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Food for Work Program and its Implications on Food Security: A Critical Review with a Practical Example from the Amhara Region, Ethiopia

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Abstract

A systematic evaluation of food-for-work (FFW) programs in Ethiopia is seriously lacking. Most of the few available reports indicate that these programs have reached very few achievements in terms of food security and reduction of poverty at large. As expressed by HOLDEN *et al.* (2005), FFW programs are commonly aimed to produce or maintain potentially valuable public goods necessary to stimulate productivity and thus income growth. Natural resources management, like rural road construction, erosion control and afforestation of degraded lands can be mentioned as valuable measures which could stimulate productivity and agricultural growth. The poverty reduction and food security impact of food or cash for work activities are larger if they offer not only seasonal job opportunities to the rural community but also long term employment possibilities. This is more likely if the projects are regionally dispersed and combined with basic education. In the Ethiopian context, it was always questionable if the continuous boom in food aid (regardless of cash or food for work purposes) was the solution for the long standing food insecurity and poverty crises in the country. The study discusses the efficiency of FFW programs that aimed to reduce rural poverty and ensure food security on the one hand, and the impact of the food aid on resource and time allocation of the participating households for own food production on the other. The study is based on a field research conducted at a FFW program project, in the Amhara region, Ethiopia run by the German Agency for Technical Cooperation (GTZ) with the view of improving food security in the Amhara region, Ethiopia. A household theoretical model is used to analyze the sample data, whether FFW program may indeed reduce household food insecurity and/or has some crowding-out effects on labour allocation of participating households for own field production.

Keywords: Ethiopia, Amhara, GTZ, food for work program, poverty, food security, malnutrition

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1 Introduction

FFW programs have long been used to protect households against the decline in purchasing power that often accompanies seasonal unemployment, climate-induced famine, or other periodic disruptions by providing employment opportunities to the people (SUBBARAO, 2001). The FFW project, being undertaken by the German Technical Cooperation Agency (GTZ) was established in 1996 and provides funding for rural roads construction and some afforestation activities in the Amhara state. The funding was said to have been allotted almost entirely for the construction of rural roads, multiplication and distribution of multipurpose plant species like *Acacia* sp., Pigeon pea (*Cajanus cajan*) and Vetiver grass[1] (*Vetiveria zizanioides*). The vetiver grass is mainly used for the replacement of stone terraces as a hedge against water erosion. The varieties of multipurpose tree species are thought to provide animal forage, controlling soil erosion and at the same time improve soil fertility. Rural energy supply is another issue requiring attention. After large increases of funding in the second half of 1996, the program has diversified and includes investments in a much larger number of areas, including soil conservation, Triticale crop introduction and introduction of an improved ox-drawn cultivator to the Amhara farmers.

According to HOLDEN *et al.* (2005), food for work programs are essentially used both for short-term relief and long-term development purposes. From analysis based on data from FFW projects in early 1990s, it appears that villages with more favorable economic conditions with higher populations receive more FFW projects. Building a road or providing electricity in a remote and sparsely populated village, for example, would not be the most efficient use of poverty reduction funds. In the mid 1990s, more remote areas were said to be targeted for FFW projects, but results from these efforts have not yet been assessed.

AAS and MELLEMSTRAND (2002) stated that most of the FFW programs in Ethiopia had long-term development goals and were formally distinguished from the disaster relief FFW programs. Provision of public goods may be socially desirable because private investment in soil and water conservation and tree planting maybe well below socially optimal levels due to poverty and market imperfections (HOLDEN *et al.*, 1998; HOLDEN and BEKELE SHIFERAW, 2002). However, there is also a danger that FFW programs crowd out private investments (GEBREMEDHIN and SWINTON, 2000). It is therefore, appropriate to evaluate these programs based on their long-term goals and not only on the basis of short-term relief provisions. In a case study in Tigray state, Ethiopia, AAS and MELLEMSTRAND (2002) found out that the FFW recipients considered the long-term benefits of FFW more important than the short-term benefits of food provision. Keeping this in mind, this study examines whether or not the FFW programs show a significant long term contribution in terms of increasing food security, calorie intake and marketed surplus effects for the participating rural households in Northwest Ethiopia. And, the study raises the question whether or not the FFW programs also show crowding

[1] Vetiver is a little known tropical grass with strong and deep root system suites to hold back sediments and slows runoff.

out effects on resource and time allocation of the participating households for own crop production. The analysis draws mainly on the findings of a recent FFW program study at the Integrated Food Security Project (IFSP), sponsored by the German Technical Cooperation Agency (GTZ) in the Amhara region.

The project site characteristics
Ethiopia is one of the poorest countries in the world in almost all measures of poverty. For example in terms of food consumption, it does not fulfil the minimum nutrition requirement of 2,200 calories per adult person per day, including non food consumption requirements. The Amhara region is one of the poorest regions in Ethiopia. It is characterized by undependable rainfall, very high land degradation, rapid population growth, high rate of poverty and malnutrition. Food security is also threatened by frequent droughts which as a result makes the majority of the population food recipient.

The Ethiopian government has a policy of committing 80% of food aid resources to FFW programs (SANFORD and HABTU, 2002). The FFW programs have been especially widespread in northern Ethiopia on government attempts to improve food security and promote sustainable rural development in this chronically poor and food insecure region (HOLDEN *et al.*, 2005).

2 Materials and Methods

The survey data covering 200 households has been taken in 3 districts (*Weredas*) in south Gondar zone of the state. The samples were taken from farming communities participating in different FFW activities such as construction of hillside terraces, planting of fodder plant species and implementation of improved ox-drawn sub cultivator.

The first round sample survey took place during the *Belg* or short rainy season extending from February to April while farmers were in preparation of their land. Land preparation in the region is carried out by using ox-drawn plough as is commonly used by the vast majority of the Ethiopian farmers. The plough is light in weight, cheap and endurable and home made implement that has been in use for centuries in the country. The second sample survey was taken during the *Meher* or long cropping season between June and October at full maturity of the crops shortly before harvest. Both round surveys were carried out in 2003. Two hundred sample households in three districts were randomly selected for interview and videotaped individually in different occasions when the households were participating in FFW programs. Household questionnaire was also developed, which was filled by one of the project employee assigned to assist.

The agricultural household modelling approach was used to analyze the food security and marketed surplus outcomes of the new technologies. The agricultural household model providing a joint model of production and consumption decision is a natural phenomenon for the rural subsistence households. The section starts with the general theoretical framework for small farm households which can be adapted for the particular problem in the study. The equations specified in this part provide the theoretical support for the empirical specifications of the following equations to be estimated, these are: food consumption equations and calorie intake equations.

2.1 A simple basic model

The agricultural household model incorporating production and consumption in this section forms the basic structure of empirical equation estimated in this paper. Following Becker (1965); Singh *et al.* (1986) and Behrman and Deolalikar (1988), households obtain utility from the consumption of G-goods specified as:

$$U = U(G_1, G_2, G_3, \ldots, G_n) \tag{1}$$

where the Gs are consumable goods. Let us assume that there are two sets of goods: calories (G_1) and other n-1 consumable goods. The production functions for the G-goods are:

$$G_i = G_i(X_m, X_a, X_l, F, R)\ i = 1, 2, \ldots n \tag{2}$$

where X_m is market-purchased goods, X_a is agricultural staples produced by the households, X_l is leisure, F is family labour endowments and R, a non-choice vector of variables, represents individual and household characteristics, such as ages, years of education, household size, dependency ratio and other environmental variables. The household utility function can therefore be specified as:

$$U = U(G_1(X_m, X_a, X_s, F, R), G_2(X_m, X_a, X_s, F, R), \ldots, G_n(X_m, \ldots)) \tag{3}$$

The household picks the optimal consumption bundle, subject to its production technology:

$$Q_a = Q_a(A, L, V, K) \tag{4}$$

where Q_a is the household's production of staple food, A is land, L is total labour input, V is a vector of variable inputs (fertilizer etc.), K is a vector of capital (drought and other animals). Model details can be seen at the appendix.

3 Results and Discussion

3.1 The effect of food for work program for food security

In both round surveys 25% of households stated that they were participating in a FFW project aimed at rehabilitating the environment and controlling soil erosion caused by water. According to these participants, the FFW project enabled them to secure their daily food, to purchase additional food items to be kept in stock for harder times. These households have further stated that they were provided some vegetables seeds such as onions and cabbages to grow at their home gardens in order for them to diversify income and improve household nutrition. However, lack of fertilizer and insecticides combined with scarcity of irrigation water devastated their interest to grow these vegetables. Out of the participated households (hhs) 15% stated that due to the participation in FFW programs they had less time to focus on the cultivation of their own land, while 13% stated that they were not crowded out by the FFW participation at all. About 26 % of the households stated that their own food production need was reduced due to their enjoyment of FFW program, whereas 9% mentioned that their household situation has hardly changed by the FFW program in terms of food security and daily calorie intake.

As a result, the survey sample suggests that the FFW program has indeed negatively effected to time and resource allocations for own production. Because the household labour was spent more on FFW activities than on own field works. In Table 1 is indicated the various FFW activities in which the sample hhs participated during the field surveys.

Table 1: Various FFW activities in which the sample hhs participated during the field surveys

Type of FFW activity	*Participation of hhs in %*
Rural roads construction	30
Bio-physical soil and water conservation activities	25
Multiplication of multipurpose plants incl. vetiver grass	20
Gully erosion control	12
Check dam construction	8
Stone band and related metal works	5

Source: own data

As has been summarized in the table, much of the FFW program of the GTZ food security project in the Amhara region focused on road construction activities, multiplication of various plant species including vetiver grass that would be distributed back to the farmers themselves. Multiplication of various plant varieties were carried out on selected individual farmers' fields who have also participated in the FFW programs. Gully erosion control both by bio-physical i.e., by planting trees in the gullies and using stone bund control measures were carried out in different worst affected communal lands. These new implements were used by the GTZ food security program with the view of improving food security and rural poverty by increasing food production for the mainly drought affected, degraded areas of the Amhara state.

FFW programs were also carried out by the local administration in mass mobilization of the community. This takes place in different weredas throughout the country, especially in the highly degraded highlands. HOLDEN *et al.* (2005) also stated that an annual activity in Tigray state had been under implementation for many years. These authors further stated that in this region, each able bodied adult person had to contribute 20 days of work to the community without any direct payment. During the survey, hhs were asked what activities they consider most important in their communities if they offered to choose FFW funded activities to be carried out for their communities. As is summarized in Table 2, the majority (30%) of the participants consider irrigation development as most important, while 25% stated that health centre construction would be their first preference in their community. This was argued that especially the prevalence malaria

Table 2: Various FFW activities which sample hhs consider most important

Type of FFW activity	*HHS response in %*
Irrigation development	30
Building health centres	25
Vegetable seedlings or seeds supply	22
Roads construction	13
Culvert construction	10

Source: own data

was very high in the dry seasons infecting hundreds of people each year making many households unable to cultivate their fields on time and costing others their lives.

3.2 Calorie intake impacts of FFW program

Several studies have documented that technological change and commercialization of smallholder production improve the level of food consumption, hence the calorie intake of participating households (VON BRAUN and KENNEDY, 1994). Changes in food consumption are generally associated with more readily available cash income. Meanwhile, increased commercialization may result in greater self sufficiency via increased productivity of the land and labour inputs allocated to the commercial activity and changes in cropping patterns (VON BRAUN, 1995). With a higher income a substitution of cheap calories for more expensive calories can take place and consequently, diets gain not only in quantity but also in quality and diversity. Consumption changes affected by technological change and commercialization have been attributed to increased income rather than to higher food availability (ALDERMAN, 1987; BINSWANGER and VON BRAUN, 1991).

On the basis of the calorie content of the various food categories, the Ethiopian Nutrition Institute has set at a daily calorie intake of 1,518 per person. This is of course, well below the medically recommended minimum daily intake of 2,100 calories (72.3%) and almost 34% below the 2,300 calories/person/day representing staple food self-sufficiency (FAO/WFP, 1995). The current low calorie intake reflects the dramatic magnitude of malnutrition still existing in Ethiopia, particularly among the vulnerable groups.

The impact of the FFW programs in Amhara that aims to improve food security and alleviate poverty through food for work payments in kind, results a small increase in the calorie intake of the participating households. As can be learned from the responses of the sample households, FFW members indicated to have increased consumption up to about 30% of the daily requirements of 1,518 per person. Nevertheless, the households have often criticized the FFW program to have had undermining them to produce their own crop due to the fact that the FFW activities in which they participate, competes with

the households' own field related activities especially at crucial times of cropping seasons. Highland Ethiopia, including the Amhara region has two main cropping seasons i.e., the Belg or short rainy season the Meher or long rainy season. Therefore, it needs to be mentioned that the FFW activities may effectively utilize households' labour if targeting the programs at off-farm seasons and in accordance to priority areas selected by the communities themselves. FFW may then be more effective to enhance food security, improve daily calorie intake and resource conservation, provided that the programs are compatible with local priorities. A policy combining promotion of tree planting and conservation of cropland may achieve win-win long term benefits in terms of increased household incomes as well as more sustainable land use (HOLDEN *et al.*, 2005).

4 Conclusion and Recommendations

Following the liberalization process in Ethiopia, the number of non-governmental organizations (NGOs) involved in the country has increased substantially. However, whatever numbers of NGOs do exist in the country and whatever programs are carried out by them, there is no significant change of life for the overwhelming majority of the rural community at all. With the current state of affairs, it is also clear that food for work projects are by no means the best alternative solutions to the worsening living conditions of millions of Ethiopians.

Though the FFW provision contribution to food security is negligible when compared with the large scale of destitution and high food deficiency prevalent in the Amhara region, maintaining the program to supply basic needs of Ethiopia's most destitute population is indispensable. However, the choice of the programs need to be left to the local community, and must focus in long term rural development operations in order to shift the debate from whether poverty is dropping, and how best to improve the continued poverty and malnutrition in the Amhara region and Ethiopia at large.

The types of investment, for instance, soil and water conservation (SWC), road construction, land use management and other food security and related programs also implemented by the regional and district authorities, require better coordination efforts between the different stakeholders involved in the region. As over 80% of Ethiopia's population said to live in rural areas, it is essential to resettle the sparsely distributed households into small villages, which would enable both the government and non-governmental organizations (NGOs) to effectively utilize resources for execution of the FFW operations. Operations include providing safe drinking water, electricity, telecommunication facilities and facilitating access to rural roads for better marketing of agricultural produce. At this point, the resettlement program undertaken by the previous government or the failed Tanzanian Ujamaa movement may come in the minds of many, there is no doubt however, if the choice is provided to the households themselves and infrastructure such as road, health, water and electricity availability is ensured, the resettlement program can be successfully implemented.

The conclusion in accordance to this sample survey can be summarized into two reciprocating scenarios: a) In the first scenario, the empirical evidence from the Amhara region shows that the number of people in need of food aid and the number of undernourished

children in the region have been increasing from time to time, which might have been attributed by the rising frequency of food aid being distributed in the area that in turn created the so called a *dependency syndrome* among the small scale producers. However, it should be stressed that the food aid had saved millions of lives in the region that resulted in due to drought or other crises. Given the number of undernourished people in Amhara and the increasingly complex risks to food security, local authorities together with partner NGOs need to put the FFW program at the top list of their agenda, not only as a relief provision in short terms but also with the view of reducing food aid dependency and increase food self sufficiency in longer terms. An improvement in the widespread under-nourishment due to FFW activity, was not conspicuously prevailed by the study, except the fact that a small increase in calorie intake was reported by sample households b) In the second scenario, it was also revealed that the FFW program has some crowding-out effects on own field productivity and resource management by participating households. Time and labour allocation by farmers for own field works, especially during field cultivation and weeding periods, was limited due to the permanent involvement of the farmers in FFW activities.

Generally, the way in which "aid" decisions are made should be with reference to those whom they utilize it most. Coincidence of food aid import or distribution with harvesting seasons needs to be avoided in order not to destabilise market prices of home grown agricultural produce. In this regard, payments can also be made in cash that would allow the beneficiaries to purchase the food of their choice at times they are in need. The recent shift of FFW into Cash for Work (CFW) programs by the GTZ-IFSP is a very good move towards the right direction, that other aid organisation could follow suit. The workers of aid organizations in general should be ones who listen to the opinions of the supposed beneficiaries of the process of development and have a degree of access to what one observer has called "the rich and the detailed system of knowledge of the poor".

In the opinion of the author, the overall food for work program could be improved by more explicit targeting of the poorest households, and by refocusing its work on the types of programs that bring the greatest benefits to the destitute in greater scale. The author strongly believes only direct investment (for e.g. in middle and big scale agricultural industries, investment in irrigated agriculture) both by national and international stakeholders is the best alternative to food aid, which we believe is a long lasting solution for Ethiopia's recurrent food insecurity and poverty crises. After all, there is no single country in the world that is considered to be 'developed' as a result of food aid. The author is by no means criticising the humanitarian assistance, which is meant to save lives effected by natural or manmade disasters.

Finally, there are ominous signs for the future especially amidst concerns in water scarcity, soil depletion, the lack of improved agricultural techniques, the continued threat of disease epidemics such as HIV/AIDS and malaria and family birth control pose a grave threat to the food security of the growing population in the region, which lacks the attention of many FFW program operators.

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Appendix

A simple basic model

The agricultural household model incorporating production and consumption in this section forms the basic structure of empirical equation estimated in this paper. Following BECKER (1965); SINGH *et al.* (1986) and BEHRMAN and DEOLALIKAR (1988), households obtain utility from the consumption of G-goods specified as:

$$U = U(G_1, G_2, G_3, \ldots, G_n) \tag{1}$$

where the Gs are consumable goods. Let us assume that there are two sets of goods: calories (G_1) and other n-1 consumable goods. The production functions for the G-goods are:

$$G_i = G_i(X_m, X_a, X_l, F, R)\ i = 1, 2, \ldots n \tag{2}$$

where X_m is market-purchased goods, X_a is agricultural staples produced by the households, X_l is leisure, F is family labour endowments and R, a non-choice vector of variables, represents individual and household characteristics, such as ages, years of education, household size, dependency ratio and other environmental variables. The household utility function can therefore be specified as:

$$U = U(G_1(X_m, X_a, X_s, F, R), G_2(X_m, X_a, X_s, F, R), \ldots, G_n(X_m, \ldots)) \tag{3}$$

The household picks the optimal consumption bundle, subject to its production technology:

$$Q_a = Q_a(A, L, V, K) \tag{4}$$

where Q_a is the household's production of staple food, A is land, L is total labour input, V is a vector of variable inputs (fertilizer etc.), K is a vector of capital (drought and other animals).

The household also faces a budget constraint:

$$P_m X_m = P_a(Q_a - X_a) - w(L - F) + E \tag{5}$$

That is, given prices, P_m, the total market consumption, $P_m X_m$, cannot exceed the total income, that is the sum of non-labour income, E, labour earnings, $w(L-F)$, and the value of food marketed surpluses, $P_a(Q_a - X_a)$. F is the family labour supply, such that $(L - F)$ if positive it represents hired labour, and if negative it is off-farm labour supply. The household also faces a time constraint: that is the total time, T, available to the household cannot exceed the sum of time in leisure X_s and time working on-farm or off-farm, F. In this case:

$$T = F + X_s \tag{6}$$

Substituting the production constraint (4) for Qa and incorporating the time constraint (6) into the budget constraint (5) for F, yields the following constraint:

$$P_m X_m + P_a X_a + w X_s = W_T + \pi + E \tag{7}$$

where, $\pi = P_a Q_a(A, L, V, K) - wL$ measures farm profit. The left-hand side of (7) represents total household expenditures on purchases of market commodities ($P_m X_m$), the household's purchases of its own output ($P_a X_a$), and the household's purchase of its own leisure time (wX_s) The right-hand side represents the full income in which the value of the stock of time available to the household wT, profit π and non-labour income (E) are explicitly recorded.

From equations (3) and (7), the household can choose (i) the consumption levels for the Z-goods through the consumption of X_m, X_a and X_s and (ii) the total labour input into agricultural production. The first order conditions (FOC) for maximizing the choice variables are explored in TANGKA (2001). FOC for labour can be solved for L, as a function of prices (P_a and w), the technological parameter(s) of the production function and the fixed area of land (A)

$$L = L(w, P_a, K, A) \tag{8}$$

Since production is not influenced by consumption choices, this form of the model is recursive.

The value of the full income, when profits have been maximized through the appropriate choice of labour input, can be obtained by substituting L into the right-hand side of the full income constraint (7), which could then be re-written as:

$$P_m X_m + P_a X_a + wX_s = S \tag{9}$$

Since production is not influenced by consumption choices, this form of the model is recursive.

Various elements of the basic model will be modified in the following sub-sections to address pertinent issues specific to the problem to be analyzed. This includes the impact of intensified dairying and market-orientation of small farmers on food consumption, per capita calorie intake and food marketed surplus for the harvesting and planting seasons.

In this case if the household maximizes utility, where utility is a function of consumption (C) and leisure (X_l),

$$U = U(C, X_l) = P_q Q(L_a, L_q) + W_{FFW},\ L_{FFW}\ (T - L_a - L_{FFW}) \tag{10}$$

where P_q is the price of output produced, Q is a production function with the marginal returns to every input increasing, L_a is labour input in crop production, L_q is the land quality, W_{FFW} is the FFW participants' wage, L_{FFW} is the amount of labour performed by the participants and T is total time spent for FFW. The model has no factor markets for land instead a market FFW labour and crop value.