Do land transfers to international investors contribute to employment generation and local food security?

Evidence from Oromia Region, Ethiopia

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Abstract

Purpose – Like many countries in the developing world, Ethiopia has leased out a huge amount of land to foreign investors. However, empirical evidence on the contribution of international investments to employment generation and food security is limited. The purpose of this paper is to examine the contribution of large-scale farms to local-level food security in Bako Tibe District, Oromia Region.

Design/methodology/approach – Primary data were collected from 200 randomly selected households from two purposefully selected villages in the district. Secondary data were collected from government offices and the literature. Propensity score matching was used to match households based on observable characteristics. Using the World Food Programme (WFP) approach, the food consumption score (FCS) of households was calculated. Finally, the Average Treatment effect for the Treated was determined.

Findings – Findings indicate that foreign land deals increase the odds of households falling into food insecurity and that the employment opportunities are both temporal and marginal. Furthermore, these land deals result in a decline of households' FCS and thus have a negative effect on households' food security.

Research limitations/implications – The result is based on a case study which is not generalizable to the whole of Ethiopia.

Practical implications – The result implies that future endeavours should resort to substantial changes in the principles of investment as well as the design and enforcement of contracts on land transfers so that international investors can commit to objectives beyond private profit.

Originality/value – It examines the effect of large-scale land transfers commonly termed as land grabbing on local food security. The paper makes an important contribution to the current policy debates regarding land grabbing in Ethiopia as research about the contribution of land deals to the food security is limited.

Keywords Africa, Ethiopia, Food security, Technology transfer, Propensity scores matching

Paper type Research paper

JEL Classification — C83, C21, Q12, Q15

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1. Introduction

Countries in the global south have recently leased out 227 million hectares of land to international investors (Oxfam, 2011). African countries have leased out an area as large as 4.8 per cent of the continent's total agricultural area (approximately equivalent to the area of Kenya) to international investors. Ethiopia has transferred 2.4 million hectares of land to international investors, and is only behind Sudan in terms of the amount of land leased to international investors in Africa (Anseeuw *et al.*, 2012).

The recent rush for land acquisitions[1] in poor countries such as Ethiopia has been the result of several factors. The first is the 2007/2008 severe supply shortage of agricultural commodities at the world market, which resulted in an abrupt food price hike (Deininger *et al.*, 2011; IFPRI, 2009; World Bank, 2010). The price hike showed the extent to which countries that hitherto depended on food imports were vulnerable to instabilities in the global commodity market (Hall, 2011). This situation forced these countries to be concerned about future food supplies (Deininger *et al.*, 2011; Olanya, 2012). The second is the increasing pressures of the 2009 financial crisis (Hall, 2011). The third is the fuel crises emanating from skyrocketing oil prices (Olanya, 2012), and water scarcity (Daniel and Mittal, 2009).

The willingness of host country governments has also contributed to the global rush of international investors for land. Host country governments have welcomed international investors due to their expectations in terms of employment creation, technology transfer, income generation through foreign currency reserves, and infrastructure development in rural areas (Olanya, 2012). The positive attitude of these governments towards foreign investors is manifested in terms of incentives offered to them. For instance, incentives in Ethiopia include, among others: little or no requirements of minimum capital for investments; tax waiver schemes on imports of capital goods[2]. Tax exemptions are given for two to three years if investors supply less than half of their produce to the domestic market, and for five to six years if they export more than half of their produce[3]; low-lease amount paid by international investors (Anseeuw *et al.*, 2012), which ranges from as low as approximately US$1.08/ha/year to US$8.44/ha/year to as high as US$38.17/ha/year.

Despite such incentives from the government, positive outcomes of international agricultural investments have become hard to come by, as they are not automatic. Empirical evidence suggests that for such investments to contribute to "sustained development" through employment generation, technology transfer and food security, they have to be well-managed (Deininger *et al.*, 2011). Otherwise, they may result in stiff competition for cropland, which may ultimately disrupt livelihoods of the local people (Rahmato, 2011), since farmers risk losing access to and control over their land, water, and other critical resources (Mersha, 2009).

While the aforementioned arguments highlight the nature of land deals and the magnitude of the problem they create on local people, our knowledge about the contribution of land deals to the employment generation and food security of local communities in SSA in general and Ethiopia in particular is still limited. So far, empirical works have focused on land rights (Delville *et al.*, 2002), societal differentiation and societal pressures (Hall and Paradza, 2011), the impact of land rights on forests (Wily and Mbaya, 2001), land reforms and conflicts (Deininger *et al.*, 2011; Ntsebeza, 2005; Spierenburg, 2005; Brown, 2005), land use and ownership in host countries (Olanya, 2012), land conversion and its impact on the ecosystem (DeFries *et al.*, 2004), typology and conversion of land (Borras and Franco, 2012), the governance of land deals (Rahmato, 2011), water scarcity and land deals (Horne, 2011),

the impact of land deals on social sustainability (Shete, 2011), and rural land policy and the land acquisition process (Getnet, 2011). More importantly, studies conducted so far on land deals are at aggregate levels using mostly qualitative approaches indicating that there is still a need to examine the contribution of foreign investments in agriculture at the local-level using quantitative methods (Scoones *et al.*, 2013).

This study, therefore, aims at analysing the role of land acquisitions in contributing to local-level employment generation and food security using propensity score matching technique. The remainder of this paper is organized as follows: Sections 2 and 3 discuss some insights from the literature. Section 4 describes the study area and methods. Section 5 presents and discusses the results. Section 6 concludes.

2. Investment in land: does it bring "win-win" outcomes?

The major motive of international investors in agriculture is to maximize their profit, while the interest of host country governments is to fulfil the food security demands of their people. Striking an optimum balance between these competing societal needs in both investor and host countries is, therefore, the essence of win-win outcome for both parties. This should be a special consideration in low-income countries of the developing world where the overwhelming majority of the people depend on land to survive. More importantly, land is a very essential resource that needs to be effectively used to improve the socio-economic status of farmers. And when land is to be leased out to international investors, the benefit of the local people should not be compromised.

In Ethiopia, the contribution of agriculture to GDP is huge. However, its performance is so meagre that poverty afflicts the bulk of the rural populace who depend largely on land for their livelihoods. Investment in agriculture-hence on land, is thus considered to be crucial in the fight against poverty as well as to meet the Millennium Development Goals through productivity gains and enhancement of livelihoods (von Cramon-Taubadel *et al.*, 2009; Prášková, 2012; De Janvry and Sadoulet, 2010).

In fact, in order to achieve these objectives, huge financial resources are required. Nevertheless, like many developing countries in SSA, Ethiopia does not have the required financial capital to invest in agriculture so that rural areas can be developed and economies can be transformed in the short-term (von Cramon-Taubadel *et al.*, 2009). To help close such financial gap, Ethiopia, like many countries in SSA, has leased out land to foreign investors (Cotula *et al.*, 2009).

However, as De Schutter (2011) noted, investing countries have the objective of limiting "their dependence on international markets in order to improve their long-term food security" (De Schutter, 2011, p. 252), which may conflict with the objectives of the host country. De Schutter (2011) further argued that despite the fact that investment in agriculture is desirable in theory, it is doubtful that large-scale investments in agriculture will bring win-win outcomes for all stakeholders. As a result, the viability of large-scale investments in contributing to rural development and poverty reduction in SSA is questionable, given that countries do not have the capacity to coordinate and manage large land deals due to weak land governance (for instance, lack of people's participation). The problem is even worse in situations where land rights by the local people are unclear (De Schutter, 2011). The Ethiopian situation is not any different.

3. Technology transfer from large-scale farms

Deininger and Byerlee (2012) write that Asian countries have become successful in their economic development due to their focus on smallholder agriculture through the

Green Revolution, indicating that increasing gains in productivity of smallholders will favour economic growth, employment creation, and poverty reduction. The success of Asian countries highlights the extent to which smallholder agriculture is instrumental in economic growth and poverty reduction. Currently, however, countries in SSA appear to favour investments in large-scale agriculture. This has emanated from the fact that smallholder-based efforts to improve productivity have achieved very little so far in SSA. More importantly, "the apparent success of Brazil in establishing a vibrant agricultural sector based on much larger farms has led some countries to view the development of large-scale mechanized farming as the path to agricultural modernization" (Deininger and Byerlee, 2012, p. 2).

In fact, it has been well-established in both theory and empirical works that large-scale investment plays a vital role in promoting economic growth through creating employment and increasing the technological level of farmers in recipient countries (Blomstrom and Kokko, 2003; Klein *et al.*, 2003). Developing countries lack financial capital, technology, and know-how, which international investments could contribute to. The literature also shows that foreign direct investment plays an important role in bridging the technological gap of countries by increasing spill over effects and improving efficiency (Buckley *et al.*, 2006; FAO, 2001). However, technology transfer depends on the performance and learning ability of host country farms, which depend on the stock of their technical knowledge. As evident in Blomstrom and Wang (1989), while active learners will get access to modern technology, passive watchers will be left behind. Institutional factors also play a significant role in impeding technology transfer in SSA (Deininger and Byerlee, 2012).

4. Study area, data and methodology

4.1 Study area

This study was conducted in Bako Tibe district, Oromia national regional state, Ethiopia with intensive large-scale land investment. The main sources of water in the area are the Gibe and Amara rivers. Bako Tibe district is relatively well-endowed with rivers, streams, and springs. Local communities depend on crop cultivation and livestock husbandry.

Rahmato (2011) described that the land use system in the district consists of arable land, grazing land, open wood land, forest, and shrub land. Half of the area lies in the *qolla*[4] agro-ecology and 40 per cent is in the *woyena dega*[5] agro-ecological zone. Because of population pressure and lack of diversified income sources, people encroach into the hills and steeper slopes with gradients ranging between 3 and 10 per cent. During the wet season, between the hills and plains, there is intensive cultivation of cereals, such as maize, sorghum, and *teff*[6], as well as pepper. In the dry season, flooded parts of the plain are mainly used for cultivation, while the remaining parts of the plain are used for grazing.

Information from key informants reveals that, currently, the Bako plains, which cover 35,000 hectares, are used by a subsidiary of the Indian company Karuturi Global Ltd called Karuturi Agro Products Plc. In 2008, the company leased 10,700 hectares from Oromiya National Regional State for a period of 30 years. So far, it has cultivated about 4,000 hectares for the production of maize and palm trees. Information from the district shows that the company has employed about 30 Indian and 50 Ethiopian workers as supervisors, technicians, and drivers. In addition, the company has created temporary employment opportunities for about 500 people who work during peak agricultural activities.

4.2 Sampling procedure and sample size

Bako Tibe district has a total population of 123,031. Of these, 81.4 per cent live in rural areas and depend on traditional smallholder agriculture. The study employed a two-stage sampling technique. First, *kebeles*[7] (villages) were purposively selected. These were Bachera (the investment or treated village) and Jije (the non-investment or control village). Second, 200 households (100 from each village) were randomly selected using a list of households as a sampling frame (Israel, 1992). The fact that households in the treated and control villages are considered allows for comparisons to examine the contribution of land investments to employment and food security.

4.3 Data type, sources, and instruments

Qualitative and quantitative data emanated from both primary and secondary sources. Primary data sources were smallholder farmers from the local community, regional government office workers, and local employees of companies. Secondary sources include documents obtained from government offices (such as the Ministry of Agriculture and Federal Investment Agency) and previous studies.

To solicit qualitative information, five key informant interviews and a focus group discussion (FGD) in each village were conducted. For key informant interviews, individuals were drawn from different sections of the society including the elderly, women, men, and youth to portray both success and failure stories associated with foreign land investment. Similarly, each FGD had between five and eight participations of varying backgrounds. Checklists and questionnaires were used to generate quantitative data from secondary sources and households, respectively.

4.4 Method of data analysis

This study uses qualitative and quantitative methods to analyse the data. The quantitative part includes propensity score matching, independent sample *t*-test, binary logistic regression, and a stochastic frontier model. These methods are discussed below.

4.4.1 Propensity score matching. As indicated in the sampling section, two villages were selected for the study. One is the investment village (treatment group/participation) and the other one is the non-investment village (control or untreated group/non-participation). To avoid selection bias from treatment assignment conditional on observables as well as to focus on households which share commonalities, propensity score matching was used. This technique allows us to make comparisons between households in the two villages to justify whether the investment led to changes in the food security status of people in the treated village. It also helps measure the magnitude of change in terms of average effects of the treatment for the treated.

For ease of elucidation, let us assume that T^1 represents participation and T^0 non-participation. Furthermore, let us assume that each group has two outcomes. These are treated outcome (Y^1) and untreated outcome (Y^0). For the treatment group, the treated outcome (Y^1) is the observed outcome, but the untreated outcome (Y^0) is not directly observable because it is the counterfactual (Table I). For the treatment group,

Group	Y^1	Y^0	Effect
Treatment ($T=1$)	Observable	?	Average treatment effect on the treated (ATT)
Control ($T=0$)	?	Observable	Average treatment effect on the untreated (ATU)

Table I. Average treatment effects and the counterfactual

Y^0 designates the outcome if the treatment group was not exposed to the investment. On the other hand, for the control group, the treatment outcome Y^1 is not observable since the group is not exposed to the investment. Instead, what is observable for this group is the non-treated outcome Y^0. Therefore, the impact of the treatment is the difference between the treated outcome Y^1 and the non-treated outcome Y^0 for both groups. The causal effect of unit j will be:

$$Y_j = Y^1 - Y^0 \tag{1}$$

However, the counterfactual is very difficult to observe in both groups. Put simply, the untreated outcome of the treated and the treated outcome of the control group is not known. Therefore, the difference between the treated outcome for the treated (Y^1) and the untreated outcome for the control (Y^0) is considered to single out the impact of the investment on the food security status of households in the study area (as indicated by the diagonal box in Table I).

As indicated in Table I and following Khandker *et al.* (n.d.), there are three possible outcomes. These are:

(1) the average treatment effect, represented by:

$$E(Y) = E(Y^1 - Y^0) = E(Y^1) - (Y^0) \tag{2}$$

(2) the average treatment effect on the treated indicated as:

$$E(Y^1 - Y^0 / T = 1) = E(Y^1 / T = 1) - (Y^0 / T = 1) \tag{3}$$

(3) the average treatment effect on the untreated (control group) indicated by:

$$E(Y^1 - Y^0 / T = 0) = E(Y^1 / T = 0) - (Y^0 / T = 0) \tag{4}$$

Conditional on observed characteristics X and based on the probability of participating in the treatment T by calculating the propensity score ($P(X) = \Pr(T = 1/X)$, propensity score matching constructs a statistical comparison group. Nearest neighbour, kernel, and stratified matching algorithms are used to estimate the impact of the investment on the food security status of households in the treatment village.

4.4.2 Food consumption score (FCS). To determine food security, the FCS of households was calculated using the World Food Program (WFP) approach (2008) based on eight standard food categories with a maximum recall period of seven days. The frequency of consumption of each food group is multiplied by an assigned weight. Finally, the product is summed to obtain the FCS, which is a composite score that takes into consideration dietary diversity, food frequency, and the relative nutritional importance of different food groups (Table II). In addition, household food expenditures are considered as a proxy indicator for food security.

The FCS is calculated using the food groups and weights shown in Table II. The mathematical notation is given by:

$$FCS = \sum_{i=1}^{n} \alpha_i f_i x_i \tag{5}$$

No.	Food items	Food groups	Weight
1	Maize, maize porridge, rice, sorghum, millet pasta, bread, and other cereals	Cereals and tubers	2.0
2	Cassava, potatoes, and sweet potatoes		
3	Beans, peas, groundnuts, and cashew nuts	Pulses	3.0
4	Vegetables and leaves	Vegetables	1.0
5	Fruits	Fruits	1.0
6	Beef, goat, poultry, pork, eggs, and fish	Meat and fish	4.0
7	Milk, yogurt, and other diary	Milk	4.0
8	Sugar and sugar products	Sugar	0.5
9	Oils, fats, and butter	Oil	0.5
10	Condiments	Condiments	0.0

Source: WFP (2008)

Table II. Food groups and their weight in the FCS analysis

where α stands for weights attached to each food group, f for the frequency of consumption, and x for food items. Based on the result obtained from the FCS, three categories are identified: poor consumption (< 21), borderline consumption (vulnerable group), and acceptable consumption (> 35.5).

4.4.3 Binary logistic regression. Because there were too few households in the poor consumption group, households were grouped into two groups based on their FCS: food insecure (< 35) and acceptable consumption ($\geqslant 35.5$). A binary logistic regression model was used to identify determinants of household food insecurity. The binary logistic model is estimated using the following specification:

$$Y_i^* = \alpha + \beta X_i + e_i \tag{6}$$

where α is the overall food insecurity problem of households, β is the fraction by which the food security status of the household changes from a unit increase in the independent variable given that all other variables are held constant, and μ_i is the error term. For the latent variable Y_i^*, the estimation is based on the observed binary discrete choice of whether or not the household is food secure:

$$Y_i = \left\{ \begin{array}{c} 1 \textit{ with probability } P \\ 0 \textit{ with probability } 1-P \end{array} \right\} \tag{7}$$

Odds are defined as the ratio of these two probabilities:

$$\frac{p}{1-p} \tag{8}$$

Description of variables used in the binary logistic regression model is provided in Table III.

4.4.4 Stochastic frontier model. To examine whether technology transfer occurred, technical efficiency is used as a proxy. Following Alemu *et al.* (2009), for j observation of farmers indexed as $j = 1$ who uses a vector of $x > 0$ inputs, indexed

as $x = 1,\ldots, x_n$ to produce $y > 1$ outputs, the stochastic frontier production function is specified as:

$$y_i = f(x_j, \beta).e^{\phi} \tag{9}$$

where $f(x_j; \beta)$ and e^{φ} represent the deterministic and stochastic part of the production frontier, respectively. β is a vector of parameters to be estimated and Φ is the random disturbance term. The stochastic frontier production function in Equation (9) is specified as follows:

$$y_i = f(x_j, \beta) \times \exp(V_j).TE \tag{10}$$

After dividing both sides by $f(X_j, \beta) \times \exp(V_j)$, Equation (10) is rewritten as:

$$TE_j = \frac{Y_j}{f(X_j,\beta) \times \exp(V_j)} \tag{11}$$

where TE refers to the technical efficiency of the jth farm, y_j is the observed output, $f(X_j, \beta)$ indicates the deterministic part that is common to all producers, $\exp(V_j)$ is producer-specific and captures the effect of random noise on each producer. Following a one-step approach of Battese and Coelli (1995 in Alemu *et al.*, 2009), a stochastic frontier production function was estimated using a Cobb-Douglas formulation. The dependent variable is the natural logarithm of the gross volume of output per hectare (expressed in Birr).

5. Results and discussion

5.1 Descriptive statistics

This section describes and compares households in the study villages in terms of their demographic and socio-economic characteristics.

As shown in Table IV, except for family size, the villages have statistically significant differences in all other characteristics considered. Thus, before conducting any further analysis, sample households from the two villages were matched based on observable characteristics to lessen bias in the analysis. Appendix shows that the balancing property is satisfied indicating that households in the two villages are matched. Ultimately, this allows assessing the contribution of the investment to local food security.

Table III. Description of variables used in the binary logistic regression model

No.	Variable description	Expected sign
1	Age of household head (years)	?
2	Age square of household head	?
3	Sex of household head (male = 1)	+
4	Education of household head (years of schooling)	+
5	Assets (in Birr)	+
6	Dummy for the investment village (Bachera = 1)	+
7	Volume of production (measured in kg multiplied by prices)	+
8	Availability of labour force in the family (number of adults)	+
9	Access to extension services	+

5.2 Household food security status and its determinants

Results of an independent samples *t*-test (Table V) show that there is a statistically significant difference between the two villages in terms of the mean FCS of households in the two villages. Findings in Table V show that people in the treatment group have a statistically significant lower mean FCS than households in the control category ($z = -4.2538$).

To disentangle the impact of the foreign land investment from other factors, Average Treatment Effect for the Treated (ATT) was used in the propensity score matching model using three different matching algorithms (nearest neighbour, kernel, and stratified). Findings of the ATT in Table VI indicate that the foreign land investment greatly impacted local food security. Results of the nearest neighbour, kernel, and stratified matching algorithms indicate that, on average, households suffer a decrease in their FCS ranging from 4.68 (in nearest neighbour matching) to 7.196 (in stratified matching). This is a reduction of about 12.5 (in nearest neighbour) and 19.2 per cent (in stratified matching) of the mean consumption score (Table VI).

Variable	Villages	Obs	Mean	SD	Min	Max	*z*-Value
Age of household head	Bachera	100	43.7	14.2	20	90	2.77**
	Jije	98	38.2	13.9	19	82	
Education of the household head	Bachera	100	4.2	3.2	0	12	2.54**
	Jije	98	3.1	3.0	0	10	
Family size	Bachera	100	6.1	2.5	2	15	1.43
	Jije	98	5.7	2.0	2	11	
Land (in ha)	Bahecra	100	1.6	0.9	0.3	4	5.2*
	Jije	98	0.9	0.7	0.1	4.3	

Note: *,**Significant at 1 and 5 per cent, respectively

Table IV. Demographic and socio-economic characteristics of respondents

Villages	Observations	Mean	SD	df	*z*-Value	Pr(|Z| > |z|)
Bachera	100	37.50	8.01	187	−4.2538	0.0000
Jije	89	44.83	14.99			
Difference (Mean Bachera-mean Jije)		−7.33				

Table V. Mean food consumption score

No.	Outcome indicators	Matching algorithms	Matched samples Treated	Controlled	Impact ATT	SE (bootstrapped)	*z*-Value
1	Food consumption score	Nearest neighbour	100	46	−4.68	3.81	−1.227
		Kernel	100	78	−6.20	2.90	−2.142
		Stratified	100	78	−7.20	2.71	−2.659
2	Consumption expenditure (Birr/month)	Nearest neighbour	100	46	250.52	475.30	0.527
		Kernel	100	78	455.07	370.39	1.229
		Stratified	100	78	459.80	426.18	1.079

Table VI. Impact of large-scale farm investments on local food security

In terms of the impact on food consumption expenditure, since households in the treatment village lost part of their farmland and hence own production, their mean monthly food expenditure increased by US$13.45[8] (Birr 250.52 in nearest neighbour), US$24.48 (Birr 455.07 in kernel matching), and US$24.74 (Birr 459.80 in stratified matching). Had households managed to fulfil their consumption needs from their own production, this money could have been used to build assets or invest in other productive ventures. Qualitative information from key informant interviews and FGDs reveals that most of the households augmented additional expenditure on food from the sale of livestock.

Results from the binary logistic regression analysis (shown in Table VII) reveal that households in the investment area are less likely to be food secure compared to households in the control village by a factor of 0.59. This could result from the fact that the investment took away farmers' grazing and cropland, thus negatively impacting their livelihoods. This finding concurs with evidence obtained in Ethiopia (Shete, 2011; Rahmato, 2011; Horne, 2011).

As evident in Table VII, gender is an important factor explaining variation in the food security status among households in the study villages: male-headed households are more likely to be food secure by a factor of 2.98, given that all other factors are held constant. This result corroborates with findings of other empirical works (Bazezew, 2012; Babatunde *et al.*, 2010). Findings also show that education positively and significantly determines the odds of households being food secure.

5.3 Channels through which food security may be affected

5.3.1 Technology transfer. Technology transfer from large to small-scale farms is an integral part of the win-win approach of large land acquisitions. However, wide spread transfer of technology requires availability of physical technologies (such as water efficient irrigation technologies), the ability and skill to operate as well as the organizational ability to manage them. Examples of technologies that could be transfer from large to small-scale farms with the objective of improving food security includes: water efficient irrigation methods, integrated pest management practices, as well the use of new and improved varieties. In the paper, we used technical efficiency of smallholder farmers as an indicator of technology transfer. The argument is that if households in the investment village (Bachera) were better-off because of technology

Variables	Coefficient	SE	z	$p > \|z\|$	Odds ratio
Age (in years)	0.1036	0.065	1.60	0.110	1.11
Age square	−0.001	0.0007	−1.38	0.169	0.99
Sex (1 = male)	1.092	0.55	1.98	0.048	2.98**
Education (years of schooling)	0.124	0.063	1.98	0.048	1.13**
Assets (in Birr)	0.00002	0.00008	2.44	0.015	1.00
Village (dummy 1 = Bachera)	−0.903	0.411	−2.20	0.028	0.41**
Production as an indicator of income (predicted value)	0.000014	0.00007	1.80	0.071	1.00
Availability of labour	−0.039	0.12	−0.33	0.745	0.96
Access to extension	0.008	0.008	0.92	0.357	1.00
Constant	−4.213	1.41	−2.99	0.003	0.01

Note: **Significant at 5 per cent

Table VII.
Determinants of food security (binary logistic model)

transfer from the foreign land investment, we would see improvements in their efficiency score. Results in Figure 1 portray an interesting picture indicating that there is no significant difference in technical efficiency between farmers in the two villages. Moreover, results show that the current agricultural practices in both villages have no room for improving their technical efficiency. This implies that technology transfer is urgently needed to help farmers learn new skills, improve their farming practices, and assist them to push their production frontier upward.

5.3.2 Employment generation. Employment opportunities that can be created for the local people have also been used as important justifications by the Ethiopian government to welcome investors acquiring land, water and other resources in the country. However, such promises have become hard to come by in the study area. First, the number of people employed by the company is very small. In Ethiopia, the average rate of employment generation by large-scale farms is 14 hectares and 5.2 hectares of land to one permanent and one temporary job, respectively. If this rates works for the study area, the company could be able to employ 764 permanent and 2,058 temporary/seasonal workers. But currently, information obtained from key informants working in the company shows that there are only about 50 permanent and 500 seasonal workers, which constitute 6.5 per cent and 24.3 per cent of the potential of the company to create permanent and temporary jobs in the area, respectively (Figure 2). In fact, the company does not make use of all the land it has acquired suggesting that employment opportunities may increase when all of the land is used. Currently, information from key informants reveals that the company is farming 4,000 hectares of land. This means that given the above-mentioned rate, the company is expected to create permanent and temporary employment for about 286 and 769 people in the locality, respectively. However, employment opportunities created so far are below the capacity of the company.

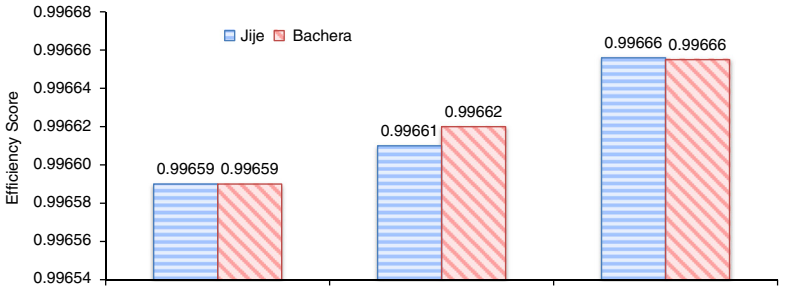

Figure 1.
Technical efficiency of farmers in the study villages

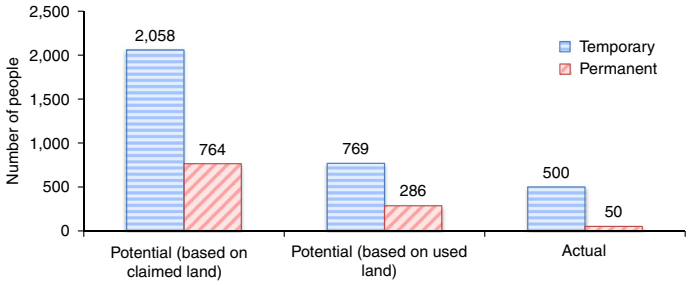

Figure 2.
Potential vs actual employment capacity of the company in the study area

Second, the type of employment created for the local people requires only limited skills. As a result, it does not provide opportunities for them to learn new farming skills or skills for alternative activities to generate income. Third, relatively better jobs are given out to people from outside the area. Findings reveal that some members of the community get part time employment in the company working as night guards being paid US$13.45 (Birr 250) per month, on average. This is far below the country's absolute poverty line, which is set at US$16.95 (Birr 315)/adult/month based on the 2010/2011 poverty line estimation by MoFED (2012) and the minimum wage, which is set at US$22.59 (Birr 420) per month. It follows that the employment opportunity created for the local people may not help them escape out of poverty. Lastly, respondents indicated that the investment has seriously disrupted local livelihood strategies due to their unpredictable nature.

Questions were posed to participants of FGDs in the investment village about the mechanisms through which they are able to make a living after the investment had taken place, given that their livestock and cropland have been reduced. Many responded that they have changed their livelihood strategies since the investment. Almost half of them responded that they are engaged in share-cropping arrangements with neighbouring farmers who own land, but do not own oxen to plough. Nevertheless, since the land owned by neighbouring farmers is limited, production from sharecropping is inadequate to feed the household.

5.3.3 Access to critical resources. Findings in the study show that the investment took place without the knowledge and consent of the local people. "All of the area claimed by the investor is by far greater than what it is supposed to claim", says a 45-year-old key informant. The company was given 10,700 hectares, but it currently controls an estimated 30,000 hectares due to lack of proper measurements when the company acquired the land. This means that the company claimed all of the plains which were used by the community for communal grazing areas. According to information obtained from the FGDs, this has caused over 20 conflicts between the company and the local people.

The investment has also negatively affected the local asset ownership and livelihood strategies. Results of the descriptive analysis show that before the investment, on average, households had ten heads of livestock. After the investment, livestock holdings were reduced by an average of about 39 per cent due to shortage of grazing land and water. Key informants indicated that the company has denied them access to roads leading to grazing areas and springs by fencing the surrounding plain. In the study area, some part of the plain has water logging, which had been previously used for dry season cultivation by the local people. After the investment, this is no longer possible. Discussions with community members revealed that young families were farming the plains because the government had allocated part of the plains to them during land redistribution. Now, the investment has resulted in a loss of control both in water and in farmlands[9]. Similar observations were made by Bues (2011) in other parts of Ethiopia where the exclusive right to use the water was given to the land acquirer, thus denying local people from obtaining land access.

Other studies indicate that scarcity of water is one of the major factors serving as a hidden agenda behind land deals taking place in several developing countries (Horne, 2011), since land acquisition means gaining control over water resources as well (Woodhouse and Ganho, 2011). As evident in Oxfam's (2011) study, large-scale

investments that do not synchronize with local livelihood strategies have serious repercussions for the rights of the local community to access key and critical resources including land and water on which they depend not only for their own survival, but for the survival of future generations as well. Such investments also threaten the viability of smallholder agriculture as a way out of poverty and curtail sustainable development.

6. Conclusions

In developing countries such as Ethiopia, investment in agriculture is urgently needed to reduce poverty and improve food security. However, whether large-scale foreign private investments in land would benefit host countries has been a concern for researchers and policymakers. Findings in the study area reveal that the employment benefits accrued by local communities are rather temporal and marginal. There is also competition over land and water, which has pushed farmers into peripheries, leaving some to reduce their livestock and look for rather inefficient share-cropping arrangements with neighbouring smallholder farmers. The fact that the investor in the study area has claimed all areas of the plains and has denied access to water points and grazing lands by the community members has exacerbated the food insecurity situation of the people.

For farming technologies to transfer to the local people, employment opportunities should be in technical positions where people can learn new ways of farming through better information, knowledge/training, and market access. However, the employment opportunities in the study area have not provided farmers with opportunities to learn new ways of farming techniques or other skills. As a result, there has not been any technology transfer to local farmers. Findings further show that farmers do not produce enough to feed their families and are forced to spend most of their income – income generated from employment opportunities created by the foreign investor and other income – on food. If households could have produced enough for their own consumption, they could have used the money from the employment and other ventures for other productive engagements.

In conclusion, in order to benefit from large-scale investments in agriculture, involvement of the local people, and enforcement of contracts is essential. Therefore, substantial changes in the principles of investment as well as the design and enforcement of contracts on large-scale land investments should be required so that international investors commit to objectives beyond private profit to help benefit the local people in terms of employment and food security.

Notes

1. Cotula *et al.* (2009) define large-scale land acquisitions as cross-border purchases or leases of land greater than 1,000 hectares mainly for the production of crops for food and fuel.
2. Towards this end, the government promulgated proclamations consisting of provisions that give incentive to foreign investors, namely articles 4 and 5 of Regulation No. 84/2003 and article two of Regulation No. 146/2008 (for details see Getnet, 2011).
3. These are as per Proclamation No. 2 of Regulation No. 146/2008 and Article No. 4 and 5 of Regulation No. 84/2003.
4. Between 500 and 1,500 m above mean sea level.
5. Between 1,500 and 2,300 m above mean sea level.

6. *Teff* is a cereal crop endemic to Ethiopia. It is a main staple crop used to make *Injera*.
7. *Kebele* is the lowest administrative unit in Ethiopia.
8. The current exchange rate is 1 USD = 18.5888 ETB.
9. Data from key informants suggests that local people lost about 15.8 per cent of their previous land size.

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(The Appendix follows overleaf.)

Appendix

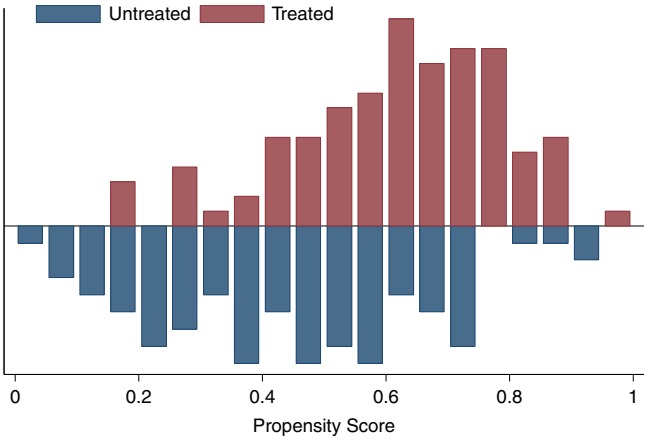

Figure A1.
Balancing criteria

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