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The Urgency of Agrarian Reform Policy: A Study of the Impact of Land Access on Farmer Household Welfare

Heru Poppy Samosir[1]*, Jossy P. Moeis[2]
[1]Master Program in Economic Planning and Development Policy, Faculty of Economics and Business, Universitas Indonesia
[2]Department of Economics, Faculty of Economics and Business, Universitas Indonesia
Prof. Dr. Sumitro Djojohadikusumo Street, Depok, West Java, Indonesia, 16424
*Corresponding Author: heru.poppy91@ui.ac.id

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Abstract: Inequality of land ownership is caused by unequal access to land. This study examined the impact of land access on total farmer's household expenditure. The Agrarian reform policy assumed open and expand access to land for groups of landless or near landless farmer households. Through state-led and market-led approaches, this research provided a categorization of access to land in two ways, which are access opening and access expansion variables with each sample coverage. Using the two periods difference-in-difference (DID) method, this study analyzed the impact of opening and expanding access to the total expenditure of farmer households using IFLS 2007 and 2014 data. The results showed that there is a significant difference in the total expenditures of farmer households due to the opening and expansion of access referring to the land distribution scheme (state-led approach), and there is no significant difference through the market-led approach. Therefore, agrarian reform policies need to be carried out by emphasizing the role of the state in implementing land redistribution to landless and small farmers.

Keywords: Agrarian reform, state-led approach, market-led approach, impact of land access, total farmer household expenditure

INTRODUCTION

Economic growth is often associated with land tenure as an important asset in economic activity, so it needs to be regulated in the form of policies. The view regarding the link between land policy and economic growth was conveyed by Klaus Deininger that land policy is the most basic thing in sustainable development, good governance, and the provision of economic opportunities for people both in villages and cities, especially the poor (Deininger, 2003). Policies regarding land are related to efforts to create access to land for the poor and other marginal groups. According to Deininger (2003), access to land and the ability to use land productively are very critical for poor people around the world.

The problem is, there are factual conditions indicating concentration of land ownership. This concentration of land ownership has a negative impact and can slow down economic growth. The concentration of land in a handful of parties will limit small actors or marginal groups from accessing credit so that it will have an impact on limited access to their land market (Luis Bauluz, et al., 2020). Research conducted by Aghion also shows that

inequality in land ownership has been shown to have a detrimental impact on economic growth (Aghion, et al., 1999). Several other studies have also shown that unequal distribution of land has a negative impact on growth and development as a result of institutions maintaining old distribution patterns (S. Engerman & K. Sokoloff, 1999; K. L. Sokoloff & SL Engerman, 2000). Unequal soil distribution is the impact of high soil concentrations on a few groups or individuals. The concentration of land ownership also reduces the efficiency of resource use (Deininger, 2003).

Based on research data by Anseew & Baldinelli (2020), global land inequality in agriculture is always above 0.60 (the gini coefficient). Both looked at the gini coefficient of land inequality based on data from 1% of farmers operating more than 70%-80% of all agricultural land. The control of agricultural land by 1% of the farmers was used for production which is controlled by the food production system in the corporate system (Lowder, et.al, 2019).

Inequality in land tenure has been responded by many countries by issuing policies regarding land such as land redistribution programs and land titling. The land redistribution and certification program are known as the output to be achieved through the land reform policy. In the Indonesian context, land reform policies have been implemented since the old order era until they were known as agrarian reform during the reformation era (Rachman NF, 2017). Agrarian reform policies are related to efforts to provide access to land by restructuring land tenure for farmers. Agrarian reform in this case is interpreted as a form of rearranging the composition (structure) of ownership, control, and use of agrarian resources (especially land) for the benefit of the common people (Rachman NF, 2015). Often land reform policies have not resolved the problem of inequality in land ownership, especially in the Indonesian context.

In this research, the problem studied is to examine the impact of access to land on the welfare of farming households in Indonesia. The assumptions in this study is Indonesia as a developing country where the welfare level of farmer households is influenced by the control of assets, one of which is land as a source of income for farmers. In contrast to the assumptions of developed countries where asset control is influenced by the level of individual or household welfare (Quan, 1983). Based on the theory by Kuznet (1963), the dynamics of the maldistribution process starts from the inequality of income distribution then through the accumulation effect, high concentration of asset ownership ultimately contributes to high concentration of income.

The concept of access was used to see the process of land distribution through agrarian reform policies. The concept of access relates to land tenure either through land ownership or land leases as a condition for households to gain access to land. In the Indonesian context, the practice of land tenure through leasing is often carried out by sharing the results between the land owner and the cultivators according to a mutual

agreement, or it can also be done by borrowing land to work on. Land ownership in this study was examined based on the condition of farmers owning land or not, as well as the size of land that should be owned as a measure of efficiency in farming households in Indonesia. The agrarian reform policy is assumed to be a form of opening access, especially for landless farmers with the opportunity to acquire land or expand land ownership from the condition of small farmers to farmers who own more land for agricultural purposes. The assumption in this study places smallholder farmers with land ownership of <0.5 ha having no impact on increasing their welfare (Shohibuddin, 2019; Wiradi & Bachriadi, 2011; Wiradi et.al, 2009). Opening access in this case relates to the distribution of land tenure structures through land redistribution as the main condition to be achieved through agrarian reform policies. The assumption in this study places smallholder farmers with land ownership of <0.5 ha having no impact on increasing their welfare (Shohibuddin, 2019; Wiradi & Bachriadi, 2011; Wiradi et.al, 2009). Opening access in this case relates to the distribution of land tenure structures through land redistribution as the main condition to be achieved through agrarian reform policies. The assumption in this study places smallholder farmers with land ownership of <0.5 ha having no impact on increasing their welfare (Shohibuddin, 2019; Wiradi & Bachriadi, 2011; Wiradi et.al, 2009). Opening access in this case relates to the distribution of land tenure structures through land redistribution as the main condition to be achieved through agrarian reform policies.

The assumptions that the researchers built were agrarian reform policies as a form of effort to open access through the implementation of land redistribution with an emphasis on pro-poor policies. According to Borras (2007), pro-poor policy refers to the condition of interpreting the value of land which cannot be interpreted strictly from a monetary perspective alone, but must be aimed at protecting the working poor and expanding their access to land. By relying on the actual goals of agrarian reform policies, this study seeks to examine the impact of access to land through land redistribution on the welfare level of farmer households.

Access to land is an important concern where previous studies have proven that inequality in land ownership has consequences for poor economic growth (Aghion, 1999; S. Engerman & K. Sokoloff, 1997; KL Sokoloff & SL Engerman, 2000; Luis Bauluz, et. al., 2020). The land reform policy is basically to expand access to land through the practice of redistributing land to groups in need, especially farmers who depend on land as a source of production.

Implementing land redistribution has become an important strategy for poverty alleviation and socio-economic development (Binswanger et al., 1995). In the Indonesian context, the concept of land reform as the implementation of land redistribution that should be aimed at marginal groups and the common people has not been implemented optimally.

In addition, the implementation of land reform policies is always followed by the tug-of-war of elite interests.

Efforts to reduce poverty by providing greater access to land for poor households in developing countries are increasingly being discussed (Binswanger, Deininger, & Feder, 1995). Policies to increase access to land for poor households have a significant impact on increasing the welfare of poor households (Ciamarra, 2004). A study conducted by Ghimire (2001) also showed that access to land is related to increasing household livelihoods. Lopez and Valdes (1997) found that land has an important role in determining the per capita income of farming households in El Salvador and Paraguay.

The study by Lemiani Makori Alais and Edwin Magoti (2021) analyzed how land is important in reducing poverty by investigating the effects of land ownership and access to household consumption. Alais and Magoti (2021) used panel data (2014/2015) to examine the relationship between land ownership and poverty reduction in Tanzania. The results of the study show that at a certain level, owning land does not necessarily increase the level of household consumption because the area of land owned by a household does not have a significant effect on the level of per capita household consumption. Conversely, households with land certificates significantly increase per capita household consumption. This study also showed that among households who own land, households that have land ownership certificates have significantly higher per capita household consumption compared to households that do not have certificates. Another study was a study conducted by Julius Mukarati, et.al (2020) regarding government redistributive policies that can affect household welfare in both the short and long-term.

In Indonesia, there have been several studies on poverty and its relation to land. The latest study is a study conducted by Kartika Eka Pratiwi (2021) which raised a welfare perspective with an emphasis on assessing non-material well-being (Subjective Wellbeing). This study proved that ownership of agricultural land has an impact on increasing the subjective well-being of farming families (Pratiwi, 2021). Another study was conducted by Faizal R. Moeis, et al. (2020) which tested Arthur Lewis' dual sector model that moving households from the (traditional) agricultural sector to the (modern) non-agricultural sector will lead to better conditions. FR Moeis, et al. (2020) concluded that the migration of poor farming households from the agricultural sector experienced a significant increase in welfare, especially in 2000-2007, but not in the 2007-2014 case.

This study filled the research gap both in terms of the scope of data usage, the methods used and the scope of the research, where the focus of the research is to look at the impact of access to land as an aspect contained in agrarian reform policies. The agrarian reform policy was used as a basis for testing the urgency of land for farming households. This study aimed to look at the impact of access to land on the level of welfare of farmers

in Indonesia. The context of this research relied on the view that agrarian reform policies have not been implemented properly.

METHODS

In this study, the theory of access is used to determine access boundaries, in this case access to land as a resource. The formulation of access as ability is a broader form of social relations that can limit or enable individuals to benefit from resources without focusing on ownership relationships only (Ribot & Peluso, 2003). Peluso & Ribot (2020) interpret access mechanisms as power relations over resources. Access to land is part of the political aspect which is regulated through land reform policies and is related to the economic aspect in poverty alleviation efforts.

This study used the concept of access as an effort to gain benefits, especially with the existence of agrarian reform policies. The agrarian reform policy opened access for landless groups. According to Wiradi (2009), the structure of land tenure is divided into two, which are formal control refers to ownership and effective control in the form of arable or operational over agrarian resources. Based on this understanding, this study used the concept of access to land through two conditions, which are: first, opening access to land, and second, expanding access to land.

The opening of access is seen from the condition of the farmers controlling the land or not. This land control can be seen from the ownership and rent of land. This means that the opening of access refers to the condition of changing two things: first, from not owning land to owning land; second, from the condition of not leasing land to leasing land. Land rent in this case refers to practices carried out in Indonesia, both in it including profit sharing and working loans. Expansion of access to land is assessed from two conditions: first, expansion of access based on changes in the size of the land owned by farming households; second, the change in the legal status of the land from non-legal or weak ownership to legal through ownership certificates or strong ownership.

To understand the context of agrarian reform policies in Indonesia, this research used a state-led and market-led approach which can be seen from two accesses, both opening access and expanding access to land. The debate about these two approaches refers to the output resulting from the use of each approach in the implementation of agrarian reform. State-led land reform, namely agrarian reform as a context carried out by considering political legitimacy in realizing the land reform agenda. The state-led land reform was an attempt to expropriate land from large landowners and redistribute it among selected beneficiaries. Some of the characteristics of state-led land reform as an explanation of criticism from the pro-market include: first, the implementation method is the central authority so the transparency and accountability is low; second, the acquisition method uses force and the payment is below market price; third, beneficiaries are supply-driven

and are often accompanied by beneficiaries who are not eligible; fourth, the land reform that occurred caused land market distortion and did not require a land certification program, resulting in an inefficient allocation and use of land resources (Borras, 2007). In contrast, market-led land reform prioritizes economic efficiency and reduces the role of the state, and allows for land transfers based on cash payments with market price mechanisms (Borras, 2007).

In this research, the use of state-led and market-led approaches is adapted to the Indonesian context. The state-led approach refers to the condition of the state's role in reducing inequality in land tenure structures through land redistribution. The market-led approach in this case is a land policy issued to facilitate market penetration of land tenure. In this study, the market-led approach refers to leasing and land legalization processes in accordance with the context of policies implemented in Indonesia. The market-led approach emphasized the implementation of several adjustments in the rules of leasing as well as full liberalization of the rental market to achieve maximum efficiency of land use (Deininger, 1999).

This study used the impact evaluation method to see the impact of land access on welfare. The impact evaluation method used is Double Difference or also known as the difference-in-difference (DID) method. Access to land in this case is seen through changes in conditions experienced by farmer households. In this study, changes in conditions experienced by farmer households were identified based on the concept of access. This change in conditions is assumed as part of opening and expanding access to resources.

The main idea of the double-difference estimator is to compare the sample of participants and non-participants before and after the intervention or program is carried out (Ravalion, 2008). In this study, the use of the DID method specifically is to test the impact of land access through opening and expanding access to land with an emphasis on land redistribution, legalization and land leases. This emphasis is seen through changes in the conditions experienced by farming households in Indonesia from 2007 to 2014 and testing variations in land size, as well as changing conditions for expanding access through land legalization and land leases. Referring to these conditions, the variables tested in this study are as follows: (1) The state-led approach refers to the process of land redistribution carried out by the government. The state-led approach refers to two variables, namely opening access through changing the condition of not owning land to owning land, and expanding access through changing conditions from smallholders with land size <0.5 ha to owning land with size ≥0.5 ha; (2) The market-led approach is seen from the process of land leasing and legalization which prioritizes private ownership rights. The market-led approach is seen from two variables, which are opening access through changing the condition of the farmer household from not renting to renting, and expanding access through changing the legal status of land ownership from non-legal to legal or having a

certificate of ownership, and expanding access through changing conditions from smallholders with a land size of <0.5 ha to owning land with a size of ≥0.5 ha; (2) The market-led approach is seen from the process of land leasing and legalization which prioritizes private ownership rights. The market-led approach is seen from two variables, namely opening access through changing the condition of the farmer household from not renting to renting, and expanding access through changing the legal status of land ownership from non-legal to legal or having a certificate of ownership. and expanding access through changing conditions from smallholders with a land size of <0.5 ha to owning land with a size of ≥0.5 ha; (2) The market-led approach is seen from the process of land leasing and legalization which prioritizes private ownership rights. The market-led approach is seen from two variables, namely opening access through changing the condition of the farmer household from not renting to renting, and expanding access through changing the legal status of land ownership from non-legal to legal or having a certificate of ownership.

First, the variable of opening access through a state-led approach refers to a sample of farmer households where the determination of the treatment group is a household that has experienced a change in condition from not owning land to owning land. This condition is interpreted as opening access to land for farming households. Then the expansion of access variable uses a sample of land size with the treatment group referring to farmer households that have changed from smallholder land size (<0.5 ha) to size ≥0.5 ha. One of the purposes of this test was to see the target of land redistribution and at the same time test the consistency of the previous model. Second, a market-led approach that refers to the variable of opening access through a sample of landless farmer households and the variable of expanding access to land through strengthening the legal status of land ownership. This refers to the conditions for making land policies through legalization in the form of certificates of property rights. Opening access to land through leasing agreements is also referred to as another form of access to land for landless farming households.

According to Khandker (2010), DID estimators rely on comparisons of participants and non-participants before and after the intervention to see the difference in the resulting impact based on the time before and after the intervention. The model used is derived as follows:

$$Y_{it} = \alpha + \beta_1 T_{i1} t + \beta_2 T_{i1} + \beta_3 t + \varepsilon_{it} (1)$$

$$HHexpenditure_{it} = \alpha + \beta_1 Treatment_{i1} + \beta_2 year + \beta_3 Treatment_{i1} * year_t (2)$$

In equation 2, HHexpenditure is the dependent variable resulting from the total consumption of both food and non-food items in household i and period t. This calculation pattern is widely used as the basis for determining the poverty status of households (Hulme, Moore and Sheperd, 2001). In this study, the measure of welfare is seen from the

amount of expenditure through the consumption of both food and non-food items in farming households. $Treatment_{i1}$ refers to the variables in table 1 which are derivatives of access to land and are dummy (1=treatment, 0=non-treatment) in household *i*. Each variable (access opening and access expansion variables) will be interacted with the dependent variable and see what the results of testing the impact of land access on the level of welfare of farmer households with status 1 experience changes in opening access to land and 0 for controls that do not experience changes. Year is a dummy variable referring to the Indonesia Family Life Survey (IFLS) survey (1=2014, 2014 IFLS data; 0=2007, 2007 IFLS data). IFLS data is survey data produced by RAND Corporation through a longitudinal survey that has been conducted for five waves (1993, 1997, 2000, 2007 and 2014). IFLS data is data from a longitudinal survey by observing the same household so that this research makes it possible to carry out an impact analysis using the DID method.

$Treatment_{i1} * year_t$ is the interaction between the treatment variable and the year. Prior to treatment, all samples had a value of 0. Equation 2 was then added to control variables to reduce bias in the model.

$$HHexpenditure_{it} = \alpha + \beta_1 Treatment_{i1} + \beta_2 year + \beta_3 Treatment_{i1} * year_t + \sum_{k=5}^{n} \delta\, Control_{it} + \varepsilon_{it} \quad (3)$$

Table 1. Variables in Research

Variable	Unit	Description and Sources
Dependent Variable		
HHexpenditure	IDR	Total expenditure of farmer households in the form of food and non-food consumption (data taken from book 1 IFLS: b1_ks0, b1_ks1, b1_ks2, b1_ks3, b1_ks4, b1_ksr1, b1_ksr2, b1_ksr3, b1_ksr4)
Interacted variables		
Before After	Dummy	1 = IFLS 2014; 0 = IFLS 2007
Opening access to land (using a state-led approach with reference to land redistribution using a sample of whole farming households)	Dummy	1 = Households that have experienced a change from status without access to having access to land; 0 = No change in access to land (data taken from book 2 IFLS b2_ut1, specific question on ut00a)
Expanding access to land (using a state-led approach with reference to land redistribution for smallholders with a sample of land-owning farming households)	Dummy	1 = Farmer households that experience changes in the expansion of access to land from narrow access to broad access. (The sample used is household farmers who own land) small size < 0.5 ha to medium-large size ≥ 0.5 ha ; 0 = no change in expansion of access to land (data taken from book 2 IFLS b2_ut1, specific question on ut00b)
Opening access to land (using a market-led approach through land leases with a sample of landless farmer households)	Dummy	1: Households that have gone from having no access to having access to land; 0: no change in access to land (data taken from book 2 IFLS b2_ut1, specific question on ut01b)
Expanding access to land (using a market-led approach through land legalization with a sample of farming households who own land)	Dummy	1: Households experiencing a change in the expansion of access to land from narrow access to broad access (data taken from book 2 IFLS b2_ut, specific questions on ut00e)
Control Variables		
Gender of Head of Family	Dummy	1: male, 0: female (sex of the head of household)
Provincial dummy	Dummy	1=Javanese: 0= non-Javanese (regional basis)
Age of Head of Family	Year	Age of the head of family
Dummy Zone	Dummy	1: Urban: 0: Rural (area base)
Number of Household Family Members	Amount	Size of family members in the household

The use of control variables in table 1 above is used to reduce bias that might appear in the regression model built by the researcher (Fredriksson, 2019). The use of control

variables is related to the time period which is only at two points between 2007 and 2014 so that a pre-treatment trend test cannot be carried out. The control variable is determined based on previous studies and its effect on household poverty or welfare. According to Meng & Gregory (2007), households with a higher age group are significantly less likely to remain poor. In this case, age is an association of accumulated experiences, resources, broad social capital that contribute positively to welfare (Bashaasha et.al, 2006). A study conducted by Bogale (2009) found that increasing the number of household sizes would equate to increasing the chances of becoming poor. The case in Pakistan shows a different matter where large household size has a negative impact on household welfare (Sikander and Ahmed, 2008).

This context is different from Indonesia. Households with more household members will increase the likelihood of households becoming poor or vulnerable to becoming poor (Widyanti, 2009). The study by Litchfield & McGregor (2008) showed that individuals living under a female household head are more likely to become poor and have a poorer standard of living than those under a male household head. According to Nusrat Farah (2015), the gender of the head of the family significantly influences the social economic status of a family. In addition, Nusrat Farah (2015) also included rural and urban areas as the demographic variables studied. According to Nusrat Farah (2015), rural areas suffer more from poverty than urban areas.

Table 2. Amount of Sample and Treatment Combination

Sample	Treatment	Household 2007-2014
All samples of farmer households	Opening access (access opening): change in access from not having access to land to having access to land is treated as a variable opening access to land (state-led approach)	1556
Sub-sample of farmer households who own land with the size of the land owned	Expansion of access (access expansion): changes in the expansion of access to land from small land sizes (<5000 meter2) (small land) to medium and large land sizes (≥5000 meter2) (middle and large land) (state-led approach)	382
A sub-sample of farmer households who do not own land and rent	Access opening: changing access from not having access to land to having access to land through rent (access opening through land rent – market-led approach)	416
The sub-sample of households that own land	Expansion of access (access expansion) changes in the expansion of access to land from limited access to broad access with legal status of land ownership (access expansion through legal status – market-led approach).	334

The sample size for each variable that interacts with the dependent variable is shown in table 2. In addition, when using the DID method, one of the most critical assumptions is

the parallel-trend assumption (Khandker, et al. 2010). The four samples used in the model have fulfilled this parallel-trend assumption (see figure 1).

Table 3. Statistical Description of Access to Land and Control Variables

Treatment Group	State-led approach				Market-led approach			
	Access Opening (change from not having access to having access to land)		Access expansions (change from narrow access to broad access)		Access opening (change from not having access through rent to having access to land)		Access expansions (change of access from narrow access to broad access through land legalization)	
Control Group	No Status Change		No Status Change		No Status Change		No Status Change	
Variable	Means	Standard Dev.	Means	Standard Dev.	Means	Standard Dev.	Means	Standard Dev.
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Household expenditure (IDR)	2969068	2651323	2347841	2057667	3004713	2648749	2917025	3754344
Gender of head of household (1=male: 0=female)	.8123407	.3904529	.8157609	.3877845	.8019423	.3985537	.866548	.3401634
Age of Head of Family	45.23843	14.21013	51.71359	14.23083	44.21098	13.95873	51.00474	14.02643
Number of Household Family Members	3.818779	1.769468	3.8375	1.694506	3.793924	1.789869	4.055753	1.772985
Provincial Dummy (1=Java; 0=non-Javanese)	.5634474	.4959747	.6788043	.4670627	.5975588	.4904118	.866548	.3401634
Dummy Zone (1=Urban; 0=Rural	.6257545	.4839437	.2706522	.4444175	.7324483	.4427022	.232503	.4225532
Observations	14910	14910	1840	1840	11224	11224	1686	1686

Source: processed data, 2021

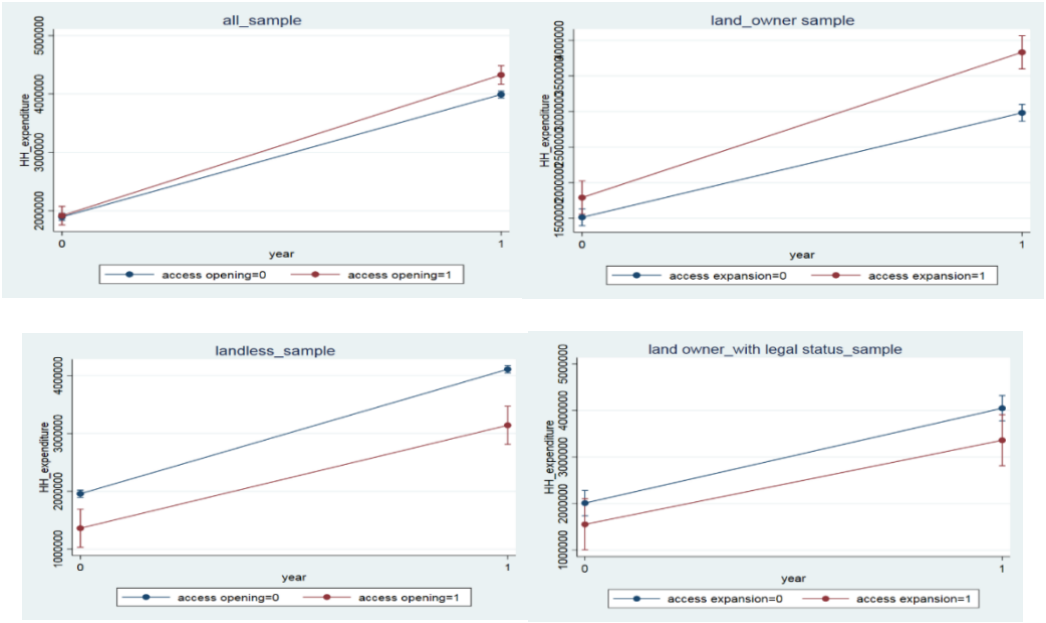

Figure 1. Parallel-trend assumption. Processed by the author (2021)

RESULTS AND DISCUSSION

Test the State-led Approach Model on Access Opening and Access Expansion Variables

The assumption built using the state-led approach is that the implementation of agrarian reform is carried out in order to change the structure of land ownership through the redistribution of land to farm households that do not own land and farmer households that own small land (<0.5 ha). Based on this assumption, the two variables, both access opening and access expansion, are used based on a sample of farmer households engaged in agricultural activities. Based on the model test conducted on the access opening variable (before interaction with the control variable), there is a significant difference between the treatment and control groups related to total household expenditure (household expenditure) with a change in condition from not having access to land to having access to land. Significant results are shown by the p-value (0.000) <0.01 at the 1% significance level (appendix 1). This can be interpreted as a condition of open access to land for farmer households which can have a positive and significant impact on increasing the welfare of farmer households.

The use of household expenditure as the dependent variable in this study assumes that income fluctuates more in the short term, even during one season or over several years (Chauduri & Ravalion, 1994). Household measures based on income will usually be less stable than measures based on consumption, although exceptions may occur as discussed by Chaudhuri & Ravalion (1994).

Table 4. DID Estimation Results of the Impact of Land Access on Household Expenditures (State-led and Market-led Approaches)

Dependent Variable: Household Expenditure (IDR)	State-led approach		Market-led approach	
	Access opening	Access Expansion	Access Opening	Access Expansion
(1)	(2)	(3)	(4)	(5)
Year (dummy variable) (1=IFLS 2014; 0=IFLS 2007)	2078825***	1510397***	2103732***	2040656***
	(0.000)	(0.000)	(0.000)	(0.000)
Access Opening*year (Access opening is a dummy variable; 1 = change from not having access to having access; 0: no change in access)	229969**		-515020.1***	
	(0.020)		(0.005)	
Access Expansion*year (Access expansion is a dummy variable; 1: experiencing access expansion; 0: not experiencing access expansion)		582032.6***		-123919.4
		(0.001)		(0.737)
Gender of head of household (1=male; 0=female)	312638.2***	703756.6***	217547**	511058.2
	(0.000)	(0.000)	(0.016)	(0.251)
Age of Head of Family	3539613	-3426.256	4357502	11393.83
	(0.233)	(0.563)	(0.215)	(0.393)
Number of family household members	293033***	186712.6***	342134.9***	113802.4
	(0.000)	(0.000)	(0.000)	(0.180)
Dummy Province (1=Javanese; 0=non-Javanese	-364761.7	-3857706*	-379466.9	-387370.9
	(0.181)	(0.064)	(0.173)	(0.399)
Dummy Areas (1=Urban; 0= Rural)	-38980.59	-344437.3	-6500,307	-521483.4
	(0.663)	(0.133)	(0.173)	(0.902)
Constanta	614448.8***	3130653**	528762.9**	726595.6
	(0.006)	(0.035)	(0.034)	(0.708)
Observations	14910	1840	11244	1686
R-squared	0.2176	0.0927	0.2245	0.0732
Number of Households (Treated)	1556	382	416	334
Number of Households (Control)	13354	1458	10808	1352

Note: ***p < 0.01, **p < 0.05, *p < 0.1.

Source: processed data, 2021

The regression results in table 4 are the results of the regression using the fixed effect model. The DID regression model with a fixed effect eliminates the treatment variable which is considered the same as the interaction variable between treatment and year because it is collinear. The use of a fixed effect model is intended to avoid the effect of estimation bias on the model built by the researcher. Regression using a fixed effect eliminates the endogeneity effect caused by individual characters that are not observed in the study. In the state-led approach (column 2 in table 4), the participant group (treatment) in the access opening variable is a farming household that has experienced a change in status from not having access to land to having access to land.

In table 4, the addition of control variables is used to test the consistency and significance of the test results for the access opening and access expansion variables. Based

on the addition of the control variable (column 2 in table 4), the test results still show significant results at a value of 0.020 at a significance level of 5%. Test results that are consistent and still significant show that there is a significant difference in the total expenditure of farming households with changes in access to land from conditions of not having access to having access to land. The impact of opening access can increase the welfare of farmer households by IDR 229,969.00. Furthermore, the robustness test is also carried out by conducting a t-test on the access opening variable. The results of the t-test (see table 5) show significant results in which there are differences between the treatment and control groups in terms of household expenditure levels for farming. The Pr (|T| > |t|) value result is less than 0.05.

Table 5. Test t-test on the variable Access Opening (State-led Approach)

Group	Observation	Means	std. Err	std. Dev	[95%conf. interval]	
0	6,677	2098693	32520.63	2657355	2034942	2162444
1	778	2473098	94908.7	2647255	2286791	2659406
combined	7,455	2137765	30791.28	2658591	2077406	2198125
Diff		-374405.7	100628.5		-571666	-177145.4
diff = mean (0) –mean (1)					t =	-3.7207
Ho: diff = 0					degrees of freedom =	7453
Ha: diff < 0			Ha: diff != 0		Ha: diff > 0	
Pr(T < t) = 0.0001			Pr(|T| > |t|) = 0.0002		Pr(T > t) = 0.9999	

Notes: 1 = treatment group; 0=control groups

Furthermore, the estimation test results on the access expansion variable also show significant results (see column 3 table 4). Expansion of access through land size expansion from small land size (< 0.5 ha) to size ≥ 0.5 ha has a significant impact on household expenditure levels. The estimation results show that there is a significant difference between the treatment and control groups in the total expenditure of farmer households with access expansion in farmer households where the p-value of the interacted variable is 0.001 (see Appendix 2). Testing the consistency of the estimation results is done by adding the control variable and the result is that the p-value remains significant at 0.001 at a significant level of 1%. The expansion of land access has an impact on increasing the welfare of farmer households by IDR 582,032.6, -. The results of this test also support the access opening variable based on variations in land size where significant results are shown in access opening with land size ≥ 0.5 ha.

Table 6. Test t-test on access expansion variables (State-led approach)

Group	Observation	Means	std. Err	std. Dev	[95%conf. interval]	
0	729	1451907	70773.83	1910893	1312961	1590852
1	191	2019826	200661.2	2773193	1624016	2415636
combined	920	1569812	70214.92	2129724	1432011	1707612
Diff		-567919.5	172192.9		-905856.9	-229982
diff = mean (0) –mean (1)					t =	-3.2982
Ho: diff = 0					degrees of freedom =	918
Ha: diff < 0			Ha: diff != 0		Ha: diff > 0	
Pr(T < t) = 0.0005			Pr(|T| > |t|) = 0.0010		Pr(T > t) = 0.9995	

Notes: 1 = treatment group; 0=control groups

Testing the robustness of the next access expansion variable uses the t-test (see table 6). The results of the t-test showed that there was a significant difference between the treatment and control groups as indicated by the Pr(|T|>|t|) value of 0.0010. This value is much smaller than 5% alpha. The robustness test shows that expanding access to land is significant for increasing the welfare of farming households.

Based on the state-led approach by assuming the goals of land reform refer to changes in the structure of land tenure and management, land redistribution as an aim of agrarian reform is urgent to implement related to the test results in this study. Doti's (2017) study regarding the effect of land size on variations in income for smallholder farmers shows that the size of land managed and cultivated has a positive relationship with farmer income. The findings of Doti (2017) are in line with the findings of this study which show that increasing the size of land for farming households can increase income. Other previous studies have also shown an increase in income along with land ownership. Studies conducted by Shankar (1990) show that income will increase as land tenure increases. Shankar's study (1990) also shows the importance of land tenure in increasing income.

Test the Market-led Approach Model on Access Opening and Access Expansion Variables

The market-led approach refers to the variables of opening and expanding access by prioritizing market mechanisms as a consequence of land policies that occur in the Indonesian context. The market mechanism prioritizes the security of private property rights through strengthening the legal status of land owned by individuals or farmer households as well as arranging leases in land use. The land redistribution mechanism through a state-led approach is considered to create insecurity on ownership rights. Based on these conditions, the researcher developed the same two variables with reference to

opening access through leases for landless farming households and expanding access through strengthening the legal status of land ownership.

The first test was carried out on the access opening variable which refers to a sample of farmer households that do not own land. The results of the estimation test for the two variables of access opening and access expansion with the market-led approach are in table 4 before. The results of the interaction between variables in the access opening variable refers to the market-led approach showing significant estimation results but has a negative impact on the total expenditure of farming households, both without control variables and with control variables (see column 4 in table 4).

Opening access for landless farmer households through rent has a negative impact on the welfare of farmer households. Based on the estimation results, the treatment and control groups have significant differences and have a negative impact on farm household expenditure levels. The p-value of the interacted variables is <0.05 (p-value=0.048 in Appendix 3). The estimation results which are significant but have a negative impact can be interpreted that opening access through land leases, especially for farmers who do not own land, has an impact on reducing the welfare of farmer households. The robustness test to see the consistency of the results is carried out by adding control variables (column 4 in table 4). After the addition of control variables, the estimation results show consistency where there is a significant difference between the treatment and control groups with the opening of access through land rent to the welfare of farmer households, but has a negative impact on the welfare of farmer households (p-value 0.005 <0.01 with a significance level of 1%). Opening access with a market-led approach has an impact on reducing household welfare by IDR 515,020.1, -. Furthermore, a t-test was conducted to see the consistency of the results on opening access through land leases. Based on the t-test conducted (see table 7), the test results show consistency. The value of Pr(|T|>|t|) is smaller than alpha 0.05, which is 0.0483. but has a negative impact on the welfare of the farmer household (p-value 0.005 <0.01 with a significance level of 1%). Opening access with a market-led approach has an impact on reducing household welfare by IDR 515,020.1, -. Furthermore, a t-test was conducted to see the consistency of the results on opening access through land leases. Based on the t-test conducted (see table 7), the test results show consistency. The value of Pr(|T|>|t|) is smaller than alpha 0.05, which is 0.0483. but has a negative impact on the welfare of the farmer household (p-value 0.005 <0.01 with a significance level of 1%). Opening access with a market-led approach has an impact on reducing household welfare by IDR 515,020.1, -. Furthermore, a t-test was conducted to see the consistency of the results on opening access through land leases. Based on the t-test conducted (see table 7), the test results show consistency. The value of Pr(|T|>|t|) is smaller than alpha 0.05, which is 0.0483. Based on the t-test conducted (see table 7), the test results show consistency. The value of Pr(|T|>|t|) is smaller than alpha 0.05, which is 0.0483. Based on the t-test

conducted (see table 7), the test results show consistency. The value of Pr(|T|>|t|) is smaller than alpha 0.05, which is 0.0483.

Table 7. Test t-test on access opening variables (Market-led Approach)

Group	Observation	Means	std. Err	std. Dev	[95%conf. interval]	
0	5,404	2151256	36647.66	2694039	2079412	2223100
1	208	1779213	124722.3	1798771	1533324	2025102
combined	5,612	2137467	35601.71	2667041	2067674	2207260
Diff		372042.6	188402.6		2700522	741384.7
diff = mean (0) –mean (1)					t =	1.9747
Ho: diff = 0					degrees of freedom =	5610
Ha: diff < 0			Ha: diff != 0		Ha: diff > 0	
Pr(T < t) = 0.9758			Pr(|T| > |t|) = 0.0483		Pr(T > t) = 0.0242	

Notes: 1 = treatment group; 0=control groups

The results of subsequent tests on the access expansion variable show insignificant estimation results for farmer household expenditure. Expansion of access through strengthening legal status with freehold title did not have a significant difference from the control group (appendix 4). Based on the regression results, the estimated interaction results between variables is worth 0.527. The estimation results based on the p-value have a value greater than 0.05 so that it is not significant in increasing the welfare of farming households that experience changes in the expansion of access from non-legal status to freehold title.

Table 8. Test t-test on Access Expansion Variables (Market-led Approach)

Group	Observation	Means	std. Err	std. Dev	[95%conf. interval]	
0	676	2037650	175783.2	4570362	1692502	2382797
1	167	1806605	178059.2	2301033	1455053	2158158
combined	843	1991879	145300.6	4218726	1706685	2277073
Diff		231044.3	364685		-484755.4	946843.9
diff = mean (0) –mean (1)					t =	0.6335
Ho: diff = 0					degrees of freedom =	841
Ha: diff < 0			Ha: diff != 0		Ha: diff > 0	
Pr(T < t) = 0.7367			Pr(|T| > |t|) = 0.5266		Pr(T > t) = 0.2633	

Notes: 1 = treatment group; 0=control groups

The robustness test is then carried out by adding control variables (column 5 table 4). There is no significant difference between the treatment and control groups with the expansion of access to land through legal status on farmer household expenses. The p-value

reaches 0.737 which is greater than the 10% significance level. The next test was carried out using a t-test (table 8). Based on the t-test conducted, the test results show consistency where the value of Pr (|T|>|t|) is 0.5266 greater than alpha 0.05. The consistency of the results shows that expanding access through strengthening the legal status of land is not significant to the expenditure level of farming households.

The Importance of Land Access for Strengthening Welfare

Opening access through land redistribution for landless and smallholder farmers is a fundamental and main thing that needs to be done in line with agrarian reform policies. Jonathan Fox (1993) further provides an explanation that renewal of distribution is interpreted as a qualitative change in which the state allocates public resources to broad groups of people. The implementation of land redistribution through agrarian reform policies should be carried out referring to the results of research that proves a positive impact on the welfare of farmer households regarding the opening and expansion of land access through land redistribution for landless farmers and farmers who own land with a small area (< 0.5 ha).

Based on the theory put forward by Quan (1983), the distribution of assets, especially in the context of developing countries, has an impact on increasing the level of household welfare. This context is relevant in Indonesia, in which the initial condition is that poor farming households will not be able to fulfill their asset purchases without intervention from the government. In contrast to the context of developed countries where basically individuals or households are assumed to have the ability to buy assets. Within the framework of agrarian reform, assets, in this case land ownership, have an impact on increasing the welfare of farming households in Indonesia.

The meaning of agrarian policy in a state-led approach that seeks to improve land tenure structures with the state leading land reform, is criticized by a market-led land policy approach that emphasizes leasing policies and strengthening property rights that are irrelevant in the short term in the Indonesian context. The research results show the importance of land redistribution with the assumption that land is a source of income for farming households in Indonesia. The market-led approach through leasing has a negative impact on the welfare level of farmer households, due to the cost constraints that arise from leasing, especially in the agricultural context in Indonesia. According to Griffin (2002), Agrarian reform can only be said to be agrarian reform if there is a redistribution of land ownership from large-scale private ownership to small farmers or landless farmers.

The findings of this study that it is important for farmers to have access to land in order to increase their welfare is strong and very relevant to the real goals of agrarian reform. This finding reinforces that land for farmers, especially in Indonesia, is still the main means of production to improve the welfare of farmer households. Opening and expanding

access to land through agrarian reform policies needs to be carried out in a structured manner with the aim of reducing inequality in land ownership. Opening access to land for the poor is not always done with a market approach. When market factors in rural areas are competitive and operate efficiently, the rural poor have limited access to land (Binswanger & Elgin, 1998). Rural areas are areas with high poverty rates. According to Statistics Indonesia data (2021), the poverty rate for the urban population in Indonesia reaches 7.89% or the equivalent of 12.18 million people, while the poverty rate for the rural population reaches 13.10% or the equivalent of 15.37 million people. The impact of a competitive market in rural areas will limit rural communities' access to resources. Opening access through a land lease scheme has an impact on reducing the welfare of farmer households.

This finding reinforces the need for land redistribution, especially for landless farmers to improve their level of welfare. If giving land management to the market mechanism, farmers who are in a vulnerable and poor condition will certainly not be able to compete to open up access to resources. This condition is in line with the findings of Carter & Mesbah (1993) and Binswanger & Elgin (1998) that a competitive market will have a negative impact on the poor who cannot buy land at competitive prices because it is related to the financial problems of the poor. The process of land redistribution is important to break the transmission of poverty between generations (Guerena & Wegerif, 2019). It is important to open and expand access to land, especially with redistribution schemes for farmer households that aim to improve the welfare of farmer households. In line with the findings of Quan (1983), the distribution of assets, especially land, has an impact on the welfare of farming households, especially in the context of developing countries. Opening and expanding access to land is assumed to be a process of distributing assets based on agrarian reform policies.

Implementation of redistribution by considering the state-led approach also has problems in Indonesia. This approach requires the political will of the ruling regime. In the Indonesian context, as long as the agrarian reform policy was present, the implementation of land reform was not fully carried out and separately in each ruling government it was always used as a political tool. Based on the offer made by Borras (2007), the successful implementation of land distribution policies cannot be relied upon solely on the state, but is highly dependent on mutually reinforcing political interactions between pro-reform groups at both the state and community levels (state-society interaction approach).

CONCLUSION

Based on the results of the estimation test, this study concluded that opening and expanding access through redistribution is significant and has an impact on increasing the welfare of farmer households. First, opening access to land through land redistribution for

landless farmers is relevant in the context of implementing agrarian reform policies. The amount of land that should be distributed mainly to households in agricultural areas is 0.5 ha larger. The category of opening access to land with the distribution of small-sized land is not significant for the welfare of farmer households. The test results showed that opening access to land for farmers who do not have significant land is carried out with a land area of ≥ 0.5 ha. This study did not set an ideal maximum limit for farmer households. Second, the test results of opening access were strengthened by the test results of expanding access to land through the distribution of land to farmers who have small-scale land size < 0.5 ha. From this, it can be concluded that the expansion of land for smallholders is important in the context of agrarian reform policies. Opening and expanding access to land through distribution schemes had an impact on increasing the welfare of farmer households.

Third, opening access to land through a leasing scheme for agricultural activities had an impact on reducing the welfare of farmer households. The test results showed a significant but negative impact on the welfare of farmer households. Land rent has the consequence of additional costs to be paid by farming households. In the Indonesian context, profit-sharing is a form of rent that is carried out by dividing the harvest between the land owner and the tenant. Fourth, expanding access to land through strengthening the Freehold Title from non-legal to Freehold Title does not significantly improve the welfare of farmer households. The agrarian reform policies that have been carried out so far have focused more on changing the legal status of land ownership through the process of land certification. Based on the results of this study, certification process was not a priority in the short term. The urgency that needs to be done was to carry out redistribution on target with reference to the goals of agrarian reform through the restructuring of land ownership and control for farming households and other marginal groups.

RECOMMENDATIONS

This research was basically conducted to find out what kind of access to land is appropriate in the Indonesian context. In Indonesia, policies regarding agrarian reform have always been an issue that is raised at every change of national leadership. Until now, the implementation of agrarian reform has only been limited to certifying land that already exists and is controlled by the community. Agrarian reform in the form of redistribution in order to improve the status of homeless farmers and smallholder farmers to become landowners with adequate land area has not been implemented massively. Based on the findings of the test results on the model, this study recommends: (1) Implementation of agrarian reform policies should be focused on landless farmers. Changing conditions from not owning land to owning land can help farm households increase household consumption. (2) In addition, the goals of agrarian reform policies should be focused on smallholders. Land size is still significant in the Indonesian context. (3) The focus of

agrarian reform policies on landless and smallholder farmers will at least reduce land rent behavior which has no significant impact on increasing farmer household consumption. (4) The agrarian reform policy through the certification process is not significant for farmer households. The need for land management with a focus on land redistribution should be an urgent agenda to be implemented. Land size is still significant in the Indonesian context. (3) The focus of agrarian reform policies on landless and smallholder farmers will at least reduce land rent behavior which has no significant impact on increasing farmer household consumption. (4) The agrarian reform policy through the certification process is not significant for farmer households. The need for land management with a focus on land redistribution should be an urgent agenda to be implemented. Land size is still significant in the Indonesian context. (3) The focus of agrarian reform policies on landless and smallholder farmers will at least reduce land rent behavior which has no significant impact on increasing farmer household consumption. (4) The agrarian reform policy through the certification process is not significant for farmer households.

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Appendix

Appendix 1

HH_expenditure test results and access opening variables in the state-led approach without control variables

Number of obs = 14,910
F(2.7453) = 2421.17
Prob > F = 0.0000
R-squared = 0.1638

HH_Expenditure	Coef	std. Err.	t	p>|t|	[95%conf.	intervals
year	2098693	32507.76	64.56	0.000	2034968	2162417
access opening	(drop)					
year*access opening	374405.7	100628.5	3.72	0.000	177145.4	571666
_cons	1900186	21753.99	87.35	0.000	1857542	1942830

Appendix 2

HH_expenditure Test Results and Access Expansion variables on the state-led approach without control variables

Number of obs = 1840
F(2.918) = 258.05
Prob > F = 0.0000
R-squared = 0.1593

HH_Expenditure	Coef	std. Err.	t	p>|t|	[95%conf.	intervals
year	1451907	78458.14	18.51	0.000	1297928	1605885
access expansions	(drop)					
year*access expansion	567919.5	172192.9	3.30	0.001	229982	905856.9
_cons	1562936	49384.75	31.65	0.000	1466015	1659856

Appendix 3

HH_expenditure test results and access opening variables on the market-led approach without control variables

Number of obs = 11,224
F(2.5610) = 1805.18
Prob > F = 0.0000
R-squared = 0.1643

HH_Expenditure	Coef	std. Err.	t	p>|t|	[95%conf.	intervals
year	2151256	36271.02	59.31	0.000	2080151	2222361
access opening	(dropped)					
year*access opening	-372042.6	188402.6	-1.97	0.048	-741384.7	-2700519
_cons	1935980	25167.71	76.92	0.000	1886641	1985318

Appendix 4

HH_expenditure Test Results and Access Expansion variables on the market-led approach without control variables

Number of obs = 1,686
F(2.841) = 94.10
Prob > F = 0.0000
R-squared = 0.0719

HH_Expenditure	Coef	std. Err.	t	p>|t|	[95%conf.	intervals
year	2037650	162316.4	12.55	0.000	1719057	2356242
access expansions	(dropped)					
year*access expansion	-231044.3	364685	-0.63	0.527	-946843.9	484755.4
_cons	1921086	102779.6	18.69	0.000	1719351	2122820