Economic Policy Reform and the Poor in Rural Ethiopia:

The Case of Ada District

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I.   INTRODUCTION

During the past two decades, most countries in Sub-Saharan Africa undertook extensive economic reforms to reduce the role of the government and increase the role of the market in their economies (Kherallah et al, 2000). Because of the importance of the agricultural sector in the region, agricultural market reforms occupied a central place in these liberalization efforts (ibid). The reforms included removal of controls on producer and consumer prices, reduction of the role of government by closing public enterprises and limiting the mandate of parastatals, removal of quantitative and administrative controls on trade such as quotas on crop purchases and movement, and foreign exchange market liberalization to provide greater incentives for exports.

Full implementation of structural adjustment programme started in Ethiopia in 1991. Different reforms (e.g. privatization, devaluation of currency, and agriculture market liberalization) have been undertaken since then. Some of the policy reforms, such as removal of fertilizer subsidy and abolition of quota system, have direct effect on the agricultural sector while some others such as devaluation of *Birr* affect agriculture indirectly.

The expectation from agricultural reform is that improving price incentives for farmers and reducing government intervention in the agricultural sector would generate a supply response and allow well-functioning markets to emerge quickly (Kherallah et al, 2000). However, whether the policy reform is on target and whether it improved welfare of farm (rural) households is an empirical question.

Impact assessments of SAP are undertaken in different countries including Ethiopia. Sarris (1992) used household models and Almost Ideal Demand System (AIDS) to assess household welfare during crisis and adjustment in Ghana. This study suggested that deterioration of incomes of the poor in Ghana after the onset of the economic reform programme is unlikely contrary to popular hypotheses. The same study also suggested that analysis of changes in the overall degree of poverty is important although it was beyond the scope of that specific study. Ianchovichina et al (2001) assessed impact of trade reform on household welfare in Mexico using a particular Computable General Equilibrium (CGE) model provided by the Global Trade Analysis Project (GTAP) as the price generator. This

study indicated a slight decrease in the average expenditure basket, a slight increase in average income and a slight reduction in the incidence of poverty. Pal (2000), in the study of economic reform and household welfare in rural China, concluded that the result of the reform had been a worsening of rural welfare thus necessitating the authorities to identify the poor and the vulnerable adequately.

With respect to Ethiopia, different studies are undertaken on the impact of the policy reform on agriculture. Some of these studies are Sinkie (1995), Sinkie (1996), Dercon (2001), Demeke and Sinkie (1996), Gebre-Aregawi (1995), Ayana (1999), and Kobugabe (2000). None of the researches reviewed by the writer considered Ada District, one of the main food-baskets for the country. However, the policy reforms might have different impacts in different regions because of economic, social, and ecological differences and fragmentation of the local market. Dercon (2001) stated that reforms, as those in Ethiopia, involve many measures, including internal market reforms, affecting different households and regions differently. It is also stated by the same author that systematic micro-level evidence on growth and poverty after market reforms take place remains limited. Hence, impact assessment of the economic policy reform in this area is imperative.

It is arguable that whether the poor benefits from SAP or not (Marquette, 1997; Akapelwa, 2001; Dorgan, & McGillicuddy, 2000; Chilowa, 1999; Rahman, 2000; UNCHS, 2001). The overall increase in income and/or consumption expenditure might not imply that the poor are benefited from the policy reform. There is a possibility that these increases will be concentrated in some groups of the peasant households, such as the non-poor and/or better off ones (Ray, 1998; Pal, 2000). This implies that the households need be identified as poor and non-poor to assess the impact of the reform on poverty. Hence, the impact of the policy reform on poor households will be analyzed by identifying between the poor and non-poor to get a clue on whether the poor are victims of the reform or not.

Thus by assessing changes in poverty status of the rural households and identifying factors which affect the poverty status, this paper attempts to contribute to the better understanding of the impact of the policy reform on poor households for policy designers and other concerned parties. Moreover, it is expected to propose ideas for further research.

Primary data is collected in the study area (Ada District) for this study. Secondary data is also collected from different organizations.

II. DESCRIPTION OF THE STUDY AREA

2.1. Location, Topography and Climate

The study area is located in Ada District of Oromya Regional Administration some 25 kms away from Debre-Zeit town, which is located about 45 kms South of Addis Ababa. It included three sites namely Hiddi, Horaa Kilole, and Dhadhaa peasant associations (PAs).

The altitude of the area is about 1900 masl with an average temperature less than 20 C during the crop growing season and average annual rainfall of 830mm. The rainfall pattern is generally unimodal with over 70% falling between June and September. Some 20% of the rains fall in the short rainy season of March to May (Shiferaw, 1997). Rainfall that is useful for crop production only allows one cropping season per year.

2.2. Production

Crop production is the main activity in the survey area. Agriculture is rain-fed and land is cultivated during the rainy season; but drought and crop failure risks are not common. Households use a pair of oxen and a traditional implement (*maresha*) for cultivation.

A number of cereals and pulses are produced in the area. White *teff* and red *teff* are the major cash and staple crops, respectively; and wheat is produced for both consumption and sale while other crops are mainly produced for home consumption. The main purpose of producing pulses is to rotate them with cereals for maintenance of soil fertility. Apart from prestige associated with staples produced on-farm, market imperfections may further encourage self-sufficiency in certain farm products. Thus, peasants tend to have diverse production patterns to satisfy their consumption needs (Shiferaw and Holden, 1999).

The production is mixed crop-livestock system. Livestock owned by households in the area are cattle, sheep, goats, horses, mules and donkeys. However, households in the survey area do not own large number of livestock. Lack of grazing land is the main constraint to livestock production. Oxen and donkeys are owned by many of the households since they are used for traction and transportation of goods, respectively. Eighty-two percent of the sample households own ox(en) and 68% of the households own donkey(s). Oxen ownership is also an indicator of wealth since crop production is mainly dependent on oxen.

2.3. Market Characteristics

Product and input markets in Ada are relatively well developed due to its proximity to the major cities (Shiferaw and Holden, 1999). The smallholders sell their outputs both in local and distant markets. Traders are their main customers. Most of the households sell their outputs between January, right after harvesting time, and April. The main reason for selling crops in those months is payment of fertilizer credit. But output prices are low during harvesting season and increase thereafter as supply diminishes.

The peasant households have access to formal credit for fertilizer use at a 12% interest rate. The credit is not in cash; rather the farmers get fertilizer from cooperatives and pay for it within a given period of time. One of the very important criteria to get fertilizer credit is either to be a member of cooperative unions or to participate in the extension package programme administered by the Ministry of Agriculture (MOA). Some amount of down payment is also required to get fertilizer. During the

survey period, the down payment was 55% of the total credit for cooperative union members and 45% for participants of the extension package. Moreover, the amount of fertilizer that can be taken on credit has a limit. The maximum amount allowed for cooperative union members in the time of survey was 300kg DAP and 150kg Urea, which is sufficient for three hectares of land. Other kinds of formal loans do not exist in the area. But farmers sometimes take informal loans from relatives, neighbors and friends for non-agricultural purposes such as consumption, family events and petty trade. The amount of informal loan in the survey area ranges between 100 and 250 *Birr* and the interest rate is as high as 100%.

As in the rest of Ethiopia, peasants hold usufruct rights to land, thus land is neither traded nor used as collateral. Informal short-term rental contracts for land exist, but such practices lack legal basis (Shiferaw and Holden, 1999). The common practice is that poor landlords rent their land to rich tenants. The main reason for renting out land is lack of (a pair of) oxen among other reasons such as lack of the necessary workforces to manage farming practices. Twenty-four percent of the sample households in the study area rented out land. Out of the households who rented-out land during the survey time, 72% have one or no ox. Oxen rent has more risk than land rent because of moral hazard. Hence, it is easier for households to rent out land than renting in oxen if they don't have (a pair of) oxen. There is relatively better access of oxen rental market for households with one ox. Such households also have an alternative of sharing oxen among each other. Among the households who rented out land, 48% have no ox while 24% of them have one ox.

Important farm activities are undertaken by family labor, while some labor is also hired during peak seasons to complement family labor. Labor markets are thus inactive during part of the year, and opportunities for off-farm work are limited (Shiferaw and Holden, 1999). Out of the households who earned non-farm income during the survey time, 56% rented out land while those who hired-out labor are only 11%.

III.   POLICY ISSUES

Structural adjustment is a policy package of market-oriented economic reforms sponsored by the International Financial Institutions (IFIs). Initially structural adjustment programmes (SAPs) were introduced to offset what were seen as temporary balance of payments problems in developing countries resulting from increased oil prices and interest rates in the late 1970s. However, with the debt crisis, which broke in 1982, structural adjustment programmes became more widespread and long-lived than was initially anticipated (Sachs, 1986; cited in Glassman and Carmody, 2001). These reforms are worked out and implemented in explicit consultation with international agencies and donors such as the World Bank and International Monetary Fund (IMF); and the release of loans is tied to progress in implementing them. The major purpose of the programme is to restore external and internal balances, and promote the efficient allocation of resources by reducing or eliminating distortions in product and factor markets. Although the specific objectives vary among countries, the

general prescription for this purpose is to reduce public expenditure, enhance public revenue, stimulate an increase in foreign exchange earnings, reduce foreign exchange expenditure, and improve efficiency of public sector bodies.

The agricultural sector is prominent in structural adjustment programmes (SAPs), both because it is a major productive sector and because it is often the object of a myriad policy interventions. Even when the structural adjustment policies are economy-wide, rather than sector-specific, the agricultural sector is likely to be affected, mainly through changing relative prices and inter-sectoral resource flows (Gaiha, 1991). Most African governments initiated programmes of agricultural market reform in the 1980s as part of economic structural adjustment programmes. As stated by Jayne et al (2002), the basic reform policy package included two broad features: privatization (withdrawal of state agencies from grain pricing and marketing activities) and liberalization (the relaxation of regulatory controls on private marketing).

Ethiopia has undergone two major policy reforms since 1970s. The economic policy during the period between 1974 and 1991 was centrally planned and anti-market in orientation while the one after 1991 is a market oriented policy.

A quasi-socialist economic policy was established in the country since 1974. All land, extra houses, and large as well as medium private enterprises were nationalized without compensation in this period (Abegaz, 2001). Owner-cultivators and sharecroppers were given use rights (usufruct) to land in lieu of their customary freehold or communal ownership rights and the rural population was organized into peasant associations (ibid). Establishment of producer cooperatives, "villagization" and resettlement of the drought-vulnerable population were also measures taken by the "socialist" government. Moreover, government parastatals were established to control inter-regional wholesale and retail trade in key staples and important industrial goods. Among such parastatals are Agricultural Marketing Corporation (AMC), Ethiopian Domestic Distribution Corporation (EDDC), and Agricultural Input Supply Corporation (AISCO).

The command economy was not successful because socialist policy was more intention than reality during the period under consideration. In mid 1980s, famine and war created a big humanitarian disaster and pushed the economy further back. Finally, the demise of socialism in Eastern Europe, the intensification of civil war in northern part of the country, and the worsening economic conditions forced the government to amend its economic policy in 1989 and 1990. However, the policy amendment could not bring about a significant effect in the overall economy.

The military government was thrown from power in 1991 and the Transitional Government of Ethiopia (TGE) took office. Following this revolutionary change, the centrally planned economy was ended and SAP was implemented. Major reforms undertaken during this period included: prudent fiscal policies (mainly through retrenchment of the army and civil servants, tax reform and lower defense spending) and

monetary policies (by limiting monetization of the fiscal deficit); devaluation of currency; decontrol of many prices; liberalization of the foreign trade and foreign exchange regime; privatization of small and medium enterprises; and financial market reform (Abegaz, 2001).

IV.   METHODOLOGY

4.1. Data Collection

Data collection was carried out between June and August 2001 in three villages of Ada District, named Hiddi, Horaa Kilole and Dhadhaa. This survey is a continuation of two previous works accomplished in 1994 and 1998. The household surveys were mainly sponsored by an EU (European Union) project named EPISODE (Economic Policy Reforms and Soil Degradation in LDCs) Research Project. During 2001 similar survey was conducted on the same villages except the village Borara Guddaa was replaced by Dhadhaa village. In this study, only Hiddi and Horaa Kilole villages are considered for data analysis.

The survey included data on household characteristics, consumption, production, land use, input use, off-farm activities, food security and others. Enumerators who can speak *Oromiffaa*[1] were recruited and trained. The questionnaires were pre-tested to enhance the validity and reliability of responses. Field visits and group discussion with key informants were also carried out to get important qualitative information. Furthermore, secondary data were collected from the Ada District Agricultural Bureau, Ethiopian Grain Trade Enterprise (EGTE), Central Statistics Authority (CSA) and other published data sources.

4.2. Data Analysis

The data collected for this study in 2001 (i.e. data of year 2000) is accompanied by data collected in 1994 (i.e. data of year 1993) in order to assess the impact of economic policy reform. The reform is not expected to have had any strong impact by the year 1993, as it is an early stage of the reform. Hence, it is logical to consider this period as a pre-adjustment scenario.

A 'year' dummy variable is considered as a policy variable for assessing whether there is a significant change in poverty status between the pre reform and the post reform periods, which are years 1993 and 2000, respectively.

Data is analysed based on the theory of non-separable farm household models using econometric estimation methods. STATA software package is used. Consumption expenditure is deflated based on price indexes collected from CSA to be considered in real terms.

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[1] *Oromiffaa is the language spoken in the survey area.*

4.3. Econometric Estimation

Regression model is used in this study in order to assess the effect of policy and other variables on poverty status of households.

In assessing impacts of policy reform on welfare, it is imperative to consider the role of the reform on poverty reduction among other factors. This helps to ensure that the poor do not have to bear the costs of the reform. In poverty analysis, poverty line is usually defined in terms of minimum income/nutrition required for subsistence living, which underlies a number of assumptions regarding the minimum nutritional requirements and the pattern of food consumption (Pal 2000). In this study, poor households are identified using the absolute poverty line defined based on national household and budget monitoring surveys in Ethiopia, which amounts per adult equivalent total expenditure of 529 *Birr* per annum.

A probit model is used to assess whether poor households have gained from the economic policy reform process.

$$p_i^* = \beta'X_i + u_i \tag{1}$$

A dummy variable P for p_i^* is defined by:

P = 1 if the *i*th household has total expenditure per adult equivalent $\leq$ 529 *Birr*

    = 0 otherwise   (2)

The following relation holds from (1) and (2):

$$\text{Prob}(P = 1) = F(X_i, \beta')$$

$$\text{Prob}(P = 0) = 1 - F(X_i, \beta') \tag{3}$$

Where P stands for poverty, X_i is a set of explanatory variables which determine poverty status, F is the cumulative distribution function, and the parameter vector β' reflects the impact of changes in any of the X_i's on the probability that P = 1.

The parameter vector β' can be estimated by maximizing the probit log-likelihood function L:

$$\ln L = \sum_i \left[p_i \ln F(\beta'X_i) + (1 - p_i)\ln(1 - F(\beta'X_i)) \right] \tag{4}$$

Description of all the variables to be used in the econometric analysis and their descriptive statistics are presented in tables 4.1 and 4.2, respectively. Some explanatory variables are considered in per adult equivalent terms. A suffix 'pa' is added to the variables presented in per adult equivalent terms.

Table 4.1.   Description of variables

Variable Name	Description
P	Poverty status of a household
age	Age of household head
edu	Educational level of household head
mwf	Male work force in standard labour unit
fwf	Female work force in standard labour unit
cwr	Consumer worker ratio
clpa	Cultivated land per adult equivalent in *kert*
oxpa	Oxen ownership per adult equivalent
tlupa	Other livestock wealth in tropical livestock unit per adult equivalent
cre	Fertilizer credit as dummy variable (1 if credit is taken and 0 if not)
year	Year as dummy variable (1 for 2000 and 0 for 1993)

Table 4.2.   Descriptive statistics of variables

Variable	Mean		Min		Max	
	1993	2000	1993	2000	1993	2000
Household consumption expenditure (Birr)	3069.4	4098.0	557.1	1196.9	7345.1	9708.3
Household consumption expenditure per adult equivalent (Birr)	776.0	835.7	364.3	228.3	2708.1	2640.4
Own product consumption (Birr)	1546.5	1453.8	263.5	0	4028.1	4310.5
Own product consumption per adult equivalent (Birr)	392.9	280.8	58.7	0	1750.2	890.8
Cash consumption expenditure (Birr)	1522.9	2644.1	224	690.6	4253.8	5397.7
Cash consumption expenditure per adult equivalent (Birr)	383.2	554.9	143.8	88.5	1215.4	1749.6
Poverty status	0.23	0.15	0	0	1	1
Age of household head	48.5	46.6	24	28	89	84
Educational level of household head	1.1	1.7	0	0	9	10
Male work force	1.3	1.6	0	0	4	5
Female work force	1.1	1.4	0	0	4	4
Consumer-worker ratio	1.6	1.7	1	1	3.6	3.3
Cultivated land (kert)	7.2	7.1	0	0	19	22
Cultivated land per adult equivalent	1.7	1.3	0	0	12.5	4.7
Oxen ownership	1.7	2.3	0	0	5	6
Oxen per adult equivalent	0.37	0.42	0	0	1.4	1.2

Total livestock unit	2.5	2.5	0	0	11.9	10.2
Total livestock unit per adult equivalent	0.53	0.44	0	0	3	1.6
Fertilizer credit in monetary terms	366.0	633.1	0	0	1660	1852
Amount of fertilizer credit (kg)	239.4	283.3	0	0	1000	750
Access to fertilizer credit (dummy variable)	0.84	0.85	0	0	1	1
Year (dummy variable)	0	1	0	1	0	1

V.   Result and Discussion

This section is comprised of two main parts. The first part is description of the empirical data while the second part consists of the results of data analysis.

5.1. Description of Empirical Data
5.1.1. Descriptive Statistics

Descriptive summary of the explanatory variables used in the analysis is presented in table 4.2. Average household consumption expenditure has increased in 2000 both in total and in per adult equivalent terms. This could be because the households earned better income due to the increase in price of agricultural products after the reform. Average consumption of own products has decreased while cash consumption expenditure has increased.

Mean cultivated land has decreased both in total and in per adult equivalent terms. Oxen ownership has increased while mean livestock holding has decreased in per adult equivalent terms although it has increased in total terms. The mean fertilizer credit taken has also increased in 2000 both in quantity and in monetary terms implying better access after the policy reform. However, the average increase in price of fertilizer is 73% while the amount has increased only by 18.4%. This big discrepancy is a reflection of removal of fertilizer subsidy besides inflation.

Table 5.1 presents a t-test for changes in educational status of household heads, male work force, female work force and consumer-worker ratio. The change in households' educational status is significant at 10 percent level of significance. Illiteracy rates of household heads were 48.1% and 46.8% in 1993 and 2000, respectively. The proportion of household heads with elementary and secondary education, on the other hand, has increased from 16.5% to 17.7% and from 1.3% to 8%, respectively while the proportion of members who have only basic education (i.e. only reading and writing) has decreased from 34.2% to 27.8%. Average male and female work forces have increased from 1.3 to 1.6 and from 1.1 to 1.4, respectively. The change is significant at 10% for male work forces and at 5% for female work forces. There is no significant change in consumer-worker ratio between the two years.

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Table 5.1. t-test for change in educational level, work forces and dependency ratio

Varialbe	Mean		Standard Error		t-ratio
	1993	**2000**	**1993**	**2000**	
Education	1.101	1.671	0.196	0.282	-1.659*
Male work force	1.316	1.595	0.113	0.117	-1.706*
Female work force	1.127	1.392	0.068	0.085	-2.433**
Consumer-worker ratio	1.633	1.650	0.050	0.036	-0.285

*** and * represent 5% and 10% levels of significance, respectively.*

5.1.2. Basic household Characteristics and Farm size

Table 5.2 presents mean family size in standard consumer unit, female workforce, male workforce and cultivated land of different categories of households based on their oxen ownership status. Family size has increased in the year 2000 for all categories of households but those who have more than two oxen. Total family size has also increased. The highest increase is for households who own no ox followed by those who own one ox. The probable reason for this situation is that fertility and mortality rates are high among the poor; and having many children may be seen as an insurance strategy against future possible deaths (Kinfu, 1995).

Table 5.2. Basic household characteristics and farm size in the survey area

Variables	Household category based on oxen ownership								Total	
	0		**1**		**2**		**>2**			
Year	1993	2000	1993	2000	1993	2000	1993	2000	1993	2000
Mean family size	2.5	3.8	3.6	5.2	4.7	5.0	6.7	6.4	4.3	5.4
Mean female workforce	0.8	1.3	1.0	1.2	1.1	1.1	1.5	1.6	1.1	1.4
Mean male workforce	0.4	0.7	1.0	1.3	1.4	1.5	2.5	2.0	1.3	1.6
Mean cultivated land (*kert*)	2.5	1.3	5.9	4.3	8.1	6.5	12.5	11.5	7.3	7.1

Source: Survey data

With regard to size of cultivated land, there is a decrease for all categories of households. However, the percentage decline is highest for households which do not have any ox followed by households with one ox and it is lowest for households who own more than two oxen. Total cultivated land has also decreased by 2.7%. This might be because some households have used previous farmlands for grazing due to increased livestock ownership. It might also be due to that some plots of land are lost

by households because of serious land degradation. Nonetheless, further assessment is not done since the issue of land degradation is beyond the scope of this study.

It can be observed from the above figure that cultivated land increases as the number of oxen owned by a household increases. Since neither is land distribution based on wealth status nor is it allowed by law to sell land, the reason could not be that households own more land, as they get richer. Rather, it may be because poor households mostly rent out their land to the relatively rich ones as it is stated in section 2.3.

5.1.3. Income Distribution

Difference in income distribution among the society determines the difference in their social status. Gini coefficient and Lorenz curve are used in this study to assess the degree of inequality in income distribution among the sample households during the two periods under consideration.

The Gini coefficient takes the difference between all pairs of incomes and totals the absolute differences and it is normalized by dividing by population squared as well as mean income (Ray, 1998). In symbols, it can be presented as:

$$G = \frac{1}{2n^2\mu} \sum_{j=1}^{m} \sum_{k=1}^{m} n_j n_k \left| y_j - y_k \right|$$

Where, G = Gini-coefficient

μ = Mean income

n = Total population

y_j = Share of individual j of total income

y_k = Share of individual k of total income

Higher Gini coefficient means higher income inequality. The Gini coefficient of the study area was 0.34 in 1993 and it has a slight decrease to 0.33 in 2000. This is sufficiently low as compared to the national level of 0.43 (Dercon, 2000). However, it can be realized from these numbers that there is not much reduction in the level of income inequality after the policy reform.

Figure 6.1 presents Lorenz curves of the households' total income during 1993 and 2000. The red curve refers to income of the year 1993 while the green curve is for 2000.
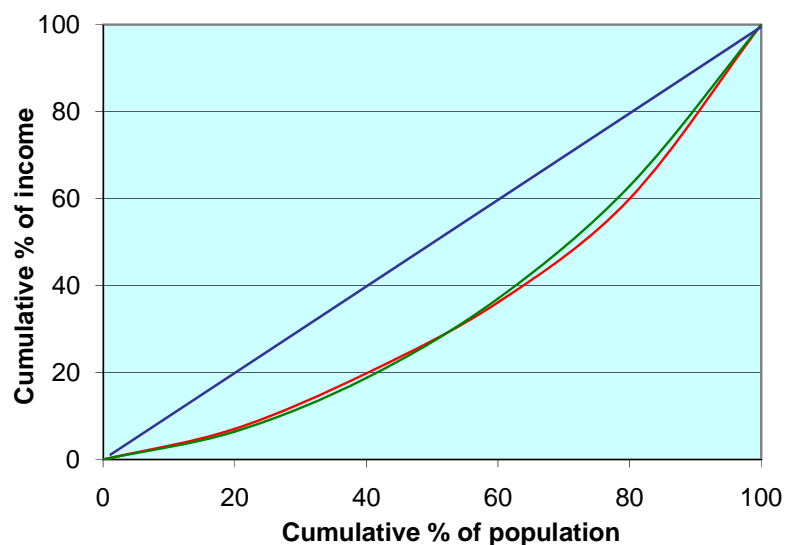
Figure 6.1. Lorenz curve of total households' income

The Lorenz curve and the Gini coefficient have the same interpretation. As the area between the curve and the 45^0 line gets bigger, Gini coefficient also increases. The figures show that there is not much change of income distribution between the two years. During the year 1993, the highest 20% of the population enjoyed nearly 40% of the total income while the lowest 20% earned only 7% of the total income. During the year 2000, on the other hand, the highest 20% of the population enjoyed 37% of the total income while the lowest 20% earned 6.5% of the income. These figures in general show that there is not much improvement in the level of income inequality between the two years.

5.2. Analytical Results

The probability of poverty status among sample households in the study area is estimated using a probit model. This model presents the probability of a household being poor with respect to different explanatory variables.

The probit model estimation results are presented in table 5.3. The marginal effects indicate the effect of a unit change in the explanatory variable on the probability of households' poverty status. Marginal effects may not have meaningful implications on binary variables (Greene, 2000). As a result, the marginal effects are presented only for continuous variables.

Table 5.3.   Probit model estimation results of poverty status (z in parenthesis)

Number of obs   =   158

Variables	Estimated coefficients	Marginal Effects
age	0.0433511*** (3.35)	0.0064013 (3.35)
edu	-0.0186623 (3.35)	-0.0027557 (3.35)
mwf	0.7788827*** (4.19)	0.1150107 (4.19)
fwf	0.0958988 (0.46)	0.0141605 (0.46)
cwr	0.7640502** (1.98)	0.1128205 (1.98)
clpa	0.1716099 (0.75)	0.0253401 (0.75)
oxpa	-2.540591*** (-2.68)	-0.3751466
tlupa	-1.521619*** (-2.50)	-0.224684
cre	0.1040761 (0.22)	-
year	-0.444835 (-1.42)	-
constant	-4.343198*** (-3.53)	-
Pseudo R^2	0.3718	0.3718

z and P > $/z/$ are the test of the underlying coefficient being 0.
*** & ** refer to 1% and 5% levels of significance, respectively.

The policy reform, which is represented by the year dummy variable, has the expected negative sign; however, it is not significant. The insignificance of the coefficient for this variable coincides with the very slight change of income inequality between the two years.

Oxen ownership and other livestock wealth are significant at 1% level of significance and both have the expected negative signs implying that the probability of a household being poor decreases as its asset holdings increase. This result also supplements the situation explained by the villagers about oxen ownership: the more the number of oxen owned by a household, the better off that household is. Consumer-worker ratio is also significant at 5% and it has a positive relation with the probability of being poor, which means poverty increases as the number of dependents in a household increase.

Male work force (mwf) does not have the expected sign while it is highly significant. The positive sign of mwf variable indicates that an increase in male work force worsens the poverty status of a household. This implies that extra labour in a household do not have access to off-farm employment; furthermore, redundant labour in a family results in a non-proportional increase of consumer units. Labour market imperfection stated in section 2.3 supplements this situation. Age of household head has also a positive effect on households' poverty status implying that a household gets poorer as the household head gets older. This could happen for two reasons. On the one hand, the households in

the study area might have high rate of time preference, that is, current consumption might be given high value relative to consumption in the future. As a result the households might give more emphasis to consumption rather than investment; hence they might get poorer as they get older. On the other hand, household heads will not have the same efficiency as before to perform either farm or off-farm activities as they get older.

VI.   SUMMARY AND CONCLUSIONS

Peasant agriculture is the dominant economic activity in Ethiopia providing a livelihood for more than 80% of the population. However, this sector performed poorly during the 1980s due to inappropriate agricultural marketing and pricing policies (Amha, 1994). These conditions contributed to the poor performance of the economy as a whole and the rural sector in particular. The outcome of the worsening crisis Ethiopia had been facing led to the Structural Adjustment Programme, which has been implemented since 1991.

The main objective of this study is to assess the impact of the economic policy reform on poverty status of rural households in Ada district. The study assessed the impact of the reform on poor households by dividing the households into poor and non-poor based on absolute poverty line and how poverty status is determined by other factors such as household characteristics, market characteristics and asset holdings.

Data is analysed based on the theory of non-separable farm household models. The method of maximum likelihood technique is applied to achieve the objective.

The policy reform has no significant effect on households' poverty status. Age of household head, male work force and consumer worker ratio have significant positive effects on poverty status, which means their increase worsens households' poverty. Oxen ownership and total livestock unit, on the other hand, have significant negative effects which indicates that they contribute for poverty reduction.

It is surprising that the increase in male work force worsens the poverty status of the households. Female work force has also the same sign as the male work force although it is not significant. This implies that extra labour in a household do not have access to off-farm employment; furthermore, redundant labour in a family results in a non-proportional increase of consumer units. This situation is justified by a very low proportion of income from hired-out labour out of the total off-farm income (section 2.3).

The following conclusions are made based on the above results. As indicated in the descriptive summary statistics, there is not much change in income distribution between the two years although the Gini coefficients for both years were sufficiently lower than the national level, which is 0.43 (Dercon, 2000). The analytical result also shows that the policy reform doesn't have significant effect

on poverty status of the households in the study area. Land degradation, which could have its own contribution for worsening poverty, is not assessed here since it is beyond the scope of this study. Hence, further researches on land degradation in relation to poverty are imperative. The negative effect of workforces on poverty reduction, on the other hand, calls for further research on off-farm activities in rural Ethiopia and/or in this specific area. In general, detailed study with more observations covering a wider area is needed for robust policy recommendation.

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APPENDIX

Correlation Matrix of different explanatory variables considered and used for data analysis.

	age	edu	mwf	fwf	cwr	cl	ox	tlu	cre	year
Age	1.00									
Edu	-0.48	1.00								
Mwf	-0.07	-0.001	1.00							
Fwf	0.01	-0.03	-0.33	1.00						
Cwr	0.18	-0.05	-0.32	-0.09	1.00					
Cl	-0.09	0.14	0.55	0.23	-0.18	1.00				
Ox	-0.02	0.13	0.60	0.29	-0.11	0.77	1.00			
Tlu	0.16	0.04	0.56	0.29	-0.07	0.67	0.70	1.00		
Cre	-0.31	0.17	0.34	0.11	-0.24	0.55	0.45	0.32	1.00	
Year	-0.06	0.13	0.14	0.19	0.02	-0.02	0.20	0.01	0.02	1.00

- *sqage stands for the square of age of household head.*