence shows that over 60% of export earning of the Sub - Saharan African countries derived from commodities whose price elasticity of demand is such that an expansion in the volume of export results in a contraction in export earning (Cornia, 1988:50). Thus, the effect of expenditure switching policies are not certain (Getachew Yosef, 1994). Getachew further elaborated that the failure of SAP is attributed to inadequate meso, sectoral and micro policies compared to macro policies.

However, Behrman and Deolalikar (1991) argued that, at certain level, the question of how macro economic adjustment affect the poor is the wrong question to ask, because adjustment policies are not homogenous, and it is possible with in limits, for government to choose policies that differ in their adverse effects on the poor.

In the case study of Indonesia, Huppi and Ravallion (1990) indicated that aggregate poverty decreased over the period 1984-87 partly because of increase in agricultural export price induced by adjustment program and partly due to the lagged effect of previous poverty eradication effort. Moreover, Glewwe and de Tray(1988), have argued that in many countries, particularly in Africa, most of the poor are not adversely affected by adjustment policies (and many may actually be helped) in part because most poor households are rural. Poor rural households are often insulated against shocks brought by adjustment effort because of self provision of necessities and in fact may even benefit from the relative price changes that typically result from devaluation and trade liberalization (Krueger, Schiff and Valdes, 1988, Behrman, 1990b, 1990c).

Thus, the outcome of SAP is a source of controversies and, indeed, an issue of current debate. It is often difficult to isolate the role played by adjustment or lack of it (Lipton and Ravallion, 1995). Poverty may rise during the adjustment period but it may have risen further without adjustment. Evidence from Cot d'Ivoire indicated that over the period of 1980 - 84 poverty increased at the annual rate ranging from 4.96 to 5.28, however, if the adjustment was not in place, the level of poverty would increase at the annual rate of 14% (Kakwani, 1990). More over, in the comparative study of five SSA countries[4], which in fact focused on rural smallholder, Sahn and Sarris (1991) concluded

[4] The countries are Cote d'Ivoire ,Ghana, Malawi, Madagascar and Tanzania.

that there is little evidence of large welfare gain or loss to smallholder in the wake of policy reforms.

2.3. Government Policies and Rural Sector

In developing countries, agriculture is a single economy that plays a major role in the development of the economy. Moreover, majority of the population living under poverty are also found in this sector. As a result, the government intervenes in the economy mainly through agricultural policies[5](Schiff and Valdes, 1992)[6].

In discussing how the government influence the agricultural prices, Schiff and Valdes (1992) wrote:

> " Government influence agricultural prices both directly, through agricultural policies, and indirectly, through industrial protection and macroeconomic policies that tax agriculture relative to tradable and non- tradable outside the agricultural sector."

Indirect interventions affect the price of agricultural tradable (through their impact on the real exchange rate) or to other tradable (as the result of industrial protection). These policies

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[5] By agricultural policies is meant the entire array of government policies that affect agricultural incomes relative to what they would be in the presence of Laissez- fair system.

[6] See Schiff and Valdes (1992),pp 3&117 on the objectives of agricultural pricing policies.

affect production by making agriculture more or less attractive than other sectors of the economy.

The overall effects of the intervention were realised through its effect on purchasing power of the household and hence poverty level. At the sectoral level, the intervention would severely affect the income transfer[7] between agriculture and the rest of the economy. In Egypt during the 1960 - 85 period price, exchange rate and trade policies have induced large resource transfers out of agriculture that were not equalled by inflow in the form of investment and other fund (Dethier, 1991). However, the Moroccan experience shows that, though the overall transfer is negative for 1960 - 84 period, income was taken out of agriculture for 1960 - 75 period and, in fact, transferred to agriculture there after 1975 through agricultural input subsidies(see Tuluy and Saliger, 1991). In Cot d'Ivoire, Ghana and Zambia the net income transfer from total (direct and indirect) price and non - price intervention in the 1960 - 84 period is negative with Ghana having the highest price, exchange rate and trade policy bias against the agricultural sector (see Schiff and Valdes, 1992).

At the household level, the interventions affect the real income received from the sale of export and import competing crops. Depending on the activities the household is engaged in, government policies affecting agricultural price can have a direct and powerful impact on the living standard of the poor.

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[7] See the detail discussion of price related and non - price related transfer on Schiff and Valdes(1992) pp. 118 - 119.

Difference in consumption patterns, production mix and marketable surplus as a proportion of output account for the difference in income effects among farm or rural income categories (Schiff and Valdes, 1992). Evidence from Egypt showed that in the 1960s the lower producer price accompanied by exchange rate overvaluation and discriminatory trade policies against agriculture had resulted in significant impact on farm income. In the mean time, the land less household benefitted from such policies and hence the real income was higher than it would have been without direct intervention even during the entire period except for 1960 /62, 1970/72, and 1985 (see Dethier, 1991;pp43-47). But in Ghana , the results were mixed. Price intervention tended to benefit rice and especially maize farmers but led to severe income losses for cocoa producer due to increasingly distorted output price (see Stryker, 1991;pp.114-115). In Cot d'Ivoire during 1970 - 82, low income consumers experienced a substantial income loss as a result of the protection of rice production(Schiff and Valdes,1992)[8].

Thus, real income change brought due to interventionist policy would cause the household of various categories to move in and out of poverty. Much of the literature elaborated that changes in the income of the poor can be explained by decomposing them in to the part attributable to economic growth and the part attributable to change in the inequality of income distribution.

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[8] see Schiff and Valdes(1992) pp.152-164 for detail discussion on empirical evidence of the real income effect of policy intervention in various developing countries.

In explaining the effect of increase in income on reduction of poverty the World Bank(1990) pointed out:

> "For any given increase in the income of the poor, the reduction in poverty depends on where the poor are in relation to poverty line. If they are concentrated just below the line, the increase in their income will have a bigger effect on poverty than if they spread more evenly".

The growth of agricultural sector, as a result of transfer to agricultural sector, would have significant impact on reducing the level of rural poverty. But since the change in income may or may not be distribution neutral, its effects on the level of poverty become a subject of debate among most economists. However, evidence from low income countries indicates that there is no case in which the effect of growth would be offset by inequality[9] (contrary to immeserising growth hypothesis) and, indeed, in most cases, inequality improves contrary to Kuznet hypothesis(World Bank, 1990). Kakwani and Subbarao(1990) indicated that the inequality component can either be negative or positive and as long as its adverse impact on poverty is smaller than the growth effect, there is a reduction in poverty and as a result the poor will receive benefit from the change in income or growth.

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[9] Contrary to this argument , a classic instance of immeserising growth was the fate of smallholder in Chilalo, Ethiopia following the intensification of early 1970s (Lipton and Ravallion, 1995)

2.4. Concept and Measurement of Poverty

The concept and definition of poverty vary from place to place (i.e. it can be locality, country or region) depending on the social, economic, political and cultural environment as well as on stage of development of a society. Because of these multi - dimensional aspect of poverty, there is no general consensus on any meaningful definition of poverty (Schubert, 1994). The more general definitions which encompass every aspect of poverty states that people affected by poverty are unable "to lead a decent life"(BMZ, 1992). Virtually every body who writes on poverty can surely agree with this formulation despite the way in which "a decent life" is interpreted in reality is a matter on which opinion will diverge depending on the culture, religion and social value system (Schubert, 1994).

Most economists prefer to see the concept of poverty in terms of economic deprivation. Poverty exists when one or more person falls short of a level of economic welfare deemed to constitute a reasonable minimum, either in absolute sense or by standard of a specific society (Lipton and Ravallion, 1995). However, the main shortcoming of this concept is that it gives no indication of what benefit can be derived from goods and services owing to taste and preference that plays the major role in determining minimum nutritional requirement.

Sen(1987) looks at poverty from a capability point of view. He defined poverty as the lack of certain capability such as being able to participate with dignity in society (Ravallion and

Bedani, 1994). Though households have got similar access to resources, their capability to transform these into high quality life differs (Lipton and Ravallion, 1995). Households with better educational back ground transform their capability in to high standard of living than household with less education. Thus, this concept recognizes poverty not from availability point rather focuses on how this commodity is utilized and the benefit derived from them.

Personal and physical deprivation in terms of health, nutrition, disability, human capital, emotional deprivation, and lack of confidence can also be another dimension of poverty. Poverty as a consequence of social deprivation may include barriers to full participation in social, political and economic life. The major form of deprivation, for instance, is lack of right or failure to use the right because of personal and economic deprivation. The latter indicates the entitlement concept of poverty. This concept of poverty may also be explained in relation to social and economic exclusion. In this exclusion paradigm, however, various interest groups exert control over inputs of available resources, and as insiders determine access to resources and establish barrier to access, for example, on goods and labor market, at the same time fostering solidarity within the respective interest groups and these rules of limiting membership of the group represent exclusion mechanism that may be of a political, economic, social and cultural nature (Hauff and kruse, 1993).

The basic question to be answered given the above concept of poverty is on how to determine whether the individual is poor or not. Now, the methodological problem arises to majority of the concept in an attempt to quantify into a single index. Only the economic approach survived the quantification in terms of income or expenditure as an indicator of welfare with firm theoretical underpinning, albeit it has shortcomings. Indeed, single basic need measure such as Physical Quantity Index(Morris, 1979) and Human Development Index (HDI) (UNDP, 1990) have contributed to quantify into single index, however, experience suggest that governments don't find such measures very useful in communication with their people (Bhanoji Rao, 1991)[10].

In general, there exists a levels of consumption of various goods below which survival is threatened. It is not clear what these levels are for any individuals (Ravallion, 1993). Lipton and Ravallion explained that in most societies - including some of the poorest - the notion of what constitutes "poverty" goes beyond the attainment of the absolute minimum needed for survival. Hence views differ on the location of a poverty line.

Demery(1993) elaborated on various views to the poverty line. These are relativist, absolutist and pragmatic approach to poverty line[11]. The first approach relates the poverty line to

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[10] See on the draw back of HDI on World Development Report [1991,pp. 1451-1473]

[11] These classification emerged from the definition of poverty in absolute and relative sense.

mean income. Anand(1983) defined relative poverty line as the income level that cuts off the lowest "*p*" percentage of the population in the national income distribution. According to relativist assumption, since poverty lines vary over time depending on the mean income, poverty could never be eradicate. In developing economies where the governments are concerned in reducing the level of poverty, the relativist approach may not be an issue of concern.

The absolute poverty line is frequently based on minimum nutritional intake requirement that are translated into minimally needed food expense, and to which is then added a non-food basket deemed to constitute an essential minimum (Grootaert, 1993). The absolute poverty line remain constant in terms of real purchasing power and the only adjustment made to poverty line overtime is an adjustment for inflation (Fields, 1994).

In a pragmatic approach, the poverty line is selected in an arbitrary manner for any one year (using percentile cut off, or taking some ratio of mean income), and this line is retained in real terms through the analysis, including the analysis of later year (Demry, 1993). To this end , the choice of a poverty line would then depend on the aim of the analyst.

Apart from the selection of poverty line itself, the degree of poverty is measured by the following aggregate indices.

1/ The *incidence of poverty*, as measured by the number in the total population living below the poverty line.

2/ The *intensity of poverty*, reflected in the extent to which the incomes of the poor lie below poverty line.

3/ The *severity of poverty*, which reflects the degree of inequality among the poor, in that transferring income to the poorest from the better off poor should lower the poverty index.

Any measure of poverty should ideally reflect all the three dimensions (World Bank Study, 1990;Demery, 1993). Since adjustment frequently entails changing the sectoral composition of output from non-traded to traded goods, from import competing to export sectors, and favouring agriculture - our poverty index must be decomposable across sectors or socio - economic groups (Kanbur, 1987a). A useful index that meets these requirements is suggested by Foster, Greer, and Thorbecke(1984). This class of poverty measures is written as

$$P_\alpha = (\frac{1}{n}) [\sum_{i=1}^{q} (\frac{g_i}{z})^\alpha]$$

where $\alpha \geq 0$ and is a poverty aversion parameter

n= total number of households

g_i= poverty gap of the i^{th} households

q = number of households below poverty line

z = poverty line

The index is sensitive to reduction in number of poor, income gap and improvement in income distribution. This is governed by the value of α, which determines how sensitive the index is to

transfers among poor, for $\alpha > 1$, transfers from the poorest to better off poor groups will increase the measure of poverty. P_α measure of poverty explicitly incorporates the idea that there should be some consistency between the values that under lay a poverty measure and the value of the policy makers (Black Wood and lynch, 1993).

When $\alpha = 0, P_\alpha$ gives the head count index (H)

$$P_0 = (\frac{1}{n}) \sum_{i=1}^{q} (\frac{g_i}{z})^0 = H$$

P_0 measures the prevalence of poverty but gives no attention to the variation that occurs among the poor. The policy makers who choose α to be zero are not interested in income inequality among the poor as well as on the place where the poor lie below poverty line. But the headcount ratio would be useful in testing the effectiveness of policies over time that intended to lessen the relative number of poor people (Black Wood and lynch, 1993).

When $\alpha = 1$, P_1 gives the mean proportionate poverty gap across the whole population with zero gap for people lying above poverty line.

$$P_1 = PG = (\frac{1}{n}) \sum_{i=1}^{q} (\frac{g_i}{z}) = HI$$

Where

Where I = the income gap ratio.

y^p = mean expenditure of the poor.

$$I = \frac{z - y^p}{z}$$

I is simply the average of the poverty gap expressed as a fraction of poverty line. P_1 is interpreted as an indicator of the potential for eliminating poverty by targeting transfer to the poor. The measure concerned with the aggregate poverty deficit relative to poverty line that locates where the poor lies below poverty line and thus recognized as a measure of depth of poverty.

The last measures would then appear when $\alpha = 2$; that is, the mean squared proportionate poverty gap.

$$P_2 = (\frac{1}{n}) \sum_{i=1}^{q} [\frac{g_i}{z}]^2$$

In fact, the lager α, the greater is the weight given by the index to the severity of poverty. P_2 is concerned with the variation in income among the poor. A "birr" transferred from poor to less poor would cause P_2 to rise. Its attraction is that there is a net utility gain since the marginal utility gained from getting 1 birr exceeds the fall in marginal utility due to loss of 1 birr by relatively better off poor persons. P_2 has clear advantage for some purposes, such as comparing policies that are aiming to reach the poorest, but it is not easy to interpret (Ravallion, 1992).

This class of poverty measures satisfies subgroup consistency and thus it is subgroup decomposable(Kanbur, 1987). The "over all "index of poverty can be shown to comprise the summation of poverty indexes among all the subgroups in the population (World Bank, 1990;Demery,et al,1993). If the study population consists of m groups or sectors then

$$P_{j,\alpha} = \sum_{j=1}^{m} x_j P_{j,m}$$

Where $P_{j,\alpha}$ is the poverty index of the group j & j = 1,...,m

x_j is the population weight of groups j

$\Sigma x_j = 1$

This decomposition property is useful in analyzing poverty changes because it breaks the index down for each socio - economic group and sector under consideration (see Kanbur, 1988;Lipton and Ravallion, 1995). This measure is also understood as the sum of contribution of poverty gap and income inequality amongst the poor to P_2 (Ravallion, 1992).

CHAPTER THREE

METHODS OF ANALYSIS

The meso level is influenced either by policy or non - policy factors. The effect could be either a movement in relative price or change in economic and social infrastructure or both. Irrespective of the sources of changes, at micro level the change would have profound effect on the welfare of the poor through direct or indirect impact on real income. Thus our aim in this section is to use a standard frame work to analyze the welfare and level of poverty changes that occurred during adjustment. The methods are elaborated as follows.

3.1. Estimating Price Policy Related Income Transfer

Price related income transfers are defined as the change in real income of the agricultural sector resulting from direct and indirect price intervention affecting output and input prices and prices of the consumer goods purchased by households. Specially, these transfers are measured as the changes in value added resulting from both direct and indirect interventions, measured at the actual level of production and adjust for the change in the rural consumer price index. The change in price index accounts for the effects of intervention on the cost of the rural consumption basket, which comprises the farm household's output and its purchase of other agricultural and non-agricultural tradable output. Thus, price related transfers ultimately measure the overall movement in real purchasing power of rural sectors

that result from price interventions.

The real transfer resulting from the direct taxation on the i^{th} product is measured as

$$\sum TR_{iD} = \frac{Y}{CPI} - \frac{Y'}{CPI'} \ldots\ldots\ldots (1)$$

$$= \sum \left(\frac{P_i Q_{i0}}{CPI} - \frac{P_i' Q_{i0}}{CPI'}\right) \ldots\ldots\ldots (2)$$

$$= \sum \left[\frac{P_i Q_{i0}}{CPI}\left(1 - \left(\frac{1}{1+t_i}\right)\left(\frac{CPI}{CPI'}\right)\right)\right] \ldots\ldots\ldots (3)$$

Where

$P'_i = P_i/[1+t_i]$

TR_{iD} = The change in real income from direct intervention on product i

CPI = The actual rural cost of living

CPI' = Rural cost of living index corrected for the removal of direct price interventions.

$1/1+t_i$ & CPI/CPI' - represent the price distortion resulting from direct intervention on agricultural production and on price paid by rural consumer respectively.

Total real transfer resulting from direct and indirect price intervention for the sum of products i are measured by

$$\sum TR_{iD} = \frac{Y}{CPI} - \frac{Y^*}{CPI^*} \ldots\ldots\ldots (4)$$

$$= \sum \left[\frac{P_i Q_{i0}}{CPI} - \frac{P_i' Q_i'}{CPI^*}\left(\frac{E^*}{E_o}\right)\right] \ldots\ldots\ldots (5)$$

$$= \sum \left[\frac{P_i Q_{io}}{CPI}\left(1 - \left(\frac{1}{1+t_i}\right)\left(\frac{CPI}{CPI^*}\right)\left(\frac{E^*}{E_o}\right)\right)\right] \ldots\ldots (6)$$

Where E_o & E^* represent the nominal and the corrected exchange rate.

3.2. Measuring the real income effect

To estimate the price effect of interventions on rural household, we compared the prevailing prices paid by household with the estimated border equivalent prices at the retail level. The magnitude of the income effect among various farm categories vary mainly according to differences in output mix , consumption pattern, and marketable surplus as a proportion of farm production (Schiff and Valdes, 1992).

Nominal income(Y) is the sum of farm income (Y_F) and off-farm income (Y_{NF})

$$Y = Y_F + Y_{NF} \ldots\ldots\ldots (7)$$

Assume that Y_F is obtained from the production Q_i^s of product i , with price P_i

$$Y_F = \sum_i P_i Q_i^s \quad \ldots\ldots\ldots (8)$$

The real income effect is defined as

$$y = Y / CPI \quad \ldots\ldots\ldots (9)$$

Assuming the price policy has no impact on off-farm income and no change in price on non-agricultural goods ,the proportional change in real income (y) due to direct price interventions is

$$Y_D = [y - y'] / y' \quad \ldots\ldots\ldots (10)$$

where $y' = [Y_F' + Y_{NF}] / CPI'$ and

$$Y_F' = \Sigma P_i Q_i^s$$

where P_i' is the price of product i in the absence of direct price interventions.

In the case of total price interventions, price of non - agricultural goods also change and hence represented as

$$Y_T = [y - y^*] / y^* \quad \ldots\ldots\ldots (11)$$

where $y^* = [Y_F^* + Y_{NF}] / CPI^*$,

$$Y_F^* = \Sigma P_i^* Q_i^s$$

$$CPI^* = \Sigma \alpha_i P_i^* + (1 - \Sigma \alpha_i) P_{NA}^*$$

P_i^* is the price of product i, P_{NA}^* is price of non - agricultural goods in absence of price interventions.

3.3. Measuring the price and welfare change

Prices that consumer pays create a strong linkage between their income and welfare. For producers, market prices also play an important role in determining their income. For many questions

of public policy, it is important to know how consumers change their expenditure on goods in response to change in price (Deaton, 1990). Economic theory tells us that to obtain a cost of living index comparing one set of prices with another, we must compare the relative costs of reaching the same welfare at the two sets of prices (Deaton, 1990). One of the methods to measure the changes in cost of living would require the estimation of Laspeyre's index. The Laspeyres price index weights the price by quantities in the base year. It is expressed as

$$L = \frac{\sum_i q_i^0 P_i^1}{\sum_i q_i^0 P_i^0} \quad \ldots\ldots\ldots (12)$$

Where p_i^0 and P_i^1 are the price of good i in period 0 and 1 and q_i^0 are the quantities purchased in the base period .

We can re-write the above formula for convenience as

$$L = \sum_i W_i^0 \left(\frac{P_i^1}{P_i^0}\right) \quad \ldots\ldots\ldots (13)$$

so that the index is a weighted sum of price relative and the weights consisting of the budget share. The Laspeyres index is a relatively close approximation to the true cost of living index over time but its drawback is that the index doesn't allow for reallocation of the budget when the prices change. Thus, it may exaggerate the welfare loss when the price increases.

Deaton(1990) pointed that over relatively short periods of time, there may not be a practical problem. But for the long period where price difference guides the change in consumption pattern, the importance of the index diminishes. Therefore, we can use the index provided the period of study is not long.

Alternatively, Deaton (1988) used the Engle specification that was originally suggested by Muellbauer(1978) to show the effect of a change in per capita expenditure caused by change in relative price on the welfare. The Engle function can be specified as

$$W_i = a_i + b_i Ln(x/n) + u_i \ldots\ldots\ldots (14)$$

Re- writing this equation as

$$W_i = a_i^* + b_i[Ln(x/n) - Ln\overline{(x/n)}] + u_i \ldots\ldots\ldots\ldots (15)$$

Where Ln bar(x/n) is mean per capita household expenditure and a_i^* is $a_i + b_i$ Ln bar(x/n), a_i^* is the budget share of good i predicted for a household with average per capita expenditure. Then, equation 15 can then be substituted for the Laspeyres index so that:

$$L = \sum_i a_i^* \left(\frac{p_i^1}{P_i^0}\right) + \sum_i b_i \left(\frac{P_i^1}{P_i^0}\right)[Ln(x/n) - Ln\overline{(x/n)}] + e_i \ldots\ldots\ldots\ldots (16$$

$$\Rightarrow L = P_L^a + P_L^m[Ln(x/n - Ln\overline{(x/n)}] + e_i \ldots\ldots\ldots\ldots (17)$$

The quantities P_L^a and P_L^m are referred to as average and marginal price indices respectively. P_L^a corresponds to a single price for the society or sample households under study. The marginal index P_L^m tells us how changes in per capita expenditure affect the cost of living. If the necessities are more expensive relative to luxuries, the marginal index will be negative. Thus, the Engle curve approach allows any set of price relative to be used to calculate both the averages Laspeyres index and the distribution impact of price changes as summarized by the marginal index. The price changes that give negative value to P_L^m can be thought of as "anti - poor" and those with P_L^m positive as "anti - rich".

3.4. Change in Poverty

Change in poverty is the net result of two effects: change in the mean level of household expenditure per capita and a change in the distribution of income (Kakwani, 1990; Ravallion and Datt, 1991; Grootaert, 1993). Thus, $P_{\alpha t}$ can be written as

$$P_\alpha = P_\alpha(z/M_t, D_t) \quad \ldots\ldots\ldots (19)$$

Where z is the poverty line , M_t is the mean expenditure per capita in year t and D_t is the distribution of expenditure per capita in year t. Then the change in P_α between t_1 and t_2 can then be written as the sum of growth component , redistribution component and a residual.

$$P_{\alpha t2} - P_{\alpha t1} = G(t_1 , t_2 ; r) + D(t_1 , t_2 ; r) + R(t_1 , t_2 ; r) \quad \ldots (20)$$

Growth component | Redistribution component | Residual

where r refers to the reference point. If we select the initial year as the reference point , the component are defined as follows

$$G(t_1, t_2; t_1) = P_\alpha(z/M_{t1}, D_{t1}) - P_\alpha(z/M_{t2}, D_{t1}) \quad \ldots\ldots(21)$$

$$D(t_1, t_2; t_1) = P_\alpha(z/M_{t1}, D_{t1}) - P_\alpha(z/M_{t1}, D_{t2}) \quad \ldots\ldots(22)$$

The growth component thus captures the effect of change in level of mean expenditure between period t_1 and t_2 while maintaining the Lorenz curve constant and the redistribution component capture the effect of change in distribution between t_1 and t_2 while holding the mean expenditure constant.

Furthermore, we can measure the elasticity of P_α to changes in mean ($\eta_{P\alpha}$) and in income distribution ($e_{P\alpha}$). Here we assume that the income distribution is measured by Gini index . Kakwani(1990) formulated the elasticity of FGT class of poverty measure is summarized in the following table:

Table 3.4.1: Table of elasticity

No.	Poverty measures	Growth Elasticity($\eta_{P\alpha}$)	Inequality Elasticity($e_{P\alpha}$)
1	P_0	$-zf(z)/H$	$-[(\mu - z)/z]\eta_{P1}$
2	P_1	$-\mu^p/(z - \mu^p)$	$\eta_{P1} + [\alpha\mu H/zP_1]$
3	P_2	$- \alpha[P_{\alpha-1} - P_\alpha] /(P_\alpha$	$\eta_{P1} + [\alpha\mu P_1/zP_2]$

Note: f(z) = probability density function evaluated at x=z[12]

μ^p= mean per capita expenditure of the poor.

z = poverty line

μ = mean income of the population.

[12] see Kakwani (1990) for the detail discussion of estimating probability density function f(x)

CHAPTER FOUR

ANALYSIS OF PRICE RELATED TRANSFERS AND WELFARE

4.1. Income transfer to and from agriculture

In analyzing the price related effect on agricultural sector, it is advisable first to look into products produced by the farmers and the share of this product in the household income since it helps to identify the product influenced by the policy changes. The second task would be the identification of the share of these crops in making total household income.

Over 50 per cent of the household produce both cereal and export crops. The annual crops are dominated by maize and sorghum that constitutes 27.7 and 18.3 per cent of the total agricultural output respectively. The perennial crops are mainly coffee and chat and constitute over 30 per cent of the total agricultural output(Table 4.1). The latter crops play the major role not only as a source of cash income for the smallholder but also as a source of income and foreign exchange for the entire economy.

Table 4.1: Type and share of agricultural produces

No.	Type of crop	share (in Percentage)
1	Maize	27.0
2	sorghum	18.3
3	teff	7.9
4	barley	2.2
5	pulses and vegetables	9.9
6	chat	23.8
7	coffee	10.9
8	total	100

The contribution of these crops for total household income varies from household to household depending on geographical location of the household, vicinity to market outlet, and availability of household asset especially land. In general majority of the households' drives their income from various sources. Chat and Coffee constitute 38.4 per cent and food crops make 35 per cent of the rural household income(Table 4.2). In fact, wage and business income from petty trading activities also make substantial amount of their income. From these facts, we may deduce that any policies that affect the production, marketing and distribution of these crops would definitely influences, first, the rural household through the loss (gain) in income and secondly the country 's economy through the loss (gain) in efficiency.

Table 4.2: Sources of income of rural household

No.	Income sources	share(in percent)
1	chat	19.92
2	coffee	18.4
3	Food crops	35
4	Livestock	0.3
5	Business income	11.55
6	Wage	14.11
7	Remittance	0.72
8	Total	100

Therefore, enhancing the efficiency and production of such vital crops will depend directly on the countries agricultural policies and indirectly on the exchange rate and trade policies. The government policies affect the rural households not only as producer but also as consumer through changes in the prices of goods constituting the consumption basket.

Since the adoption of the structural adjustment polices, market liberalization especially for food crops, trade liberalization (reduction of tariffs on imported goods and removal and/or reduction of subsidies) and subsequent devaluation of currencies are the major policy changes that occurred in the country. Following the implementation of these policies, during the period between 1994/95 and 1996/97, the agricultural prices' indices rose by 4 per cent. The rise in this price index is mainly attributable to changes in the price of chat that increased by 41 per cent. During the same period food crop price index

declined by 5 percent and the prices of coffee decreased by 41 per cent (Table:4.3). The higher coffee prices in 1994/95 partly associated with the high international price that occurred during this period.

Table 4.3: Agricultural producers price indices[13]

No.	Type	95-96/94-95	96-97/95-96	96-97/94-95
1	Agricultural price Index	0.97	1.07	1.04
2	Food crop price index	0.95	1	0.95
3	chat & coffee	0.99	1.21	1.21
	chat*	1.02	1.38	1.41
	coffee*	0.93	0.85	0.79
	coffee Vs chat**	1.024**	0.9286**	0.5714**

* They are relative prices

** shows the relative prices coffee to that of chat for the year 1994/95,1995/96,1996/97 respectively.

Roughly, these movements in relative prices would tell the existence of relatively high market incentive for the production of chat and food crops rather than coffee. This disincentive situation accompanied by its susceptibility to Coffee Berry Disease(CBD[14]), the duration of time to give substantial yields

[13] The price index developed here is of Paasche type and assumes the share of every crops to be constant. The assumption allows for the re arrangement of the choice of what to produce between households but requires the same over total households. The assumption is plausible given the risk averse nature of most farmers, existence of information asymmetry and lag involved in responding for the change to incentives.

[14] As the result of the removal of subsidies on chemical inputs, the price of Daconil(fungicide) increased three fold. Thus, most of the farmers responded by avoiding the utilisation of this fungicide. This may further facilitate the replacement of coffee by chat, In fact, no households traced during the survey who purchased this input.

and other socio-economic factors may be the major causes for the historical replacement of coffee by chat production in the region. However, irrespective of the farmers' decision on type of crops they are producing, we need to know whether each market is operating efficiently or distorted as a result of government intervention (or structural adjustment policies). Similar to any country elsewhere in Africa, self-sufficiency in food is the leading agricultural policy in Ethiopia. Moreover, in an objective to increase the production of exportable crops, the government is undertaking continual adjustment in exchange rate and also relaxed the movement of food crops between regions or towns or cities. The primary impact of all these sectoral and economy wide polices is that, through their impact on meso-economic variables, they affect the transfer of resources between agriculture and rest of the economy and secondly at household level, it influences the welfare of household through changes in the real income.

Owing to paucity of production data, the study failed to compare the short run effect of the policy reform on real income changes of the rural households. However, we may be able to show the instantaneous effect of policy reform by considering the border price as an efficient price (price that prevails if there is no intervention or distortion) and then compare it the actual domestic price. Thus, the income transfers resulting from direct and indirect price interventions in the agricultural sector estimated for products produced by the farmers for the production year 1996/97 (Table 4.4).

Table 4.4: Income transfer to and from agriculture

(as a percentage of total value agricultural output)

No.	Type of crop	Direct transfer	Total transfer
1	chat	-1.744	-1.88
2	coffee	-0.163	-0.202
3	sorghum	+0.3208	+0.280
4	maize	-0.08765	-0.01069
5	barley	-0.0344	-0.043
6	teff*	-0.147	-
7	other food crops	+0.30	+0.286
8	total	-3.1346	-3.379

* Since teff is not a tradable crops, consumer price at the major market adjusted for transportation cost is taken for the analysis.

The magnitude and direction of transfer caused by direct and indirect price intervention varies from crop to crop. Except for the food crops such as sorghum, and vegetable, both direct and indirect interventions were negative for the rest of the crops. Thus, since the transfer of income out of agricultural offset the transfers to agriculture that obtained through market liberalization of food crops, the total transfer out of this sector is negative. During the survey it was observed that the markets for various crops were not fully liberalized though it is relaxed compared to previous years. From every coffee growing woredas until one reaches the major market centers, the product in question should cross at least two check points for which mostly the merchants and, in some cases, the farmers pay taxes to pass. It is difficult to measure the magnitude of taxes on each crops since the information's are not easily accessible. But, there are about two to three kinds of taxes usually levied

on every product; namely, income tax, municipality tax and in few areas there is also development tax. Of course, we are not interested on measuring the magnitude of each taxes rather searching for the final impact of all these taxes including the export taxes on farm gate price received by the rural smallholder and its impact on welfare. In general, chat is the highly taxed crop in the region as indicated by high negative transfer. As a result, there is significant deviation of the price received by chat producing household from its border equivalent. Next to chat, coffee production suffers from taxation while the result for food crop is mixed.

A number of points could be drawn from the findings. From structural adjustment policy perspective, the benefits of market liberalization and consecutive exchange rate devaluation, which narrowed the deviation of official exchange rate from its equilibrium rate, began to pay off the rural household although, at present, these benefits are product specific. Except for chat and coffee, export tax on most of the food crop such as vegetables were removed. Thus, majority of the negative transfer arises from ill functioning market and lack of commitment to materialize full liberalization of the market for agricultural product. The contribution of exchange rate and foreign trade distortion is estimated to reach 7 to 8 per cent. Over 90 per cent of the causes for the transfer of income out of agriculture might be attributed to domestic market distortion and other sectoral policies. In coffee growing area, majority of their cash income for most of the household originates from the sale

of chat and coffee. Thus, the effect of such distortion is that, besides its impact on welfare of the household through change in real income, it would have substantial impact on the efficiency and on an incentive to raise production of the exportable crops. Actually, due to the fact that the gap between equilibrium and official exchange rate is relatively narrowed together with the increasing symptoms for liberalizing the market(e.g. removal or reduction of check points) compared to previous years may reveal the existence of the room for an increasing trend in incentive for the production of exportable crops.

4.2. Real income effect on Rural household

Depending on the consumption pattern, production mix and marketable surplus, the real income effect of households would be affected by the change in prices of farm output and input and also by the change in prices of goods constituting the consumption basket. In order to look at the change in price that may or may not induced by the policy, we need to compare the real income of the household with and without policy. In section 4.2 we have seen that the tradable crop producers received lower output price than they would have to receive in the absences of intervention. As a result, the chat and/ or coffee producers encountered welfare losses in 1996/97. In contrast, the food producers enjoyed welfare gain during the same period(Table 4.5). The real income loss especially for coffee growing farmers may also be associated with the decline in world price. But positive

welfare gain that averaged from 0.07 - 0.08 per cent of total real income for food producers is particularly associated with the drastic rise in price of onion(four times relative to price of 1994/95)[15].

Although due to absence of income data the analysis fails to take into account the short run and long run income effect of direct and indirect intervention, prior to adoption of SAP there existed substantial tax levied on export crop and on importable goods. For instance, coffee was taxed by 72 per cent of which 38 per cent were direct tax, however, this tax was reduced to 29 per cent[16]. The rest of the crops such as vegetables were not taxed at all in an attempt to encourage their production. Tariffs on importable goods were revised three times after reform indicating attempt to liberalize foreign trade sectors. Despite all these reductions in tariff and tax rate, there is still divergence of actual prices from its border value. For some export crops except chat and coffee and industrial goods, most of the divergences were caused by incomplete liberalization of goods markets (taxation of goods at every check point). Though it is not included inside the survey because of its lag effect in changing local price, removal or reduction of the check points in the region were already started. Table 4.5 further shows that welfare loss due to overvaluation of currency and trade policy is minimum

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[15] most of the food producers engaged in the production of onion as a sources of cash income

[16] ULG food study group(1987) and Israel Mariam Kidane and Paul Collier(1995)

since there is no significant difference between the total and direct real income effect.

The over all effect of these changes on welfare depends on whether household produces the taxed crop or not. Thus, relatively coffee and chat are highly taxed crops thereby making their producer a loser when compared to their non-intervention income. On the other hand, food crops have relatively high degree of liberalization and this made their producer to a have positive real income effect. When we look over sample the households(summing over the categories), since the income losses that arose from the taxation of export crops offset the income gain from liberalization of food crops, the rural smallholder received negative real income compared to the income that they would have to receive without intervention.

Table 4.5: Instantaneous real income effect of price changes on rural smallholder (as a percentage of real income)

No.	Farmers' categories	Direct effect	Total effect
1	chat growers'	-0.1275	-0.1285
2	coffee and chat growers'	-0.1257	-0.1282
3	Food producers'	+0.0833	+0.0734
4	Total	-0.1693	-0.1860

4.3. Welfare Index

The conventional Laspeyre's index estimated from the expenditure data indicate that during 1994/95 - 1996/97 the costs of living increased by 15 percent(Table 4.6). At the same time, the consumer price indices increased by 17 per cent. Actually, if we compare year 1994 and 1995, the cost of living decreased by 8 per cent (laspeyre's index = 0.92) and this decline in the cost of living is associated with the decline in the price of cereal and industrial goods.

During 1994/95 - 1996/97 period, on average, the price indexes of agricultural goods increased owing to relatively higher change in the price of chat and onion and moderate change on the price of pulses that offset the declining effect of price of cereal and other crops. As for non-agricultural goods, the price increased for most of the goods and thus making the price index to increase by more than 50 per cent. Therefore, the overall effect resulted in raising the cost of living during the implied period.

Table 4.6: Cost of living index and CPI.

No.	Index	1994/95	1996/97
1	CPI	100	117
2	Price index for cereals	100	55.49
3	Price index agricultural goods	100	111.89
4	price index for non agricultural goods	100	158
5	Average price index	97.39	158.30
6	Marginal price Index	-11.04	7.127
7	laspeyre's index	100	115

In order to see the effect of change in per capita consumption on welfare that may be caused by the change in price, the Laspeyre's specifications of the Engle curve were estimated and the results are also presented in Table 4.5(see appendix for the estimated specification derived from the Engle curve). Like CPI, the change in price calculated from specification of Engle curve revealed that during 1994/95 - 1996/97 period, the average price index for the sample households increased by 62.5 per cent. The most important point that we infer from the econometric estimation of Laspeyre's index is that in 1994/95 due to higher price of necessities relative to luxuries the marginal price index became negative. This result shows that the price change that occurred during the coffee boom period may be regarded as "anti - poor" whereas the price change that occurred in 1996/97 may also be interpreted as "anti rich". The rise in price of non-agricultural goods had low impact on poor households given small share in their consumption. However, in 1994/95 it is non-poor (large or medium farmer) who benefitted from the lower price of non-agricultural goods owing to relatively high budget

share. In 1994/95 since the coffee boom occurred after harvest when most of the farmers (especially small farmers) sold their produce, it is only those who have the capacity to store and do not have shortage of cash income that obtained the advantage of higher price. Some of the benefit may be accrued to the middle men. Moreover, the price of chat was lower during this period and hence most of the chat producers may face fall in income because income from chat constitutes a significant share of their farm income.

CHAPTER FIVE

POVERTY ANALYSIS

5.1. Poverty Line and Poverty Indices

Determination of a poverty line to delineate the poor from non-poor is a controversial area in poverty analysis. In our case, since we are interested in comparing the incidence of poverty at different period using constant real poverty line, we shall use the absolutist approach rather than relativist for determining the poverty line. The approach is frequently based on minimum nutritional intake requirement that is translated into minimum needed food expenses. Accordingly, the food poverty line is determined by regressing the logarithm of per capita food expenditure on caloric intake per person per day. Thus, the food poverty line is obtained at Birr 40.11 and Birr 62.13 per person per month for the year 1994/95 and 1996/97 respectively (see appendix 2).

In reality, household may fail to meet required basic food need, however, they expend certain fraction of their total income on non-food goods by sacrificing their basic food need spending over a range of consumption level(see Ravallion and Bedani, 1994). Thus, the total poverty line is determined by adding the amount of expenditure necessary to meet the basic need for non-food goods on food poverty line. Ravallion and Bedani(1994) suggested that the value of non-food component can be calculated from estimated demand function for food, representing the food share

as a linear function of the logarithms of total spending (food plus non-food) in relation to the cost of basic food needs (See appendix 2 for the estimated results and the mathematical specification of the model).

Thus, the amount of money required to meet both basic food and non-food for an individual is estimated at Birr 41.71 and Birr 70.59 per month for the year 1994/95 and 1995/97 respectively. However, in order to compare the level of poverty between two period, the nominal poverty line of 1996/97 was expressed in constant 1994/95 price by applying CPI and hence the real poverty line for 1996/97 is Birr 60.59 per person per month. Using these poverty lines, the FGT class of poverty measures were estimated for the 1994/95 and 1996/97 period and the results are presented in table 5.1.

line failed to make adjustment to protect their per capita expenditure and thus moved in to poverty.

Next to looking at the incidence of poverty, the trend and magnitude of the depth and severity of poverty must be investigated and this is done on the basis of P_1 and P_2 in table 5.1. Similar to P_0, both P_1 and P_2 increased by 25.3 and 20.7 per cent respectively. This may indicate that as we move to the poorest households by increasing the value of α, the magnitude of rise in poverty diminishes which may signal the betterment of the poorest households. This may further justified by the increase in per capita expenditure of the bottom decile by 42 per cent. Rise in per capita expenditure of the poor by 47 per cent contributed to reducing the rate of increase in depth and severity of poverty though it was not sufficient to reverse the direction of depth and severity of poverty by bringing more people out of poverty. Indeed, the rise in per capita expenditure of the poor caused 3 per cent decline in the gap between poverty line and average income of the poor. From this fact, it follows that the change in average income of the poor as a percentage of the poverty line was about half of the change in the expenditure gap.

5.2. Poverty measures of 1996/97 by socio-economic groups

The households were categorized based on variation in their production mix i.e.whether they produce coffee and/or chat or

only food crops[18]. The estimated FGT poverty measures for each category are shown in table 5.2. The result indicates that the incidence of poverty is greater among food producers (a sector containing 56 per cent of the poor in the region) followed by Chat producers that consisted of 24 per cent of the poor. In fact, in terms of contribution there is no significant differences between chat and chat and coffee producers.

As greater weight is given to the poorest groups by increasing "α" the contribution of chat growers rises where as it declines for chat and coffee growers. Similarly, the contribution moderately rise and then declines for food producers. But for all poverty measures, over 50 per cent of the contribution were from food producer's category.

The result also showed that there exists a positive relation ships between inequality and contributions(or poverty measures) across socio-economic categories. That is to say, the higher the inequality, the larger would be the level of poverty. This may further supported by the decline in per capita expenditure of the bottom decile relative to top decile from 27 per cent to 16 per cent across groups in line with the rise in inequality.

The high level of inequality and poverty for food producers may be associated with the type of crop they produce and quality of land they have. Most of the food producers found in the high land

[18] Farmers producing coffee and /or chat also produce food crops.

that have relatively degraded soil and usually produce crops such as maize and sorghum which earn lower price in the market. However, some of the food producers(mostly non-poor) engaged in the production of crops that have high rate of market return (teff and/or onion) and also have the land that are fertile and/or irrigable. Hence, the condition of some of the household in food producers specifically those that are found above the poverty line are relatively in a better situation since, on average, they had higher real per capita consumption than the rest of the groups.

Table 5.2: Poverty indices by socio- economic categories(1996/97)

No	Categories of rural household	P_0		P_1		P_2		Gini coeff.	PCEXP ofBottom 10 %	PCEXP of top 10 %	PCEXP of poor	PCEXP of non poor
		Value	cont. (%)	Value	Cont. (%)	Value	Value (%)					
1	coffee and chat growers	0.1724	20.0	0.0328	12.23	0.0124	11.20	0.198	41.76	151.56	49.07	91.78
2	chat growers	0.2143	24.0	0.0832	29.95	0.0404	34.60	0.2299	26.24	134.22	37.04	93.37
3	Food producer	0.3256	56.0	0.1046	57.82	0.0412	54.20	0.2967	29.84	185.31	41.11	105.16
4	Total	0.25	100	0.0778	100	0.0327	100	0.2481	30.23	162.65	47.32	96.4

Note: PCEXP = Per capita expenditure
cont. = contribution
coeff. = coefficient.

5.3. Decomposition of the change in poverty

Decomposition of poverty measures into its growth and redistribution components requires the estimation of Lorenz curves. Among various Lorenz curves, we have chosen Kakwani specification of Lorenz curves since it behaved well in this data and has a goodness of fit ranging from 0.98 to 0.998(See Appendix 3).

The decomposition results show that the growth and redistribution components are operating in opposite direction. From 1994/95 to 1996/97, the rise in per capita consumption of the poor reduced the adverse effect of decline in expenditure on the level of poverty. Table 5.3 shows that the growth component is positive. This means that the decline in per capita consumption caused the incidence and depth of poverty to rise. If the Lorenz curve remained constant between two periods, the incidence and depth of poverty increased by 12.97 and 18.05 percentage point respectively. However, a significant change in the distribution contributed much in reducing the change in poverty. In other words, had the mean household expenditure in the region remained the same between 1994/95 and 1996/97, poverty incidence and depth would have been reduced by 3.6 and 3.1 percentage point. Moreover, the absolute value of the redistribution components become large relative to the total change as one moves from P_0 to P_1 which implies that the poverty reduction stemming from the change in distribution benefitted the poorest

most. Indeed, the per capita expenditure of the bottom decile increased from Birr 21.43 to Birr 30.43 per person per month. Thus, the improvement in inequality as indicated by the decline in gini index (from 0.34 to 0.25) contributed to reducing the incidence and depth of poverty thereby dwarfing the effect of decline in per capita consumption. This finding emphasizes the role of decline in mean expenditure in generation of poverty. It also indicates that in 1996/97 what was needed to fight poverty was not in the first place redistributive policy, but policies which could halt and then reverse the decline in household expenditure.

Table 5.3: Decomposition of poverty in to growth and redistribution component (percentage point)

No.	P_a measures	Growth component	Redistribution component	Residual	Total change
1	P_0	+12.97	-3.60	+7.01	+5.65
2	P_1	+18.05	-3.1	- 1.33	-1.57

5.4. Responsiveness of poverty to Growth and Inequality

Kakwani (1990) and Kakwani and Subbararo (1990) had well treated the issues of elasticity together with the empirical results. Likewise, following the same procedure, we estimated the elasticities of growth and inequalities for FGT measures (Table 5.4)

Table 5.4: Growth and inequality elasticities of poverty measures

No.	P_a measures	Growth Elasticity		Inequality elasticity		MPRS	
		1994/95	1996/97	1994/95	1996/97	1994/95	1996/97
1	P_0	-2.73	-3.44	3.33	1.30	1.22	0.38
4	P_1	-2.14	-2.21	4.80	2.22	2.24	1.00
3	P_2	-2.58	-2.76	7.6	3.8	2.95	1.38

In general, the increasing magnitude of growth elasticities and the declining trend in inequality elasticities indicates the responsiveness of poverty measures to change in distribution and mean consumption. Due to decline in per capita consumption, the growth elasticities in 1994/95 were smaller than that of 1996/97 for all poverty measures indicating the relevance of growth enhancing policies in 1996/97. Since changes in mean expenditure of the poor were not the interest of the head count, in line with the falling trend in mean expenditure of the society, the growth elasticity of head count were higher than P_0 and P_1 in both period. The effect of the changes in the distribution were captured more by P_2 than P_1 and P_0. As a result, the magnitude of inequality elasticities were higher for P_2. In general the inequality elasticity had a declining trend for all poverty measures owing to the rise in the share of poor by 37 per cent. Looking at the over

all changes, the rate of decline in inequality elasticities were larger than the rate of increase in growth elasticities indicating again the relative importance of growth enhancing policies than inequality reducing policies since fairly stable distribution is already attained in 1996/97.

Finally, it is essential to look at the trade off between income and inequality elasticities so far as the change in either of them plays a central role in changing the poverty level. This trade off can be seen by calculating the marginal proportional rate of substitution (MPRS)[19]. In general the estimated results show that MPRS diminished over the period by more than 46 per cent because of higher rate of decline in inequality elasticities than increment in growth elasticities. In 1994/95 due to relatively high extent of inequality, MPRS may be interpreted as 1 per cent change in gini index increased the per capita mean consumption by more than 3, 4, and 7 per cent for extent, depth and severity of poverty respectively. However, the magnitude of MPRS in 1996/97 is lower than in 1994/95 suggesting that a percentage change in gini index may cause a mean per capita consumption to increase by less than 1.4 per cent. This means that enhancing pro-poor distribution neutral growth policies have an important role to play to help the poor. Actually, during the survey although it may not include or

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$$MPRS^{28} = \frac{\partial \mu}{\partial G} \cdot \frac{G}{\mu} = -\frac{inequality\ elasticity\ of\ poverty}{growth\ elasticity\ of\ poverty}$$

captured (may be due to small aerial coverage of the program), the implementation of productivity enhancement[20] is already under way. This may include distribution of fertilizer and high yielding varieties as an intervention in fighting against rural poverty and food insecurity.

[20] The strategy is not yet known or proven whether it is distributional neutral or not.

CHAPTER SIX

SUMMARY AND CONCLUSIONS

Poverty in various forms has a long history in Ethiopia. However, its extent and depth increased in the past 2-3 decades. It was suggested that the increasing trends were largely associated to inappropriate development strategies besides the natural calamities. Overvaluation of exchange rate and excessive intervention of government in the economy were also the major policy error practiced in the past two decades.

The policy reform which included mainly liberalization and exchange rate devaluation aimed at reversing the increasing trend of poverty through enhancing growth in the economy. In order to see the impact of policy reform on the welfare of household, liberalization and exchange rate adjustment may be understood as measures taken with the knowledge that trade and market distortions have become counter productive and then reducing them would improve economic welfare.

The analysis of income transfer showed that resources were taken out of agriculture that averaged 3.34 per cent of total value of agricultural output through direct and indirect interventions thereby making the rural households to face welfare loss. Over 90 per cent of the transfer and welfare loss were attributed to direct interventions. However, measures undertaken in liberalizing exchange rate adjustment began to pay off the rural household by

reducing the extent of transfer out of agriculture and thus welfare loss.

During 1994/95 - 1996/97 period, analysis of price movement revealed that the costs of living were increased by more than 15 per cent although these change in price were pro-poor as indicated by the marginal index. As a result, some of households met welfare loss and moved in to poverty. Estimated poverty indices showed that incidence, depth and severity of poverty increased during 1994/95-1996/97 period. Actually, the magnitude of their increments decline as greater weight were given to α . This may imply that the poorest households (more accurately the bottom decile) in 1994/95 became poor in 1996/97 though remained below poverty line. The decomposition result further indicated that much of the rise in poverty was attributed to decline in inequality. The improvement in the distribution played the major role in dwarfing the effect of decline in per capita consumption on the levels of poverty.

The rise in growth elasticities and fall in inequalities over the period emphasized the role of growth enhancing policies since stable distributions had already attained. The role of growth is also evident from declining value of the marginal rate of substitution(MPRS). Thus, we may conclude that pro-poor growth inducing polices that maintain the distributions have a vital role to play to improve the welfare of the poor household and thus level of poverty.

Finally, based on the empirical findings we may attempt to provide few general recommendations. First, lack of liberalizing the market for export crops specifically coffee and chat that constitute the major lion share in total income may created anti export bias and disincentive structure of production of export crops. Similarly, lack of free movement of non-agricultural goods consumed by the farmers due to prevalence of tax payment in most of the check points may create the rise in price of non-agricultural goods relative to agricultural goods. Thus, removing the anti export bias and taxation of goods constituting the consumption basket of rural household's may bring improvement in resources allocation and income gains that, in turn, raise welfare and causes poverty level to fall. Secondly, the change in poverty is mainly accountable to inequality than to growth between 1994/95 and 1996/97. The trend in elasticities of growth and MPRS pointed out the potential of growth in changing the structure of poverty. Thus, enhancing distribution neutral growth to reverse the declining per capita mean consumption(mean income) in the region(or even at the national level) and specifically through change in productivity of input, improving access to credit, provision of extension programs that involve the utilization of modern technologies may bring sustainable development and improvement in level of poverty. In relation to this, the present government effort to increase productivity through provision of improved inputs has to be encouraged, however, there is doubt that this program targeted the poorest sections who are resource poor.

Finally, since local economic environment may not often behave similarly as national macro-economic situations besides the presence of ecological, socio-cultural and socio-economic diversity of the country, the conclusion drawn from these findings should be interpreted with caution. Thus, further research on nationally representative household would be required to have thorough understanding and wider scope as to what would happen to poverty in light of structural adjustment program.

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APPENDICES

Appendix 1: Estimated results of Engle function for determining the Laspeyre Index

$$W_i = a_i^* + b_i \left[Ln\left(\frac{x}{n}\right) - Ln\left(\frac{\overline{x}}{n}\right)\right] + u_i$$

Where Lnbar (x/n) is the mean per capita household expenditure

a_i^* is the budget share of good i predicted for a house hold with average per capita expenditure.

The estimated result of the above equation is presented in table A.

Table A: Estimated results of Engle function for determining Laspeyres index

No.	Variable	1994/95		1996/97	
		Food	non-food	food	non-food
1	Ln(x/n) - barln(x/n)	-0.20*	0.2*	0.132	-0.132*
2	constant	0.70*	0.3*	0.816	0.184*
4	R^2	0.70*	0.7*	0.46	0.46*

*Significant at 1 per cent level

a_j & b_j are parameters to be estimated. The total poverty line is given by

$$z_t = z_f(2 - a_j)$$

where z_t = total poverty line

the implication of the above equations is that the total poverty line is obtained by scaling up the food poverty line.The value of intercept estimates the average food share of those households that can afford basic food needs(See the details on derivation and nature of this methods , Ravallion and Bedani(1994)). Thus, the above food Engle curve specification were estimated using weighted least square and the result is presented in table C.

Table C: Estimated results for determining total poverty line

No.	Variables	coefficient	
		1994/95	1996/97
1	Y_{ij}/z	0.033*	0.097*
2	constant	0.96*	0.858*
3	R^2	0.21*	0.54*
4	Z_t	41.71*	70.89*
3	Z_t (real)	41.71*	60.59*

* Significant at 1 per cent level.

Table D: Estimated results for the Lorenz parameters

No.	Variables	1994/95	1996/97
1	Log[1 - p]	0.4295*	0.6792*
2	Log(p)	0.9584*	0.8448*
3	constant	-0.079*	-0.615*
	R^2	0.998	0.983

* Significant at 1 per cent level.

DECLARATION

I, the undersigned, declare that this is my own original work and has not been presented in any university. All sources of materials for this thesis have been fully acknowledged.

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