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Large-scale Agricultural Investments and Female Employment in Nigerian Communities

^{1,2}O. O. Edafe, ^{1,2}E.Osabuohien and ^{1,2}R.Osabohien

¹Department of Economics & Development Studies, Covenant University, Ota, Nigeria

²Centre for Economic Policy & Development Research (CEPDeR), Covenant University, Ota, Nigeria

Corresponding email: oluwatosin.edafe@stu.cu.edu.ng

Abstract. This study examines how large-scale agricultural investments (LSAIs) affect employment outcomes of female households in Nigeria. It focuses on wage income and labour allocations to agricultural activities for households in communities with LSAIs compared with households in communities without LSAIs. It engages Wave 4 (2018/2019) of the Living Standards Measurement Study-Integrated Surveys on Agriculture (LSMS-ISA) dataset using the Propensity Score Matching (PSM) technique. The results show a positive relationship with the household income living in communities with LSAIs, but a negative relationship with the labour allocation to agricultural activities. Furthermore, the findings indicate that households in communities with LSAIs received higher wages and spend fewer hours in agricultural activities. Also, though female-head households spend more hours on agricultural activities than male-headed households, they earn less. Therefore, the study submits with some recommendations on reducing the possible adverse effects of LSAIs and optimising its positive impact, especially for females in rural communities where most of such investments occur.

Keywords: Agricultural Investments; Employment; Labour Allocation; Wage Income

1. Introduction

For the last two decades, Large-scale Agricultural Investments (LSAIs) have increased globally [19,43], and Africa has been the most targeted region with Nigeria as one of the top 20 LSAIs destinations in the world, and one of the first 10 in Africa [2,20,29,31]

The purpose of the LSAIs in Africa includes acquiring land for general agricultural cultivation, biofuels, non-food agricultural commodities, food crops, livestock rearing, renewable energy, mining activities, and forest logging, timber plantation, and carbon sequestration. The promised benefits of these LSAIs are contributing to economic development and poverty reduction by creating job opportunities, developing the rural areas, and providing social amenities in the communities where they are situated [31]. However, the consequences of these LSAIs is still highly controversial, which include, among others, loss of ancestral lands, agricultural activities, food insecurity, and employment concerns, thereby aggravating rural poverty [7,15,25,31,32,34].

In sub-Saharan Africa (SSA) and Southern Asia, about 60% of female households engage in one form of agricultural activities or the other [12,33]. In Nigeria, the contribution of female to



agriculture is estimated at about 60% to 79% of labour-force, especially food production [11]. However, only 14% of them own the land that they cultivate. Some of the factors that hinder rural female recognition include the customs and norms that deprive them of some essential rights (e.g. land inheritance). For instance, values are not placed on domestic production embarked upon by women, land tenure system issues and also their failure to meet essential collateral required to access credits and other agricultural input materials [18,23]. Female in rural areas often find themselves in a vulnerable employment situation. Thus, focusing on female employment is essential, considering their role in society and the high rates of female unemployment in developing countries [33]. In 2017, the global rate of unemployment for men was 5.5% while that of women stood at 6.2% and there is a projection that it may relatively increase from 2018 through 2021 [17]. Studies submit that when female possess rights to land and security, it decreases the risk of domestic violence for some women [36,41]

The reason for paying attention to rural women in Nigeria is that women are significant players in Africa's rural agricultural sector, where most of the LSAIs are located. Their involvement in small-scale food production is the bedrock of rural livelihood [10,16,26,39,42]. Hence, the presence of LSAIs can impact women, which is yet to be well established in extant studies. Female farmers produce more than half of all food grown globally. Around the globe, about 1.6 billion women rely on agriculture for their livelihood. Many are now at risk from the massive rise in LSAIs that endanger people living in poverty's food supply [39].

Against this background, this study adds to existing literature by evaluating the employment effects of LSAIs on female-headed households compared to male-headed households in rural communities with LSAIs alongside those in communities without LSAIs in Nigeria. The study is structured into five sections; following this introductory section is the review of related literature. Section three is the methodology. Results are presented and interpreted in section four, while the study concludes with section five.

2. Insights from Extant Literature

Large-scale Agricultural Investments (LSAI) is an act of buying land and users' right, which could be for a short or long-term, through leasing [13,33,35]. Large-scale Land acquisitions (LSAIs) are investments that exceed over 1,000 ha[6]. It is difficult to attribute a widely accepted definition of the concept as it occurs distinctly based on their size and main drivers of different regions where it occurs [4,19,24].

Studies have indicated that if women have land and security rights, it decreases the risk of domestic violence for certain women [41]. [36] discovered that when women own lands or property, it reduces violence, whether physical or psychological. When women have access or own land, they gain power in their households and communities at large. [9] also revealed that women who own lands improve their productivity and bring about higher income and contribute to economic development and well-being.

Studies have revealed how land dispossession destabilizes women's rights, worsens their reproductive burden, and diminishes their work prospect [21,22,29,40]. [31] investigated the impact of LSAIs on female labour outcomes in Tanzania. The study employed the LSMS-ISA data set, complemented by two case studies of two communities in Tanzania. Results of this

study indicate that LALIs have a reduced effect on agricultural wages and adversely affect the welfare of female-headed households in communities where LALIs are located.[8] examined the gendered impacts of agricultural commercialisation in the production of Sugarcane in Kilombero District, Tanzania. The study findings revealed that if the gendered effect of commercialisation of agriculture is addressed, it will reduce the vulnerability of women in Tanzania.

The study by [25]investigated implications of Large-scale land acquisitions on Women in Zimbabwe. The study reveals that females are less favourable when compared to their male counterparts in Zimbabwe due to some factors such as the women's low educational level, Favourable labour structure to men over women. Also, [1] examined how large-scale Agricultural Investments have adverse effects on women due to displacements from their lands of tribal inheritance. [22] assessed the intergenerational displacement caused by land grabbing for oil-palm in Indonesia. The study found that land grabbing causes a triple displacement impact. First, women's access to land is being reduced. Second, when women have limited land access, they cannot be involved in their primary farming occupation. Third, the skills that they acquired and which can be employed in other farm-related activities will depreciate over time and become inadequate for these new jobs they will be offered in the communities where lands are grabbed.

Utilising a case/control method, the survey by [5] investigated the Large-scale Agricultural Investment's effect on local livelihoods in Northern Sierra Leone. The results showed that farmers in the LSAI areas experienced lower yields, reduced agricultural areas for food production, and spent more on external labour. On the other hand, Large Scale Agricultural Investment-Impacted villages experienced a rise in their total monetary income, improved food and water security, and increased spending in food consumption. Nevertheless, for landowners, the surge in financial income was higher than for renters, and access to wage labour benefited men more than women, which suggested that LSAI tends to increase local inequalities. Hence, they conclude that LSAI has a positive effect on Local Household Livelihood.

There is limited empirical evidence from the reviewed literature that examines the implications of LSAIs on employment creation, particularly when considering gender dimensions in LSAIs host communities using a quantitative technique in Nigeria. The degree to which LSAIs keep to their promises is highly contentious and under-explored, especially for women who find themselves in disadvantaged positions [10] and are highly vulnerable to socio-economic shocks. Thus, this paper provides new empirical evidence on the implications of LSAIs on employment creation by focusing on disaggregated data across gender dimensions in the host communities.

3. Methodology

3.1 Data Source

The study employs data from the Living Standards Measurement Study-Integrated Surveys on Agriculture (LSMS_ISA). The World Bank usually conducts the LSMS-ISA data in conjunction with Nigeria's National Bureau of Statistics (NBS).

This study engages Wave 4 (2018/2019) of the Living Standards Measurement Study-Integrated Surveys on Agriculture (LSMS-ISA) dataset using the Propensity Score Matching (PSM)

technique. The LSMS-ISA is part of the household survey programme under the unit survey of the World Bank Development data, which assist in providing the required technical assistance to the various national statistical offices across various countries of the world to structure and implement various multi-topic household surveys [30]

3.2. Measurement of Variables

The first step that was taken in analysing the data was tracking where LSAIs occurred by engaging both the Land Matrix Global Observatory [20] and the LSMS_ISA (2018/2019) data. What the LMGO data does is that it helps to identify the communities where LSAI occurred when the LSMS_ISA data. These communities are then placed into categories such that the communities known to host LSAIs are considered as "1" while communities, where LSAIs have not occurred, are considered "0". Only the LSAIs that have been identified and are currently operational are taken into account in the matching process.

Outcome variable: There are two outcome variables of interest in this study, and they include – household agricultural wages (measured as the total wages the household earns from agricultural activities), and labour allocation (measured as the total average hour spent on agricultural activities daily). The outcome variables capture the different ways through which LSAIs can influence female employment.

Control Variables: Include the households' social-demographic characteristics like age, gender, level of education, state of origin, and marital status. Other main control variables are health, right to land, credit access, household members, household assets.

3.3. Estimation Techniques

The study employs quantitative data from LSMS-ISA (2018/2019), which is analysed using the Propensity Score Matching (PSM) and probit regression techniques. The key benefit of this research approach is its ability to produce a comparison of group of households with a common distribution of characteristics in communities with LSAIs and communities without LSAIs.

The Household characteristics that were used in this study include age, gender, state of origin, education, health, right to land, whether the household cultivates the land, number of household members, household assets, and household location. [37] introduced the PSM as a reliable and effective method that can be used to generate the equivalent non-participant data.

As mentioned before, the study applied the probit regression and the PSM model. The PSM is a statistical method of that aims to measure the effect of a treatment that considers the covariates that anticipate receiving treatment [37]. PSM was introduced by [37]. As seen in [34], this method addresses selection bias and moves towards more causal estimates.

The first step in the PSM is the estimation of propensity scores. To achieve this, the probit regression of the treatment condition on the vector of covariates is used based on similar characteristics. Therefore, the implicit form of the model is specified in equation [1]

$$HWLA_{ijk} = f(LSAI_{ijk}, \mathbf{T}_{ijk}) \quad [1]$$

Where, $HWLA$ represents the two outcome variables in this study, which are households wage (income from agricultural activities) and labour hours (hours household spent on farm); subscript i represents a household in the community (male or female); j ($j = 1, 2$) means household gender (male or female), k ($k = 1, 2$) stands for two various sectors which the household operate (either urban or rural); $LSAI$ means large-scale agricultural investment; j ($j = 0, 1$; meaning community with (1) and community without [0] large-scale agricultural investment. Apart from information on $LSAI$ that is from the LMGO (2020), data on other variables are sourced from LSMS_ISA. T is a vector of household characteristics such as marital status, educational qualifications, state of origin, age, among others. This can be prespecified in its explicit form as shown in equation [2]

$$HWLA_{ijk} = \beta + \gamma LSAI_{ijk} + \alpha_1 T_{1ijk} + \dots + \alpha_n T_{nijk} + u_{ijk} \quad [2]$$

In equation [2]: $E(u_{ijk} | LSAI_{ijk}, T_{1ijk}, \dots, T_{nijk}) = 0$, representing the conditional mean of zero assumption of the ordinary least squares (OLS). That is, the expected estimates of the outcome variable should be in a linear form given the control variables:

$$(HWLA_{ijk}) = \beta + \gamma LSAI_{ijk} + \alpha_1 T_{1ijk} + \dots + \alpha_n T_{nijk} \quad [3]$$

The tendency (f) that $LSAI$ may take place is named “occurrence” and it is depicted as $f_{ijk} \rightarrow HWLA_{ijk} = 1$ ($f_{ijk} = \text{Pr}(HWLA_{ijk} = 1)$) while the tendency that $LSAI$ may not occur is termed “non-occurrence” and expressed as $1 - f_{ijk} \rightarrow HWLA = 0$ ($1 - f_{ijk} = \text{Pr}(HWLA_{ijk} = 0)$). Hence, $HWLA_{ijk}$ in line with Bernoulli probability distribution. In other words, the probability that $LSAI$ and other covariates impact on household’s wage/income and agricultural labour hour is depicted thus in equation [4]:

$$f(HWLA_{ijk} = 1 | LSAI_{ijk}, Z_{ijk}) = \beta + \gamma LSAI_{ijk} + \alpha_1 T_{1ijk} + \dots + \alpha_n T_{nijk} \quad [4]$$

Where the reaction probability is linear in parameters: γ , T_n and captures the difference in the tendency of occurrence when $LSAI_{ijk}$ and T_{ijk} vary, *all things being equal*.

Equation [2] can be estimated by the chosen regression analysis to show the impact of the occurrence or non-occurrence $LSAI$ on household wage and labour hour. That is, $\hat{\gamma}$ measures the predicted change in the probability of success when $LSAI_{ijk}$ increases by a 1%, *ceteris paribus*.

4. Empirical Results and Discussion

This section presents the results from empirical analysis. It covers both descriptive and econometric analyses.

4.1 Kernel Density Plots’ Results

The study uses the kernel density plots for income and labour allocations for agricultural activities in the households. It compares the trends for the households where $LSAIs$ occur with the households where they do not occur.

The kernel density plot for how much household earn averagely per month is shown in Figure 1. The households’ income density plot in communities where LSAs occurred is titled to the right, while the households in communities where LSAs have not occurred slopes to the left. It means that the households in communities with the presence of LSAs receive more earnings than households in communities without the presence of LSAs.

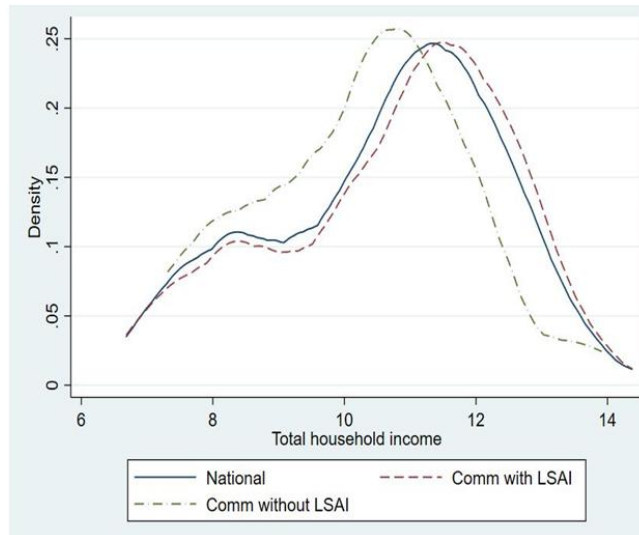


Figure 1: Household Wage Income Kernel Density
Source: The Authors’

The Kernel density plot of the labour allocations of agricultural activities of households is shown in Figure 2. There is not much noticeable difference between these two households; except after the peak where it was slightly lower in Communities with LSAs. The result shows that household in communities with LSAs spend less of their time on agricultural activities than households in communities without LSAs.

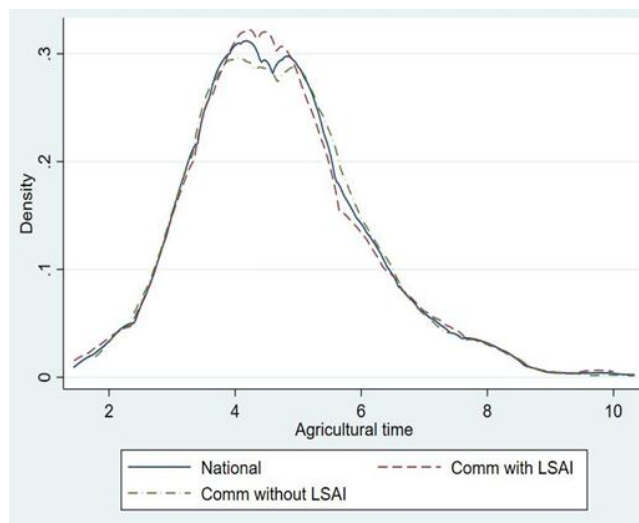


Figure 2: Household Agricultural Employment Kernel Density
Source: The Authors’

The kernel density plots' results concerning the household income and agricultural labour allocations imply that while households in communities with LSAs have the possibility of devoting or spending less of their time on agricultural activities, they have more household income when compared to the income that households in communities without LSAs obtain from agricultural activities or non-agricultural income.

The income they obtain from working with LSAs for households located in communities with LSAs appears to be more. Households that work for LSAs may spend less time in investors' agricultural activities. They still have time that they spend on other non-farm activities that could generate revenues. Also, it could be that investors provided flexible arrangements for them working and this may include permanent contracts or a procedure or system that allowed employees to earn a "double income" by working on their farms during peak seasons, that is for local produce, and then returning to the company for the rest of the year.

The analysis also shows the gender dimension of household income and agricultural labour allocations as displayed in Figures 3 and 4, respectively. Considering the household income by gender of the household head in Figure 3, the density plot of male-headed household (MHH) in communities without LSAI is rightward sloped in comparison to that of the female-headed households (FHH) that tilts to the left. The implication of this finding is that in communities without LSAI, male-headed households earn more than the households that are headed by females. Female-headed households can be heterogeneous because the path to female headship could vary across communities as well as the females in male-headed households who can make decisions [32]. While it is essential, our analysis is not able to categorise the various differences for female headship, which is outside the focus of this paper. One way to handle it would be through qualitative analysis that can be taken up in further studies.

In communities with LSAI, the kernel density plot of the male-headed household is also rightward sloped, which implies that in communities where LSAs are located, the MHH receive higher household income in comparison to the FHH. The result can be substantiated given the situation in Nigeria where there is a general belief that the males perform more rigorous task than females; hence, the males tend to get paid more. Also, there is the issue of gender disparity in income received where the males tend to receive more wages than females. From the results, in communities without the presence of LSAs the male-headed households earn ₦36,601.62 compared to the female-headed households who earn ₦14,019.14. In communities with LSAs, the male-headed households earn ₦36,027.68 in comparison with their female counterparts who earn ₦27,882.49.

The kernel density plot for labour allocation to agricultural activities by gender is displayed in Figure 4. For the labour allocation for agricultural activities by gender of the household head, the density plot of male-headed Households in communities without LSAI is rightward sloped when compared to that of the female-headed households. This shows that in the communities where LSAs are not located, the male-headed households spend more time on agricultural activities when compared to their female counterparts. This might be due to the fact that males have access to land and own their farmlands which they cultivate and perform other agricultural activities on.

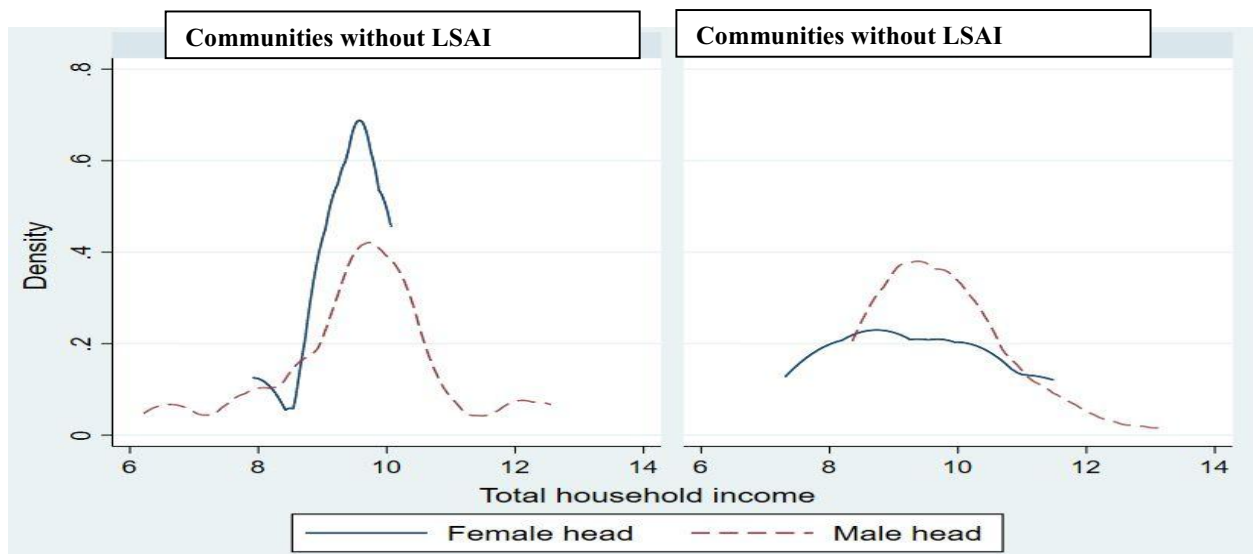


Figure 3: Kernel Density Plot of Household Income across Gender of Household Heads
Source: The Authors'

In Nigeria, for example, inheritances are not given to females in most communities due to traditional beliefs. Hence, the females do not inherit assets, and most times do not also have access to land despite being the ones working on the land and providing food. They spend less time on farm and spend some time also in some non-farm activities. In Communities with LSAI, the males spend less time on agricultural activities while the females spend more time. The results from these gendered kernel density plots imply that while men spend less hours on agricultural activities in communities with LSAIs and spend more time in Communities without LSAI, they earn more than their female counterparts.

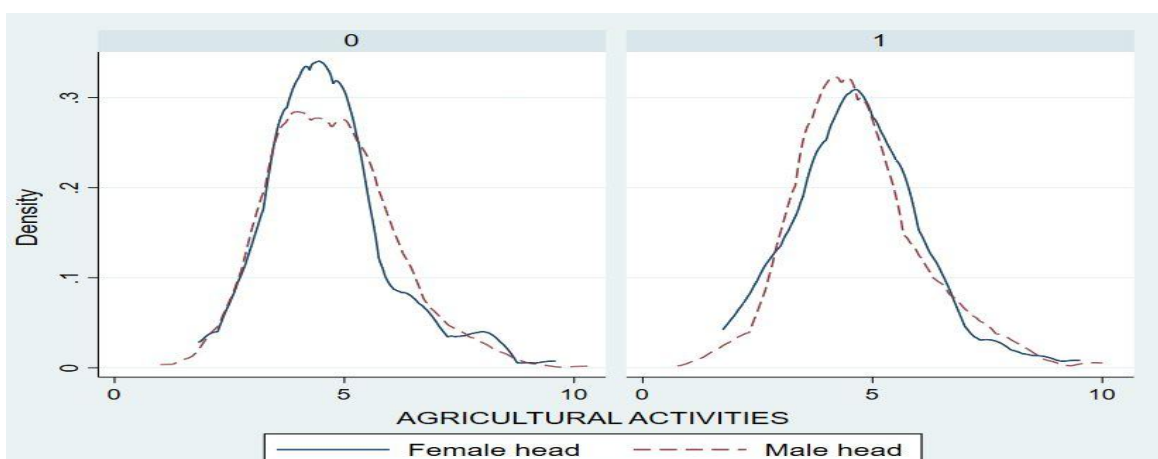


Figure 4: Kernel Density Plot of Labour Allocation across Gender of Household Heads
Source: The Authors'

4.2 Descriptive Statistics

The descriptive statistics present information on the household characteristics, which include the following: the household sector, age, education qualification, number of household members,

household assets, access to land that is, whether household cultivate plot of land or own farm lands. This study compares the characteristics for households in communities with LSAs with communities without LSAs which are displayed in the description statistics as presented in Table 1. The selections of the variables are based on extant studies on the determinants of the presence of LSAs, in a country [3] and in communities [31,35].

Findings in Table 1 show that the households in communities where LSAs are located have a higher wage. In essence, they earn wages of about ₦34,923.24. while those living in communities where LSAs are not located earn wages of about ₦31,982.48. This reinforces the observation in the kernel density plot. The household in communities with LSAs spend less of their time on agricultural activities while households in communities without LSAs allocate more time on agricultural activities. This is also in line with the kernel density plot. The difference in the time allotted to agricultural activities in households in communities with LSAs and the households in communities without LSAs is significant at 1% significance level.

Disaggregating the Results by gender

The female-headed households (FHH) receive higher household income in communities with LSAs than the female-headed households (FHH) in communities without LSAs. This is evident in Table 1. The females in communities with LSAs receive about ₦27,882.49 when compared to the female in communities without LSAs who receive ₦14,019.14. For the agricultural labour allocation, the females in communities with LSAs spend more time on agricultural activities than those in communities without LSAI.

The male-headed households (MHH) receive higher household income both in communities with and without LSAs than their female counterparts. Also, it is evident that in communities without LSAs, the male-headed households receive more income than the male-headed households in communities with LSAs. This may be as a result of the male heads owning their farm lands and properly cultivating it, having access to loans, inputs, seedlings. This will improve productivity and increase in their income compared to when their lands are “grabbed” by investors.

4.3 Results from Econometric Analysis

The probit model and balancing tests

The probit model is employed to help design a set of variables that will match the characteristics in communities with LSAs and communities without LSAs. The result of the probit model is presented in Table 2 and this study employed its use to obtain the propensity scores.

For all the households, the size of the household, age of the Household head, whether a household is cultivating land or not or whether the household owns or cultivated farm plots are displayed in the first column.

Table 1: Descriptive Statistics of Variables

Variables	Communities without LSAI				Communities with LSAI			Difference a vs d	Difference b vs e	Difference c vs f
	Total Household Head Mean (SD)	Female- headed household Mean (SD)	Male- headed household Mean (SD)	Total Household Head Mean (SD)	Female- headed household Mean (SD)	Male- headed household Mean (SD)				
Sector (Rural=1, Urban =2)	1.002 (0.041)	1.3056 (0.4614)	1.001 (0.037)	1.447 (0.497)	1.450 (0.499)	1.446 (0.497)	-0.045**	-0.1441	-0.445	
Number of Household Members	3.298 (2.242)	3.533 (2.560)	3.258 (2.198)	3.038 (2.032)	2.643 (1.495)	3.094 (2.093)	-0.260	0.890	0.165	
Age (years)	23.844 (7.548)	23.729 (7.909)	23.87 (7.471)	26.162 (8.104)	26.467 (8.231)	26.108 (8.088)	-2.317	-2.738	-2.238	
Household Cultivate Plot (Yes=1, No = 2)	1.404 (0.549)	1.267 (0.458)	1.427 (0.551)	1.466 (0.410)	1.524 (0.5055)	1.458 (0.499)	-0.062*	0.2571	-0.031**	
Household Own farmland (Yes=1, No = 2)	1.8270 (0.3801)	1.733 (0.458)	1.843 (0.366)	1.8592 (0.3483)	1.881 (0.328)	1.856 (0.351)	-0.032**	-0.147	-0.013**	
Educational qualification Health	3.559 (4.020)	4.098 (4.103)	3.551 (4.019)	3.998 (4.773)	3.667 (2.698)	4.057 (5.056)	-0.439	0.431	-0.506	
Number of Household Asset	1.832 (0.154)	1.833 (0.167)	1.831 (0.152)	1.809 (0.178)	1.811 (0.181)	1.809 (0.177)	0.022**	0.021**	0.022**	
Outcome Variables	1.423 (0,8998)	1.733 (1.100)	1.371 (0.858)	1.557 (1.825)	1.548 (1.173)	1.5508 (1.900)	-0.134	-0.186	-0.188	
Wages (per month)	31,982.48 (58646.69)	14,019.14 (7035.88)	36,601.62 (65044.94)	34,923.24 (70092.37)	27,882.49 (36,384.41)	36,027.68 (74192.31)	-0.183	0.007**	-0.198	
Labour Allocation (Agric.)	4.695 (1.356)	4.641 (1.3669)	4.707 (1.354)	4.671 (1.396)	4.664 (1.397)	4.653 (1.397)	-0.023**	-0.023**	0.034**	

Note: *, **, *** indicate significance level at 10, 5 and 1%, respectively

Source: The Authors'

Table 2: Probit model for generating the propensity scores

Variables	Total Household Head	Female-Headed Households	Male-Headed Households
Educational qualification	0.074*** (0.007)	0.073** (0.057)	0.073** (0.076)
Health	1.332*** (0.002)	1.116* (0.079)	1.731*** (0.006)
Household size	-0.032 (0.395)	-0.180 (0.729)	-0.050 (0.364)
Age	0.015 (0.124)	0.055 (0.707)	0.027* (0.069)
HH_cultivateplot	0.331** (0.033)	0.182 (0.428)	0.486 (0.026)
HH_ownfarmland	0.000 (0.999)	0.182 (0.821)	0.165 (0.611)
HH_asset	0.0264 (0.722)	0.009 (0.940)	0.045 (0.677)
Sector	-1.378*** (0.000)	-1.421*** (0.001)	-1.326*** (0.003)
Constant	0.8443	0.8343	-1.725
LR chi2	59.33	27.16	35.70
P-value	0.000	0.007	0.000
Pseudo R ²	0.1365	0.1195	0.172
Log likelihood	-187.628	-100.023	-87.755

Note: Probability values are in parentheses, ***p < 0.01, **p < 0.05, *p < 0.10

Source: The Authors'

The signs of the coefficients are positive for educational qualifications, health, age, whether households cultivate plots or not or whether households own farm, and the number of household assets. While the signs of the co-efficient are negative for numbers of household members and locality. The Z test statistics, educational qualification, health, whether Household cultivate plot or not are greater than 2, with probability values less than 0.05.

For all households, educational qualification and health are found to be significantly associated with the employment of female. The more educated the females are and the better health they have, the higher the chances of them being employed and the better positions they are placed. Since it is evident that in Nigeria, women do not have access to land, they may have to rely on wage labour. And since they have better education, they may easily get jobs with these investors and may perform better. Most females whose education are low or not skilled get employed to perform manual tasks such as seeding, farming, harvesting, watering and weeding and may earn less income while those with higher positions are placed in managerial positions and they get more paid. Many Investors have claimed that the main reasons for gender gap is due to unqualified females. So, the higher the education, the better chances of being employed and getting promoted. Health is also important. The healthier they are and the more rigorous jobs they can perform, the better chances of getting employed and being retained. For the total

household, the coefficient of education and health are also significant. This may be due to the fact that people who are young may not have access to land and will have to rely on wage employments.

Figure 5 and Table 3 show the results from balancing quality checks. The histogram of the predicted propensity scores is described in Figure 5. It is shown in this figure that the propensity scores are within the common range and have relatively equal distributions which implies that the treatment and the control groups can be compared and also that most of the sampled households are included in the common support areas.

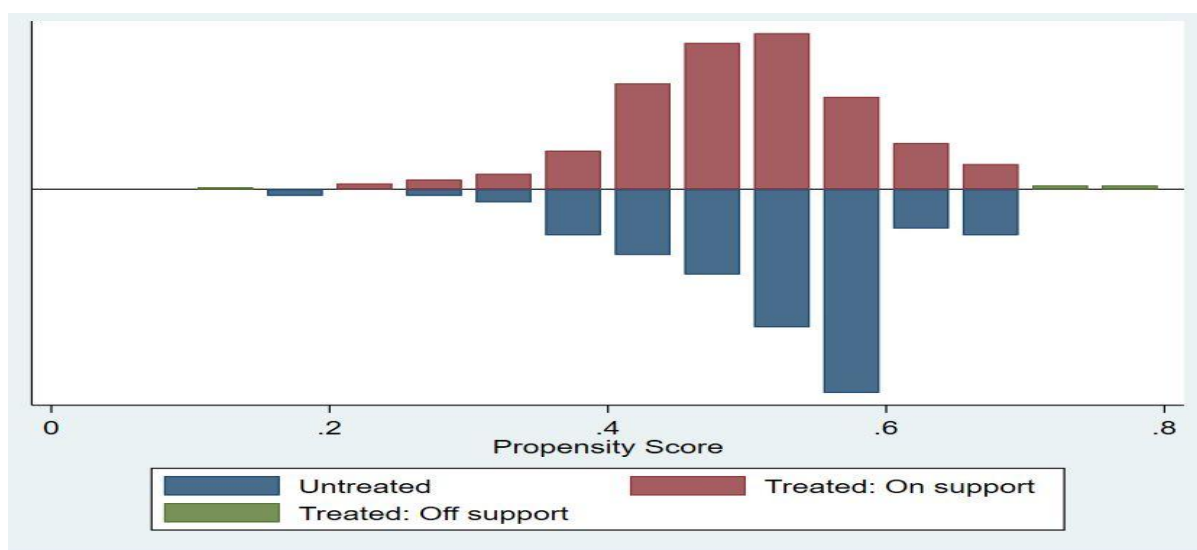


Figure 5: Propensity score distribution and common support

Source: The Authors'

It is also observable for both Kernel Matching and Nearest Neighbour Matching process that the mean and median absolute bias are reduced significantly. The matching quality of the female-headed household subsample in communities with LSAIs and Communities without LSAIs are displayed in Table 3. The reduction in the difference in the observable characteristics that exist among these two groups in both the nearest neighbour matching and kernel matching algorithm is evident.

5. Conclusion

The findings in this study show that LSAIs impact on the income of individuals in these communities positively. This further supports the fact that the presence of LSAIs can bring about technological transfers and innovations. In communities where LSAIs are located, the investors introduce and encourage new technologies and farming practices. Outgrowers could be trained on how to benefit from these facilities, and this will bring about improved productivity, food

security, thereby yielding an increase in income and improved livelihoods. With local job opportunities, when investors gain and generate more incomes, the local communities too will benefit through the development of skills and capital on rural farms.

Table 3: Matching Quality

Matching Algorithms	Outcome	Sample	Total Sample	LR Chi2	P>Chi2	Mean Bias	Median Bias
5 Nearest Neighbour Matching (NNM)	Total	Unmatched	0.366	47.36	0.000	45.2	37.8
	Household	Matched	0.3880	52.44	0.000	45.5	40.8
	Wage	Unmatched	0.138	57.57	0.000	24.6	15.4
	Household Labour Allocation	Matched	0.149	121.90	0.000	23.8	14.5
Kernel Matching (KM)	Total	Unmatched	0.366	47.36	0.000	45.2	37.8
	Household	Matched	0.384	53.30	0.000	45.1	39.2
	Wage	Unmatched	0.138	57.57	0.000	24.6	15.4
	Household Labour Allocation	Matched	0.163	133.96	0.000	24.5	15.1
Female Sub-Sample							
5 Nearest Neighbour Matching (NNM)	Total	Unmatched	0.368	26.07	0.001	42.8	32.8
	Household	Matched	0.374	28.29	0.000	40.5	27.9
	Wage	Unmatched	0.125	27.56	0.001	19.6	8.7
	Household Labour Allocation	Matched	0.177	72.15	0.000	24.2	18.7
Kernel Matching (KM)	Total	Unmatched	0.368	26.07	0.001	42.8	32.8
	Household	Matched	0.357	27.02	0.001	40.9	25.7
	Wage	Unmatched	0.125	27.56	0.001	19.6	8.7
	Household Labour Allocation	Matched	0.165	67.32	0.000	22.2	16.4

Source: The Authors'

Also, from the findings in this study, households in communities with LSAs spend less time on agricultural activities than households in communities without LSAs. Households that work for LSAs may spend less time in investor's agricultural activities such that they still have time that they spend on other non-farm activities that could generate revenues. It could be that investors provided flexible arrangements for them working and this may include permanent contracts or a procedure or system that allowed employees to earn a "double income" by working on their own farms during peak seasons, that is for local produce, and then returning to the company for the rest of the year.

It is evident from the findings that even though females spend more time than their male counterparts, they receive less wages than males. This can be validated given the situation in Nigeria where there is a general belief that the males perform a more rigorous task than females; hence, the males tend to get paid more. Also, there is the issue of gender disparity in income received where the males tend to receive more wages than females. For instance, in a maize farm in a rural community in Mozambique, females are paid equally as their male counterparts. There are better chances for females to be employed than males [38]. Therefore, it is necessary to put in place appropriate measures to protect women in rural communities, as they are more disadvantaged.

The empirical findings presented in this study give us a few clear-cut policy recommendations that include good governance - to ensure a win-win solution, good governance of land tenure and securing the rights of landholders and investors is an essential factor. LSAs can have adverse effects, especially on countries that lack transparency and good governance. The negative impact of such includes the displacement of small-scale farmers and poor livelihoods for rural people to reduce access to resources [14,31] When their customary land rights are legally secured, the negative impacts of LSAs are reduced.

One of the benefits of LSAs is the generation of employment. As evident in this study, such employments brought about an increase in household income, but could these jobs be sustained? There are cases where the numbers of jobs given have reduced over time and in most cases, they have been lower than what the investors had promised. Also, there are challenges regarding the types of jobs given, because managerial positions are usually reserved, most times, occupied by professionals who may not come from these communities. Investors tend to employ people outside the communities into such positions. Therefore, they should be binding agreements that individuals in communities where LSAs are located will be employed with good conditions and payment, and that incentives and compensations would be given to households whose lands have been engaged. Local Stakeholders should also be involved in this project.

As a suggestion for future research, it will be needful to compliment the findings in this study using more than Waves of LSMS ISA so that other impact evaluation techniques, notably difference-in-difference (DiD), can be engaged. Also, engaging fieldwork using qualitative and quantitative data in communities where LSAs operates with a view to underscoring the kind of employment provisions for females will be worthwhile.

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