Graduating or Creating Dependent Households? An Evaluation of the Productive Safety Net Program Implemented in Seharti Samre District, Tigray Region, Ethiopia

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Abstract

By drawing on evaluation research which was conducted in 2018 with the objective of assessing the impacts of a Productive Safety Net Program (PSNP) on beneficiary households in Berezah - a rural community in Tigray region- this article presents assessment results with a particular focus on issues of dependency. The study used a concurrent cross-sectional design; directed towards evaluating the Program using mixed methods. A stratified simple random sampling and purposive sampling techniques were used to select 180 and 140 study participants for the quantitative and qualitative components of the research, respectively. Quantitative data were analysed using descriptive and inferential statistics while qualitative data were analysed using hematic analysis. The findings revealed that the PSNP hasn't brought about economic empowerment, measured in terms of improving food security and asset accumulation, among beneficiary households'. Most PSNP beneficiary households were reported to have spent most of their time working on public works but lack proactive engagement in off-farm income generating activities. Moreover, beneficiary households compared to others, had large family size, purchased less agricultural inputs like artificial fertilizers, had lesser crop yields and developed higher dependency on the Program. Thus, instead of protecting asset depletion and enhancing the food security status of beneficiary households', the Program produced more dependent households and this calls for revisiting the PSNP design, its implementation strategies and monitoring mechanisms, if any.

Keywords: Productive Safety Net Program, beneficiaries, dependency, graduation

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1. Introduction

Food deficits and famines are well-known problems worldwide, especially in Sub-Saharan Africa. Responses to these challenges like emergency appeals and food aid programs have been preventing mass starvation (Azadi *et. al.,* 2017). In Ethiopia, food insecurity has long been a widespread problem. Over the last four decades, there have been several famines due to drought (Andersson et. al., 2009). For generations, the response was mainly based on foreign food aid and financial supports (Devereux et. al., 2006). Despite the food aid, rural households are experiencing a further depletion of their assets and found themselves increasingly vulnerable to even the most marginal livelihood shock (Devereux et. al., 2006; Andersson et. al., 2009).

Although some discussion of reforming Ethiopia's food aid system took place in the early 1990s, it was not until the early 2000s that reform began to gain traction (Wiseman et. al., 2009). In 2001, the Disaster Prevention and Preparedness Agency launched the first official discussions with key international agencies on reforming the system. The focus of these discussions were the need to consider alternatives (MoARD, 2006). In June 2003, the Ethiopian government took action by designing a new program with a plan to begin implementation at the start of 2005 (Wiseman et. al., 2009; Brown and Teshome, 2007). Begining 2005, the government and donors implemented the new response which is the Productive Safety Net Program (PSNP) aimed at alleviating chronic food insecurity in rural Ethiopia (Gilligan et. al., 2008; MoARD, 2006).

The objectives of the Productive Safety Net Program are to provide support to the food insecure population in a way that prevents asset depletion at the household level and create assets at the community level (MoARD, 2006). Ensuring graduation of households from food insecurity is a key goal of PSNP. Each year, there is a follow up assessment to check if the household should stay in the PSNP or not, on the basis of reported food insecurity status (MoARD, 2006). However, graduation remains a challenge because of the repeated shocks which leads to continued dependency on the Program (Sengupta, 2014; Mahmood, 2016).

According to a study conducted by Berhane (2011) on four regions of Ethiopia, the Program has reduced the farm and non-farm income of beneficiaries. It also reported that the Program was not helping beneficiaries to diversify their source of income. Discourses around dependency often blame the symptom, rather than the cause. Dependency is "an attitude and belief that an individual or a group cannot solve its own problems without outside help" (Bartle 2007:1). Long-term provision of aid to people in need of assistance has been associated with fear of creating a dependency. The primary concerns are that beneficiaries will lose the motivation to work to improve their own livelihoods after receiving benefits, or that they will deliberately reduce their work efforts in order to qualify for the transfer (Peter, 2006). In this connection one of the main disadvantages of the PSNP is that it increases family size in the anticipation of gaining more food aid in which beneficiary households of the program have developed more dependency ratio (Girma and Holden, 2017).

Assessing the negative impact of PSNP can help in increasing our understanding of the actual impacts. There has been little attention given to the subject as most previous studies focused on only the positive contribution of the program This is especially true in the case of Tigray region, Seharti Samre Woreda, where there was no study carried out to evaluate the impact of PSNP. This article draws on a study which was conducted in Tigray, Seharti Samre Woreda, at Berezba with the objective of assessing the impact of PSNP in terms of whether it has been creating dependency or not. In Berezba, the total number of inhabitants was estimated at 5111 residing 732 households, of which 428 households were beneficiaries of the program. Although the program has been in operation for about 15 years, no visible change was observed in the lives of the beneficiary households. This study assessed the impacts of the PSNP on beneficiary households.

In Berezba, there is a considerable proportion of households with food insecurity where most households having very few resources. In a context where everyone is food insecure, prone to shocks such as drought and other natural or manmade calamities, state supports have become vital coping mechanisms. For many, the PSNP is their main source of income. However,

experts doubt the role of the program in empowering the food security status of beneficiary households.

2. Methods

2.1. Study Area

This study was conducted in Berezba, which is located in the south-eastern part of Tigray, around 70 kms from the regional capital city - Mekelle. Berezba is one of the chronically food-insecure areas in southeast Tigray. Significant proportion of the population lives in rural areas and their livelihood is largely dependent on rain-fed agriculture. Rainfall patterns are, however, unreliable, resulting in recurrent crop loss and lack of food security. Food insecurity is a long-term phenomenon caused by a combination of both natural and man-made factors. These include unreliable rainfall, dependence on unpredictable weather conditions, poor soil fertility, lack of modern agricultural inputs and the absence of alternative income sources.

2.2. Study Design

This study used a concurrent cross-sectional design to assess the level of dependency on the program. The study employed mixed research approach, dominantly quantitative methods. In this regard Creswell (2003; 2008), states that "using mixed research could neutralize the biases because triangulating data sources as means for seeking convergence across qualitative and quantitative data can help to develop the results from one method to the other".

2.3. Sampling Technique and Sample Size

As to selecting study participants both probability and non-probability sampling techniques were used to match with the proposed mixed research design. To obtain quantitative data through a structured questionnaire, a random sampling technique was employed to select sample household heads from both male and female headed households of PSNP beneficiaries separately by forming strata through stratified sampling.

In Berezba, as mentioned above, the total number of inhabitants was estimated at 5111residing in 732 households, of whom 428 were PSNP beneficiaries. The sample size, in the quantitative part of the study was determined to be 140 calculated by using Krejcie and Morgan (1970) formula of determining sample size. Half of the respondents were selected from male headed households while the remaining half was from female headed beneficiary households. As to qualitative data, 4 focus group discussions were conducted with two male and two female household heads. Seven household head beneficiaries of the Program participated in focus group discussions. Besides 4 key informant interviews from experts and local community leaders and 8 in-depth interviews with household head beneficiaries were conducted. All in all, a total of 40 study participants took part in the qualitative part of the study.

2.4. Methods of Data Collection

The major data collection instruments were quantitative survey for the quantitative part, and individual interviews and FGDs for qualitative part. A structured questionnaire was prepared on attitudinal perception of aid and dependency which was designed based on Rosenberg (1965) measurement of self-esteem. A list of items was prepared which assessed participants' perception of dependency on aid by a Likert scale of five points (strongly agree, agree, neutral, disagree and strongly disagree). The language and items were evaluated by peer researchers, staff member of the School of Social Work of Addis Ababa University and Tigrigna language experts to ensure their appropriateness for the Ethiopian context. The questionnaire had also incorporated a list of questions to generate data on the basic socio-demographic characteristics of study participants such as household status, educational background, sources of income, fertilizer usage, livestock ownership, crop production and land holding.

2.5. Measurement, Validity and Reliability

Quality of the qualitative data was ensured during instrument preparation as it was evaluated by peer researchers and academic experts. On the other hand, quality of the quantitative data was ensured by double entry, researchers feedback, and pilot test before actual data collection. The questionnaire was first prepared in English and then translated into Tigrigna

language. It was piloted before actual data collection on 20 participants which were not included in the study. Hence, validity and reliability of the data were ensured right after pilot test by such measures as rephrasing some questions and simplifying some of the items with expressions familiar to participants in the research area. Accordingly, the reliability coefficient from the pilot test was .88 (α =0.88). In addition to the pilot test, three instructors from Addis Ababa University (School of Social Work, School of Psychology and Tigrigna Department) were consulted to review the contents of the questionnaire.

2.6. Methods of Data Analysis

Quantitative data were analysed by using descriptive and inferential statistics. First, descriptive analysis which includes mean, median, mode, percentage and standard deviation of the variables were analysed. The variables include sex, literacy and sources of income. Besides, family size, fertilizer usage, and crop production were included. Second, correlation and regression were employed to determine the relationship of dependency score with the explanatory variables (including family size, fertilizer usage and crop production). Qualitative data were analysed by transcribing interviews and group discussion audio data, translating language and sorting and arranging into different types of thematic categories and coding. The coding helped in generating a description of the research area, PSNP beneficiaries' and key informants' perception about the prevalence, cause and solution of the problem in Berezba. Finally, as a mixed research approach both quantitative and qualitative analysis results have been integrated and interpreted together through comparison of the findings.

2.7. Ethical Consideration

With regard to research ethical issues, first a support letter was produced from the School of Social Work in order to secure approval of the research and to gain the cooperation of concerned administrative offices in the study area. Study participants took part in the study upon their expression of willingness and consent. Both written and verbal consents were obtained from the study participants.

3. Results

This section presents the main analyses and findings of both quantitative and qualitative parts of the study. The quantitative part of the analysis focuses on descriptive and inferential test statistics performed to determine whether there is significant difference among the identified variables. In addition to the measure of central tendency, t-test statistics were used. To determine the relationship of dependency score with the variables of family size, artificial fertilizer usage and crop production, correlation and regression were employed. The qualitative material was used to supplement the quantitative one and for triangulating data sources.

3.1. Respondents Socio-Demographic Characteristics

Table 1. Respondents socio-demographic characteristics

	Value	***N***	***%***
Sex of Head	Male	70	50%
	Female	70	50%
Literacy	literate	14	10%
	Illiterate	126	90%
Source of	Only Agriculture	132	94.3%
income	Off-farm IG Iv.t	8	5.7%

Source: Own survey

A total of 140 respondents were drawn from a list of 428 PSNP beneficiaries participated in this study. As can be seen from Table 1 above, 50% of the respondents were female household heads and the rest (50%) were male household heads. Most of the respondents (90%) were not able to read. With regards to religion, all of the respondents were Orthodox Christians. Finally, in terms of sources of income, most of the respondents (94.3%) reported that their livelihood entirely depends on rain-fed agriculture; and only 5.7% of them were engaged in extra off-farm activities.

3.2. Descriptive Statistics of Household Characteristics

Table 2 below, presents the mean and standard deviation results of different continuous score variables of members with sex of household heads.

Table 2: Descriptive Statistics of Household Characteristics

	Male HHH		Female HHH		All Members	
	N = 70		N = 70		N = 140	
	Mean	(SD)	Mean	(SD)	Mean	(SD)
Family Size	6.4	(2.07)	5.6	(1.19)	6	(1.73)
Land holding	4.2	(0.84)	3.56	(0.71)	3.9	(0.85)
Fertilizer Usage	1.4	(0.61)	1.03	(0.72)	1.21	(0.69)
Crop Production	15375*	(3.01)	13710*	(3.17)	14550*	(3.13)
Livestock 2010	33750*	(4.2)	32400*	(4.7)	32850*	(4.5)
Livestock 2011	29250*	(3.9)	28350*	(4.5)	28800*	(4.2)

Source: Own Survey * - Measured in Ethiopian Birr

As can be seen from Table 2 above, PSNP beneficiary household members had larger family size with an average mean of 7.4 children (M=7.4, SD=2.28). The results from the focus group discussions also indicates that the beneficiaries of PSNP have larger family size. This seems to have resulted from the anticipation of gaining more support from the program. To deal with such a problem, the government recently changed the system of distributing aid to beneficiary households, giving support to only five members in a single household. Such adjusted aid distribution mechanism is reported to have created more problems on beneficiary households who have large family, because it is becoming difficult to feed all their family members with the current amount of support.

Another issue assessed in this study is the practice of artificial fertilizer use. Although the female household heads have enough land holdings with an average of 3.9 hectare (M=3.9, SD=0.85), they purchase less fertilizers. Mean fertilizer usage was found to be only 1.2 quintal (SD=0.69). According to a Kebele agricultural expert, there is a huge difference between PSNP beneficiaries and non-beneficiaries starting from purchasing enough fertilizers up to protecting the farm crops. There are even some members of the program who don't want to apply fertilizer in their farms, which is one of the reasons for producing small crop yields. About the use of fertilizer an agricultural expert from the locality has this to say:

> It is difficult to conclude, but most of the beneficiaries have no interest in purchasing enough modern fertilizers for their farm. This is due to their high level of dependence on the program aid. They don't seem to care as

much as the non-beneficiary households do for the agricultural production on their farms since they are a member of the program.

FGD participants who are PSNP beneficiaries also maintain that they are not good at purchasing enough agricultural inputs like fertilizers for their farms. Due to such problems, their level of agricultural production is low. Thus, regarding crop production, PSNP beneficiaries are producing very small amount of grain with an average mean of 9.7 quintals or its cash equivalence of 14550 in Birr in a year (M=9.7, SD=3.13). As a result, food shortage occurs, and they wait for the PSNP to give them aid. However, if the program couldn't provide them with the support on time, the only thing they can do to sustain their households is selling their livestock.

In Berezba community, the Program is creating dependency as reflected by the fact that beneficiary's initiative to purchase fertilizer is decreasing, resulting in low level of crop production. In this regard, it can be inferred that the Program is creating dependency by weakening beneficiaries' work habits. The existence of beneficiary's dependency on the Program has been also acknowledged by an expert from the Woreda Social and Labour Affairs Office. According to the Woreda experts to address issues of dependency a Livelihood Program is being implemented in some Kebele's. The Livelihood Program provides targeted households with grant for purchasing assets essential for the recovery of their livelihoods. However, due to the problem of transportation and lack of effective implementation and monitoring, Berezba is not benefiting from this Program.

A significant difference was observed in household livestock ownership with in the two years, in which the mean head of livestock decreased by 0.9 or 4050 in Birr. This is a clear manifestation of the program's inability to prevent beneficiaries from selling their assets. The qualitative material showed that it is hard to say the Program is improving the quality of life of beneficiaries and protecting their assets from depletion. In the eyes of the Kebele expert in food security and agricultural development, Program beneficiaries are still selling their assets and there is not any sustainable change in their livelihoods. The Program has been providing beneficiaries with food aid during the time of hardship, but they are still selling their

assets or livestock's. This is the main reason for the declining the size livestock heads. In this connection, a female household head respondent states:

> PSNP is not protecting our assets or livestock's from selling. The aid we are getting is not enough, as the Program is supporting only half of the members of one's family. So to feed the rest of the members of the family we have to sell cattle, sheep or goats.

At this juncture it should be noted that during the first and second phase of the program, the support used to be a full household support. However, recently, it is not allowed to receive support for more than 5 members of a given household. This seems to have led the situation to go from bad to worse which resulted in the PSNP beneficiary's size of head of livestock ownerships decreasing from time to time.

Table 2 above also shows that, there is a statistically significant difference between the two groups of male and female headed households in terms of family size, fertilizer usage, crop production and number of head of livestock owned. Accordingly, in terms of purchasing fertilizer, the mean of male headed households (M=1.4 quintal, SD=0.61) is greater than that of female headed households (M=1.03 quintal, SD=0.72).

The data from the in-depth interviews also show the same scenario: female headed households are purchasing less amount of fertilizer compared to their male equivalents. There are two factors associated with this: firstly, since they are part of the aid they have less initiative to purchase enough amount of fertilizer. Secondly, because of shortage of finance during the rainy season, they couldn't afford the price of the fertilizer. In the focus group discussion of female household heads, all of the participants believe that, they suffer from acute shortage of cash as they are not involved in extra off-farm income generating activities. Besides, they agree on the issue of lack of initiative to purchase enough fertilizer by taking loans from the government or their relatives.

Therefore, we can say that, there is a significant difference in the initiative to purchase fertilizer to increase land productivity between male and female

headed households. Thus, we can conclude that in Berezba, female headed households, compared to male headed households, purchase and utilize a small amount of fertilizer for their land. As a result, female headed households are producing less crops yields. All participants of the focus group discussion from female household heads believe that the dependency problem is more serious with them. This is related to the fact that they don't have any other income generating activities. Even during the rainy season, most of them failed to cultivate their land because they might not have either oxen or labour. A female household head informant who participated in an individual depth interview claims that:

> In my household, loss of crop yields and food shortage occurs all the time. For me, it is impossible to go to other places to work and earn money because I am a woman and there is no one to look after my children. If the PSNP couldn't give us the aid on time, what I have to do is to sell off my livestock and feed my children.

Therefore, we can conclude that there is a significant difference in crop production between male and female headed households which increases the vulnerability of the latter to food insecurity.

With regard to owning number of head of livestock, there is difference in sex in which for male (M=7.5, 33750 Birr, in 2010 and M=6.5, 29250 Birr in 2011 E.C) which decreased by 1 head/4500 Birr within a year. On the other hand, for female headed households (M=7.2 (32400 Birr) in 2010 and M=6.3 (28350 Birr) in 2011 E.C) decreased by 0.9 average number of livestock or 4050 Birr.

2.3. T-test Statistics of Dependency Score among the Variables

Table 3 below, illustrates dependency score t-test value and level of significance of the independent variables. The variables are sex of head of household, educational background or literacy and source of income.

Table 3. T-test Statistics of Dependency Score among Variables

Variables	Category	t-test value	Sign.
Sex of Head	Male	-3.28	0.001
	Female		0.1% e
Literacy	literate	**-1.504	**0.135
	Illiterate		13.5% e
Source of Income	Only Agriculture	3.339	0.001
	Off-farm IGA		0.1% e

** Not statistically significant at 0.05 level 2 tail

Source: Own Survey

More precisely, to determine the existence of difference in dependency score among the variables, it is necessary to use t-test analysis. Based on the results of t-test, it is possible to reject or accept the null hypothesis for final conclusion. Hence, results of DS in the differences of the variables of sex of household head, educational background/literacy and source of income have been analysed as follows.

2.3.1. T-test statistics of dependency on sex of head of household's difference

Hypothesis 1: Compared to male headed households, female headed households, have higher dependency score ($M_1 \neq M_2$).

Null Hypothesis 1: There is no statistically significant difference in the score of dependency score between male and female headed households of the PSNP beneficiaries ($M_1 = M_2$).

On the variable of sex, the calculated t-value -3.278 (see Table 3 above) is statistically significant at 0.001 or only 0.1% error ($t = -3.278$ $df = 138$, $p<0.001$). The sign negative (-) in the calculated t-value indicates the mean of the second group (female) is greater than the first group (male) which is a manifestation of higher dependency in the female headed households. Therefore, we can conclude that there is a significant difference between the mean score of the two groups (male headed households ($M = 27.8$), and female headed households ($M = 30.1$); $t = 3.278$, $df = 138$, $p< 0.001$). Thus,

we reject the null hypothesis and conclude that in Berezba female-headed households have significantly higher dependency score than male headed households.

For female-headed households, the aid from PSNP is their main source of income. Even to pay their loan, they need the aid. When we see the achievements of the Program, in the research area, it is better to see change in two ways: the temporary solution and sustainable change. Within the last decade and half, beneficiaries of the Program are the same households. No single PSNP beneficiary has graduated yet, as there is no long lasting change in their lives. However, in terms of the first change as a temporary solution, it is helping them to solve their immediate problems like shortage of basic consumption. One of the in-depth interview participants, a female household head, expressed her feelings as follows:

> I don't know, if we can survive without the support from the program. We use the support for everything like for our food consumption, to buy fodder for our livestock, etc. We are also sending our children to school with the help of the program support. However, we do not know until when we are going to continue like this. We love to have graduated from the program, but we can't, there is no sustainable change in our lives. We expect and wait for the program to continue to support us.

Female headed household who participated in a focus group discussion acknowledged that the PSNP has its own benefits and drawbacks. Regarding benefits, the Program helps them a lot during the hardship times by providing them with direct food for consumption. However, it has its own disadvantages since it creates some kind of dependency among the beneficiaries. For one thing, they wait for support from the program instead of getting involved in extra income generating activities. Secondly, they are spending their time on public works, which hinders them from working on other jobs like petty trade and daily labour works. In this connection a male household head who took part in an in-depth interview expressed his feelings as follows:

> Sometimes, I say to myself, that it might have been better if I was not a beneficiary of the program, so that I can go to Mekelle,

> Humera or Jimma to work as a daily labourer. But now I can't go there, because I have to work for the public works program, and if I go there, I will lose the aid.

In a similar vein a Kebele agricultural expert says:

> Most of the non-beneficiary households go to Mekelle, Humera and even Jimma to work and make money to support their family by themselves; and they don't have any feeling of dependency. From this, therefore, we can say that the Program is helping beneficiaries to meet their immediate needs. However, it is clear that; the program is creating dependency by eroding the work habits of the beneficiaries.

2.3.2. T-test statistics of dependency on literacy

Hypothesis 2: There is statistically significant difference in the score of dependency between literates and illiterates in Berezba ($M1 \neq M2$).

Null Hypothesis 2: There is no statistically significant difference in the score of dependency between literates and illiterates in Berezba ($M1 = M2$).

On the second variable which is educational variable or literacy, there is a different scenario. When we see the mean of the groups, there is a difference in which mean of literates is 27.2 and illiterates with mean of 29.1. However, on the t-test analysis there is no significant difference in the mean scores. The calculated t-value is -1.504 and with the degree of freedom 138, when we see the critical value is 1.6559 at one tail and 1.977 at two-tail test with 0.05 or 5% level of error. The calculated t-value -1.504 is less than the critical value of 1.652. Therefore, the t-value (-1.504) is not statistically significant at the 0.05 level of error even at one-tail test ($t = -1.504$ $df = 138$, $p>0.05$), because $-1.504 < 1.652$.

Therefore, we can conclude that there is no statistically significant difference between the mean score of the two groups of literates ($M=27.2$), and illiterates ($M=29.1$); $t=-1.504$, $df=138$, $p>0.05$. Thus, we fail to reject the null hypothesis and conclude that the score of dependency between households with literacy and illiterates have no significant difference. Thus, literacy status is not a factor for having more or less dependency score among Berezba PSNP beneficiaries.

2.3.3. T-test statistics of dependency on sources of income

Hypothesis 3: Compared to those who involve in extra off-farm IGA, those who only depend on agriculture, score higher dependency in Berezba ($M1 \neq M2$).

Null Hypothesis 3: There is no statistically significant difference in the score of dependency between those who involve in extra off-farm income generating activities and those who only depend on agriculture ($M1 = M2$).

On sources of income, like sex of household head, there is a statistically significant difference in dependency score between the respondents who depend on agriculture and those who are involved in extra off-farm income generating activities. The calculated t-value 3.339 is statistically significant at the 0.001 level ($t = 3.339$ $df = 138$, $p<0.001$). The sign (+) in the t-value indicates the mean of the first group (who depend on only agriculture) is greater than the second group (who engaged in extra off-farm activities) which is a manifestation of higher dependency score in the households who depend only on agriculture. Therefore, we conclude that there is a statistically significant difference between the mean score of those who are engaged in agriculture ($M=29.2$), and in extra off-farm activities ($M=24.1$); $t=3.339$, $df=138$, $p<0$). Thus, in Berezba households who only depend on agriculture have significantly higher dependency score than those who are engaged in extra off-farm income generating activities.

2.4. The Relationship (Correlation and Regression) of Dependency Score with Fertilizer Usage, Crop Production and Family Size

2.4.1. Correlation and regression of dependency score and fertilizer usage

Hypothesis 1: There is statistically a strong association between household's initiation of purchasing fertilizer and the score of dependency ($r \neq 0$).

Null Hypothesis 1: There is no statistically an association between household's initiation of purchasing fertilizer and the score of dependency ($r = 0$).

To measure the association between dependency score and the variables, we need simple correlation analysis. Therefore, the bivariate correlation analysis helps to examine if there is a relationship between the variables. As indicated in Table 4, dependency score has strong negative correlation with fertilizer usage ($r= -0.843$, $p< 0.01$). The relationship is statistically significant at the 99.9% confidence interval.

Table 4. Correlations of fertilizer usage and dependency score

		Dependency Score	**Fertilizer Usage**
Dependency Score	Pearson Correlation	1	-.843**
	Sig. (2-tailed)		.000
	N	140	140
Fertilizer Usage	Pearson Correlation	-.843**	1
	Sig. (2-tailed)	.000	
	N	140	140

** Correlation is significant at the 0.01 level (2-tailed).

Source: Own Survey

The absolute value of r correlation coefficient is a measure of the strength of the relationship. The closer the value gets to 1.0 (either +1.0 or –1.0), the stronger the association. In this case the calculated value r -0.843 is much closer to -1, which indicates a very strong inverse association between using fertilizer and dependency score. The r value -0.843 shows negative or inverse relationship between the variables. Thus, beneficiary household's inability to purchase enough fertilizer for their land is an indication of dependency on PSNP. The qualitative material also supports this conclusion. According to a Kebele agricultural expert, there is a huge difference between beneficiary and non- beneficiary households starting from purchasing enough fertilizers up to the protecting of their crop farm. There are even some program beneficiaries who don't want to apply artificial fertilizer to their farms, which is one of the reasons for them to produce less crop yields. The agricultural expert went on to claim that:

> Most of the PSNP beneficiaries have some problems when it comes to taking the initiative in purchasing enough modern fertilizers for

their farms. This is due to their high dependency on the program aid. They don't care as much as the non- beneficiaries do for the productivity of their farms since they are a member of the program.

In determining the regression, when r is squared (r^2) the coefficient of determination gives us 0.711, which is a measure to explain the variance in the amount of variation in one variable that is attributable to variation in the other variable. Having obtained a positive r value, we know that the association between the variables is in a negative direction. When we transform the coefficient of determination r squared (r^2) into a percentage value (r^2 *100) it gives us 71%. Therefore, 71% of the variation in fertilizer use is attributable to variation in dependency score.

Table 5. Summary of regression between dependency score and fertilizer use

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	B coefficient
1	.843	.711	.709	3.90522	a (interception) = 36, b (slop) = -8.4

a. Predictors: (Constant), Dependency Score
b. Dependent Variable: Fertilizer Usage
Source: Own Survey

The B coefficient (the value of -8.4 the slop) indicated in Table 6 above shows for every quintal increase in the fertilizer usage, the dependency score decreases by 8.4.

2.5. Productive Safety Net Program and Dependency

What does the qualitative material tell us about the experience of beneficiary households working for public works and the issue of dependency? The picture we get is gloomy and its future is bleak. According to an expert in the Woreda Social and Labour Affair Office, the public work has its own negative consequences. Even though, it is partly because of the beneficiary's lack of commitment to accomplish their work within time, expert's lack of appropriate program implementation monitoring mechanism, they seem to waste their whole winter season doing

public works without any engagement in off-farm extra income generating activity.

The qualitative material supports the assertion that beneficiaries who failed to participate in the public works are forced to get only half of the support. This is the main reason for some beneficiary households for not engaging in other extra income generating activities. In relation to public works and its effects on households' engagement in extra income generating activity a Woreda agricultural expert argues that working on public works can't be a sufficient reason for their lack of engagement in extra income generating activities rather such reasoning is a clear manifestation of dependency on the program's aid. The agricultural expert went on to say:

> Households' participation in public works cannot be a reason for their lack of involvement in extra income generating activities. It doesn't take that much time to accomplish their job on the public works. They know that, they can take a contract and get it done within two weeks' time instead of working on it the whole winter. However, it is becoming a culture to work on public works program the whole winter by doing insignificant work per day. The volume of work, which takes extra domestic work into consideration, assigned to female headed households is only half of that of male household heads. Therefore, dependency is the main reason, not public works for their inability to get engaged in extra income generating activities.

Regarding graduation, the qualitative material shows that no one was optimistic about achieving sustainable change in their life and the prospect of becoming self-reliant. Therefore, it can be concluded that PSNP is not achieving its goals measured in terms of creating sustainable change and graduating beneficiaries. The woreda experts also know that the Program has not achieved its goals in the research area. It should be noted that the PSNP is the only program being implemented in Berezba. Therefore, unless other programs with a focus on livelihood improvement are implemented along with other interventions aimed at harnessing other natural resources, achieving food security in the area remains not only a daunting task but also an elusive one.

4. Discussion

According to the Ministry of Rural and Agriculture Development (2006), the Productive Safety Net Program was launched with the aim of creating a sustainable change in the lives of beneficiaries. A perusal of the literature on the evaluation of the PSNP in achieving the above stated objectives in Ethiopia tends to be mixed. In this connection Peter (2006), argued that while large numbers of Ethiopians receive food aid, especially from the PSNP, only a small percentage is highly dependent on it. Instead of food aid, households often rely on other sources to meet consumption needs. According to this study, uncertainties surrounding the amounts and timing of food aid delivery have taught local farmers not to depend on it. In contrast to this, the results from Berezba area show that beneficiaries are losing the motivation to work to improve their own livelihoods after receiving benefits from the Program. Furthermore, many beneficiary households in Berezba seem to have been deliberately reducing their work efforts in order to qualify for the PSNP transfer. It is clear that in times of hardship, the focus should not be on avoiding dependence, but there also need to be an emphasis on providing sufficiently reliable assistance, so that those who most need it understand what they are entitled to, and can rely on it as part of their own efforts to survive. However, in the case of Berezba, most beneficiaries are found to have reduced their engagement in extra off-farm income generating activities.

Wiseman et.al (2009), argued that PSNP enables members to meet consumption needs, mitigate risks, avoid selling productive assets in times of crisis. Similarly, Azadi *et al.* (2017) found that the Program had a positive impact on the improvement of food security and asset accumulation. However, the findings from Berezba reveal that the Program has not protected beneficiary households from selling their assets. In other words, in Berezba beneficiaries of the Program are still selling their assets and there is no significant change in their lives.

Another study conducted in the country by Andersson et.al (2009) indicates that the Program had no impact on livestock accumulation while it had a positive impact on tree holding. Whereas in Berezba the result reveals that

the beneficiaries' average head of livestock decreased by 0.9 within a year, which is a clear manifestation of the Program's inability to prevent beneficiaries' from selling their assets in times of shock. In this regard, in Berezba the Program had not brought about a significant contribution on the beneficiaries in terms of asset accumulation and sustainable food security. This is mainly because program beneficiary households in Berezba are using the support mainly for consumption smoothing purpose than asset accumulation.

Gilligan *et al.* (2008), maintain that the Productive Safety Net Program is helping beneficiaries in operating their own nonfarm business activities. Contrary to this, the PSNP public works in Berezba was reported to have negative consequences on beneficiary households as it was reported to have been deterring them from actively engaging in extra off-farm income generating activities. The data at hand show that due to lack of commitment to finish their public work assignment within time and because of problems associated with the implementation and monitoring of the Program the beneficiaries are wasting their whole winter season under the name of working on public works.

Girma and Holden (2017) studied the dependency created by PSNP by analysing the dependency ratio in Ethiopia. Accordingly, they found that PSNP beneficiary households have built a larger household size and high dependency ratio than non-beneficiaries households. Girma and Holden (2017) also found that beneficiaries, like those in Berezba community, built large family size in anticipation of gaining more support from the Program. Girma and Holden established that household's number of family size and dependency score level have a strong positive correlation ($r= 0.894$, $p< 0.01$, section 5). The more households have larger family size, the more they develop dependency.

Graduation is a key goal of PSNP that focuses on ensuring food security of members and empowering them with sustainable change to be self-reliant (MoARD, 2006). Accordingly, in Berezba, those responsible for the implementation of the Program have always conducted assessments aimed at identifying if there are households to be graduated from the Program.

However, the results show that it is becoming increasingly difficult to ensure food security and graduate the beneficiaries. The beneficiaries do understand that, if there is no any other way to change their lives, graduation is unachievable and they will remain dependent on the Program.

5. Conclusion

In Berezba, like in other food deficit rural communities of Ethiopia, the Productive Safety Net Program started in 2004 with the objective of ensuring food security, protecting the environment, protection of household asset depletion and increasing asset accumulation at the community level. This article showed that due to problems associated with lack of effective implementation and monitoring mechanisms, the Program has not achieved its objectives and thereby did not bring about significant changes in the lives of the beneficiary households in the study area. In fact, the work habit of the beneficiaries also seems alarming, and the Program is creating dependency. Dependency is manifested by the existence of differences in terms of household size, amount of fertilizer usage and amount of crop yield production.

Interestingly, most PSNP beneficiary households were found to have larger household size compared to non-beneficiary households, resulting in higher dependency ratio. Having larger household size seems a by-product of the anticipation of receiving more aid from the Program. Owing to shortage of finance, beneficiary households purchased less amount of fertilizer compared to non-beneficiary households. In terms of gender, food shortage is found to be worse among female headed households compared to their male equivalents. Thus, female headed households produce smaller amount of crop yields and suffer more from food insecurity.

The main objective of the popular Productive Safety Net Program is to provide support to the food insecure population in a way that prevents asset depletion at the household level and create assets at the community level. However, this article has shown that the Program seems to have produced more program dependent households in Berezba area than those graduated from the program. The article also documented that the issue of preventing

asset depletion at the household level and enhancing asset accumulation at the community level remained an elusive objective of the PSNP. In other terms, the PSNP has failed to achieve its main objectives in the study community in Tigray. This calls, among others, for rethinking and revisiting the PSNP design, implementation strategies and monitoring mechanisms in place, if the Program was to achieve its objectives.

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