

# THE EFFECT OF FINANCIAL COMPENSATION FOR FARMLAND ACQUISITION ON HOUSEHOLD WELFARE: THE YOGYAKARTA INTERNATIONAL AIRPORT DEVELOPMENT CASE

Yudha Purbawa\*

Research Center for Behavioral and Circular Economics, National Research and Innovation Agency (BRIN)

---

## ABSTRACT

**Background Problems:** Land acquisition is a major issue in development policy, and compensation is often described as being inadequate; meanwhile, adequate compensation is the key element of fairness. **Main Objectives:** The objective of this study is to examine the impact on household welfare of financial compensation for farmland acquisition for new airport development. **Novelty:** This study utilizes land acquisition for the new Yogyakarta International Airport (YIA) because this area provides a reasonable case for evaluation. **Research Methods:** A quasi-experimental design is used to draw a causal relationship. A questionnaire survey has been conducted with 452 households, consisting of 207 households in the treatment group and 245 households in the control group. **Finding/Results:** On average, the financial compensation for the farmland acquired for the new airport development increased a household's total annual income by as much as 32.06%, especially the income that was generated from self-owned business and farmland activity, and it also increased their total annual expenditures by as much as 26.55%, especially those related to food, energy (LPG and fuel), vehicles, internet and phone, religion, social relationships, and insurance. **Conclusion:** This study highlights that financial compensation for farmland acquisition for tertiary industry, specifically a new airport development, has a positive impact on both the total annual income and the total annual expenditures.

---

## ARTICLE INFO

### *Article information:*

Received on 29 March 2021. Received in revised form 16 March 2022.

Received in revised form 1 April 2022. Accepted 4 April 2022

### *Keywords:*

financial compensation, farmland acquisition, household welfare

### *JEL Code:*

D60, D10, Q14, Q15

---

\* Corresponding Author at Research Center for Behavioral and Circular Economics, National Research and Innovation Agency (BRIN) Jl. Gatot Subroto No.10, RT.2/RW.2, Kuningan Barat, Kec. Mampang Prapatan, Kota Jakarta Selatan, Daerah Khusus Ibukota Jakarta 12710  
E-mail address: yudh016@brin.go.id

## INTRODUCTION

Large-scale land acquisition has drawn substantial attention in recent years, and it has become one of the most important issues in development policy. An important part of land acquisition is financial compensation which is defined as the amount of money paid to those whose land and livelihood are taken away due to the acquisition; this amount has been described as being insufficient. The issue of insufficient compensation might lead to massive political and social tension (Ghatak & Mookherjee, 2014). Meanwhile, adequate financial compensation is one of the key elements to ensuring that the affected landowners perceive land acquisition as being fairly compensated (Holtslag-Broekhof, van Marwijk, Beunen, & Wiskerke, 2016). Although the compensation mechanism has been improving, there are still many cases in which the losses are higher than the compensation given, which makes the affected landowners worse off and thus unintegrated from the development activities (Rao, 2019). Rousseau (2020), in Southwest China, found that the financial compensation for land acquisition for hydropower dam construction did not account for the nonland-aspect losses suffered by the affected villagers even though the calculation of the compensation followed the legal guidelines.

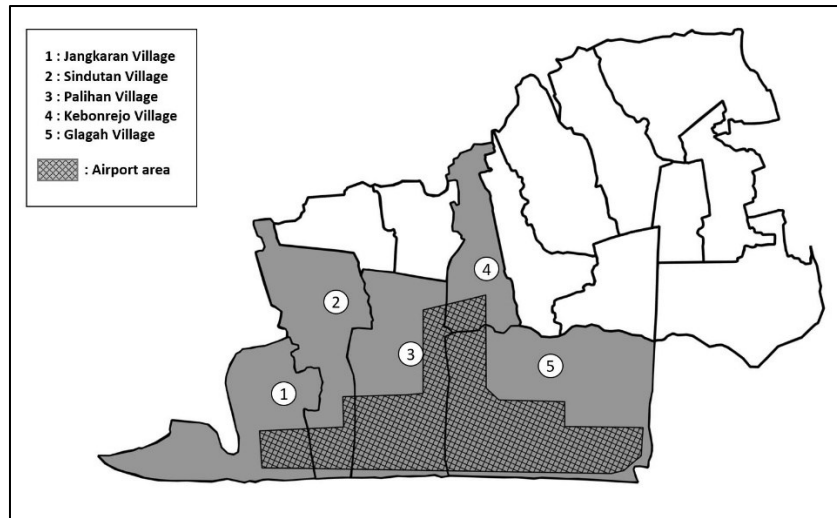
The phase of economic development is characterized by industrialization, natural resources extraction, urbanization, and infrastructure development. These characteristics require a relatively huge space to take place, and large-scale land acquisition is a way to make it happen (Ghatak & Ghosh, 2011). Irawan, Hartono, Irawan, & Yusuf (2012) analyze the impact of infrastructure on several economic parameters in Indonesia using the computable general equilibrium (CGE) model and found that the refinements to any type of infrastructure are expected to boost economic growth, increase

government earnings and factors' income, and alleviate the poverty.

The new Yogyakarta International Airport (YIA) development project was a part of the National Strategic Project, according to the Republic of Indonesia Presidential Regulation Number 58 of 2017 Concerning the Implementation of National Strategic Projects. In 2012, the Indonesian government planned to build 45 new airports, including YIA, within 10 years to support the rapid growth of the national aviation industry and to address the problem of airport overcapacity in Yogyakarta (Rachman, Satriagasa, & Riasasi, 2018). Yogyakarta had been facing a rapidly growing number of visitors because it was one of the nation's favorite tourist destinations; in fact, the region was ranked as the second-most popular destination out of all Indonesia's provinces (Kadarisman, 2019).

According to inventory data obtained from the Ministry of Agrarian Affairs and Spatial Planning, the construction of YIA involved five affected villages: Jangkaran, Sindutan, Palihan, Kebon Rejo, and Glagah (Figure 1). The total land area was 585.18 hectares, and it consisted of 3,497 land plots. Additionally, the amount of money provided by the government to acquire these lands was equal to IDR 4.15 trillion (USD 296.43 million); thus, the affected households would receive a certain amount of money as compensation for the government's acquisition of their land.

The land procurement for the YIA project was carried out in accordance with Law No.2/2012, which, it was claimed, had a fairer paradigm than the previous applicable law in terms of compensation. Law No.2/2012 uses the specific term "fair and worthy compensation", while the previous law only referred less specifically to "giving compensation". This research also attempts to evaluate the implementation of Law No.2/2012 by estimating

**Figure 1.** The Affected Villages in Temon District

the impact of financial compensation on household welfare such that the fairness and worthiness of the compensation can be implied. The evaluation of the implementation of this new law on land procurement is extremely important because the Indonesian government has plans to build other transportation infrastructure, including more new airports. Therefore, in the near future, the government will require much more land to provide space for its infrastructure development.

### LITERATURE REVIEW

Land acquisition for agricultural investment tends to have a positive effect on the affected households. Bottazzi, Crespo, Bangura, & Rist, (2018) found that the large-scale land acquisition for a sugar cane plantation by a biofuel firm in Sierra Leone decreased the food production and yields of the farmers; however, it increased the farmers' total revenue and their spending on food consumption. Another study simulated the scenario of large-scale land transactions for agricultural investment in Ethiopia; the findings showed that such transactions might cause the affected poor people to suffer because of the loss of forestland. However, losses are traded off

against the advantages obtained from investments such as business opportunities and job creation (Baumgartner, von Braun, Abebaw, & Müller, 2015). Stickler (2012) studied large-scale land acquisition for agricultural investment in Uganda and found that such acquisition should have brought about economic development, such as income generation and job opportunity creation, for the affected communities, specifically the landowners; however, in fact, the outcome of the land acquisition could not be determined due to the unavailability of data.

Besides land acquisition for agricultural investment, another purpose of acquisition is for industrialization, which is usually characterized by infrastructure development. China has experienced a huge amount of land acquisition for urbanization and industrialization purposes, which has had negative effects on the health of farmers who lost their land since the acquisition affected both their income and their psychological wellbeing (Wang, Li, Xiong, Li, & Wu, 2019). Meanwhile, Ty, Van Westen, & Zoomers (2013) found that affected households were worse off after land acquisition because of the unfair compensation and resettlement for construction of a hydropower dam in Vietnam. The

farmer households showed a decline in their food expenditures after the resettlement because the land had often been appraised as costing less than the market price. In West Bengal, India, land acquisition for a steel industry plant development reduced the monthly total revenue of the affected farmer households by 50%, and only a small number of the households were capable of sustaining their income by generating off-farm income (Shee & Maiti, 2019). Land acquisition for a oil and gas industry development in Uganda had also had a negative impact on most of the affected people because their livelihoods has been uprooted as they faced food security issues, cultural shocks, and reductions in social services (Ogwang & Vanclay, 2019).

There has been changes in the livelihood patterns of the affected households as a result of the YIA development related to compensation. Some households have used their compensation for livelihood improvement and sustainability, while some households have failed to use the compensation to improve their livelihoods (Rijanta, Baiquni, & Rachmawati, 2019). Another study was conducted to compare the compensation value to the property value for aquaculture. The compensation value was almost nine times higher than the aquaculture property value (Rachman et al., 2018). Edita (2019) stated that the YIA project caused the affected people to suffer due to resettlement, displacement, loss of farming jobs, and poor compensation. Furthermore, the expectation that the YIA project would reduce the economic gap in Yogyakarta seems to have been impossible to achieve; even worse, the economic gaps now tend to be more severe because those who have not been able to adjust to the urbanization created by the airport's existence are still marginalized, while those who obtain advantages from the existence of YIA have tended to improve their livelihoods.

According to several previous studies on land acquisition, especially in developing countries, there is a tendency for land acquisition for industrial infrastructure to bring about negative impacts, whereas land acquisition for agriculture investment usually brings about positive impacts. By using another type of industry for a case study on the purpose of land acquisition, namely, the transportation industry—which is categorized as being in the tertiary sector—this study aims to examine whether the financial compensation for land acquisition for industrial infrastructure always has negative impacts on the welfare of households, especially on their income and expenditures.

Since it is unclear whether transportation facilities have a positive impact on welfare with regard to the compensation given, and the studies that have focused on this area are still very limited, the objective of this study is to examine the impact of financial compensation for farmland acquisition for a new airport development on the welfare of households in terms of income and expenditure.

To attain the research objective, this study utilizes the land acquisition for a new airport development in Indonesia, specifically Yogyakarta International Airport (YIA). This area provides a promising case for evaluation because the transportation industry has different characteristics from the other industries examined in previous studies. The transportation industry is a tertiary industry, while the previously studied cases of land acquisition around the world have been mostly for primary and secondary industries. Moreover, agricultural investment obviously has a direct association with farmers' livelihoods, whereas the existence of the new transportation infrastructure seemingly has no direct connection to the welfare of farmers. To date, the previous studies that have been conducted regarding the YIA development are

mostly qualitative, and it is still unclear whether such compensation has a negative or positive impact on the livelihoods of households. Once again, it is important to reconfirm the effect of financial compensation for farmland acquisition on household welfare.

## METHOD, DATA, AND ANALYSIS

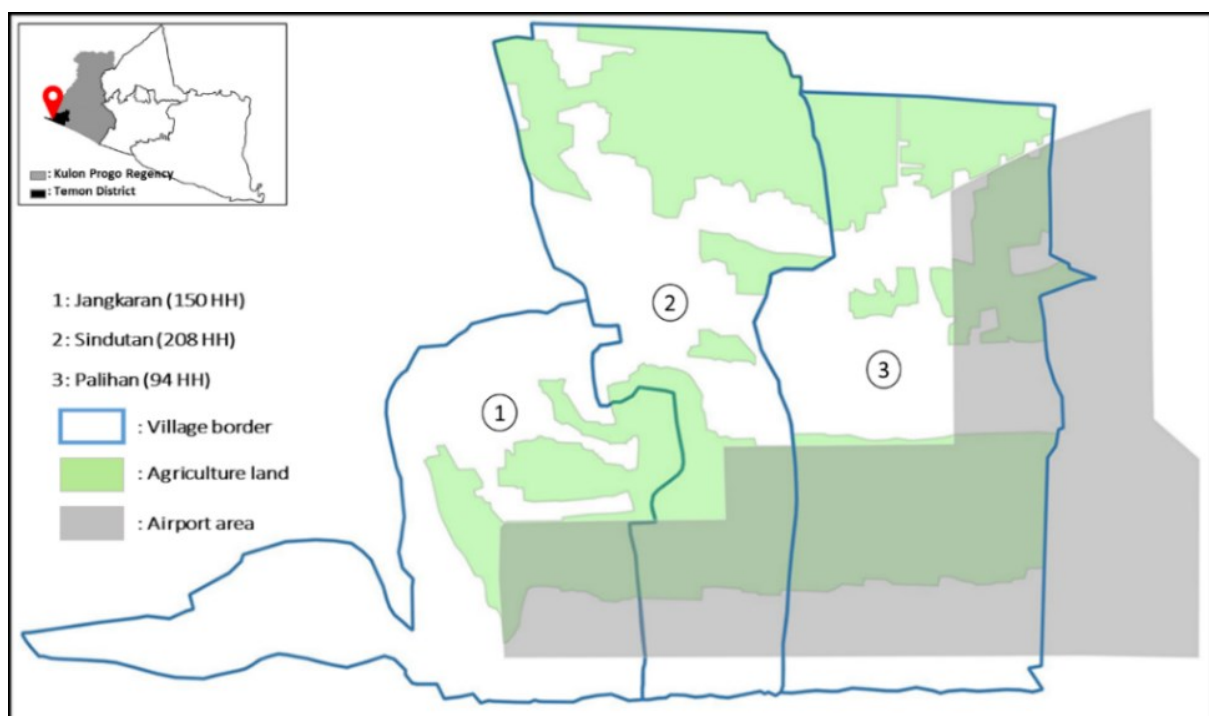
To draw causal inferences from the financial compensation of land acquisition on households' welfare, this study uses a quasi-experiment. In a quasi-experiment, the treatment groups can be assigned (other than by the researcher) by self-selection or based on a policymaker's judgement. In this study, the government determined the airport location, and the households who had farmland inside the area of the planned airport were the treatment group, and those who had farmland outside the airport planned area were the control group. The treatment assignment occurred in September, October, and November 2016.

## 1. Data

A household questionnaire survey was conducted to collect primary data. This study took three villages (Figure 2) out of the five affected villages as the sample: (1) Jangkaran, (2) Sindutan, and (3) Palihan. The survey was conducted on 452 households, with 207 households comprising the treatment group and 245 households comprising the control group.

The survey was conducted from 7 February 2020 until 9 March 2020. The location of the study was in Temon Sub-district, Kulonprogo District, Special Province of Yogyakarta. The full sample of observations was taken only from (1) Jangkaran and (2) Sindutan; (3) Palihan could not be fully observed because of time constraints for the survey. However, the maximum number of observations that could be obtained during the survey time frame in this study were acquired.

**Figure 2.** The Village Samples and Number of Observation



Before conducting the survey, the treatment group was identified by using textual data from the 2018 New YIA Land Procurement Implementation Result from the Ministry of Agrarian Affairs and Spatial Planning, while the control group was identified using data and information from the village government offices. The treatment group was defined as the households who had farmland within the area for the planned airport, whereas the control group was defined as the households who had farmland outside that area. The survey also involved almost all the heads of *Dukuh* (a village consists of several *Dukuh*) to show the exact respondents' locations and to further confirm whether a household had the criteria to be included in the treatment or control groups. Treatment assignment was defined as those who obtained financial compensation for their farmland taken by the government, and the outcome variables were the annual income and expenditures.

## **2. Analytical Method**

This is a quasi-experimental study; it is a research method that can be used to test the causal consequences of a long-term treatment. All experiments aim to determine whether a treatment has made a difference to a particular outcome instead of explaining why the difference occurred. A quasi-experiment is different from a controlled or randomized experiment. In a quasi-experiment, the treatment groups can be assigned by self-selection or on a policymaker's judgment other than the researcher. Nevertheless, the nature of all experiments, including quasi-experiments, suggests a more causal description than a causal explanation (Shadish, Cook, & Campbell, 2002). This study has only a one-time point of observation, which is the observation of the outcome variables for after the treatment assignment only.

To strengthen the causal inference, an assumption that must be held in this study is that all the dimensions of the household characteristics and farmland plots within these three adjacent villages are not systematically different. To prove this assumption, the variables for the pretreatment assignment between the treatment and control groups are supposed to be in balance. The impact of financial compensation for farmland acquisition is presented as an average treatment effect by analyzing the differences in the outcome variables (household total annual income and expenditure) between the treatment and control groups. A standard t-test of the mean is used to capture the difference in the outcome variables as the main research findings.

## **RESULT AND DISCUSSION**

The pretreatment variable balance was checked by analyzing the descriptive statistics between these groups in 2016 as shown in Table 1 below.

There was a significant difference in the farmland plots between the treatment and control groups. On average, the treatment group had approximately 0.6 more land plots than the control groups. This possibly occurred because the partially treated households considered counting their fragmented land plots as different plots when they were asked about how many land plots they had before the land acquisition; however, from the perspective of farmland size, there was no significant difference between these groups before the treatment occurred. There are significant differences in only two out of the 21 characteristics: the vocational school level education of the household head and the number of land plots they had. Generally, the balance check table shows that on average, the treatment group is, broadly speaking, not very different from the control group.

**Table 1.** Descriptive Statistics and Balance Check for Pre-Treatment Variables

Variables	Treatment (N=207)		Control (N=245)		Difference (N=452)	
	Mean	sd	Mean	sd		
Head's gender (female=1)	0.072	0.260	0.065	0.248	0.007	(0.024)
Head's age (2019)	57.382	11.639	56.024	10.112	1.357	(1.023)
Head's level of education:						
Illiterate = 1	0.039	0.193	0.020	0.142	0.018	(0.016)
Elementary school = 1	0.343	0.476	0.359	0.481	-0.016	(0.045)
Junior high school = 1	0.198	0.400	0.200	0.401	-0.002	(0.038)
Senior high school = 1	0.357	0.480	0.392	0.489	-0.034	(0.046)
Vocational school = 1	0.029	0.168	0.008	0.090	0.021*	(0.012)
Undergraduate = 1	0.034	0.181	0.016	0.127	0.017	(0.015)
Master = 1	0.000	0.000	0.004	0.064	-0.004	(0.004)
Head Indigenous villagers (settler=1)	0.348	0.477	0.371	0.484	-0.024	(0.454)
Head's main job (2016)						
Farmer = 1	0.754	0.432	0.755	0.431	-0.001	(0.041)
Employee = 1	0.174	0.380	0.139	0.346	0.035	(0.034)
Entrepreneur = 1	0.048	0.215	0.061	0.240	-0.013	(0.022)
Retirement = 1	0.024	0.154	0.041	0.198	-0.017	(0.017)
Unemployment = 1	0.000	0.000	0.004	0.064	-0.004	(0.004)
Household size (2016)	3.575	1.259	3.608	1.328	-0.033	(0.122)
Number of females	1.797	0.896	1.780	0.928	0.018	(0.086)
Number of males	1.778	0.847	1.829	0.898	-0.051	(0.083)
Working member 2016 (person)	1.874	0.832	1.841	0.903	0.034	(0.082)
Farmland size 2016 (M <sup>2</sup> )	3017.694	3491.899	2625.478	3015.601	392.217	(306.097)
Farmland plot 2016	2.000	1.461	1.416	0.712	0.584***	(0.106)

Notes: significance level: \*0.1 \*\*0.05 \*\*\*0.01

Unfortunately, the study was unable to control the location of farmland ownership. The treated households were more likely to have farmland parcels in the southern part of the rural area, while the control group mostly owned the farmland in the northern part of the area. The farmlands in the southern part were mostly dryland farms (used to cultivate watermelon and chili), while the farmlands in the northern part were mostly wetland farms (used to cultivate rice). This is the typical limitation of a quasi-experimental design where the treatment assignment is determined beyond the researcher's judgment.

### 1. Effect on Household Income

Based on Table 2, this study finds the average effects of financial compensation for farmland

acquisition for the new airport development are as follows:

- 1) An increase in the household total annual income in 2019 by around IDR 16.3 million (32.06%);
- 2) A positive impact on farmland income amounting to around IDR 6.2 million (58.13%) annually;
- 3) A positive impact on the income from self-owned businesses which increased by IDR 12.2 million (88.93%) annually. The income that is generated from the self-owned businesses shows the highest positive impact of financial compensation compared to other income sources;
- 4) A negative impact on the income from transfers amounting to a decrease of almost IDR 2 million (62.93%) annually.

**Table 2.** The Average Treatment Effect on The Annual Income (IDR 1,000)

Variables	Treatment (N=207)		Control (N=245)		Difference (N=452)	
	Mean	sd	Mean	sd		
Total income 2019	67,508.25	73,104.41	51,119.49	50,222.32	16,388.76***	(6,009.38)
Farmland income	16,971.59	36,763.02	10,732.93	16,536.93	6,239.53**	(2,765.01)
Animal husbandry income	2,031.95	7,161.61	1,509.43	5,170.20	522.52	(597.52)
Off-farm income:						
- Labor wage	18,363.02	24,977.49	19,869.10	32,047.86	-1,506.98	(2,740.21)
- Self-owned business	25,994.94	57,508.53	13,759.12	32,198.18	12,235.82***	(4,301.56)
- Transfers	1,136.72	3,495.84	3,066.12	9,330.54	-1,929.41***	(685.99)
- Subsidies/ support from government/ private	894.58	2,940.52	1,025.08	1,890.51	-130.5	(894.58)
- Pension	1,825.60	8,659.60	1,157.69	6,910.72	667.91	(1,825.60)
- Support from relatives	289.86	4,170.29	0	0	289.86	(289.86)

Notes: significance level: \*0.1 \*\*0.05 \*\*\*0.01

Finding 1 is in contrast to the previous study by Shee & Maiti (2019), which found that land acquisition for industrialization reduced the monthly total income of the affected farmer households by 50%. However, the finding supports the previous study by Bottazzi et al., (2018), which found that land acquisition for agricultural investment increased the income of the affected households. Finding 2 might have been caused by the treatment group having additional financial sources that came from the compensation that was used to improve the inputs in their farmland activities or they might have bought more productive farmlands to substitute those lost. This finding provides new evidence that financial compensation for farmland acquisition can have a positive impact on farmland income. Finding 3 shows that the treated households responded by engaging in local business opportunities brought about by airport development. This finding supports the previous study by Baumgartner et al., (2015), which stated that large-scale land transactions can bring about advantages such as business opportunities and job creation. Finding 4 shows that the treated households seem to be less likely to engage in urban activities in allocating their resources. Instead, they are more likely to prefer

allocating their resources to local self-owned businesses than allocating them to urban activities. This is supported by the previous finding 3 on income from self-owned businesses, which experienced the largest positive impact.

## 2. Effect on Household Expenditure

Based on Table 3, this study finds, on average, the effects of financial compensation for farmland acquisition for the new airport development are as follows:

- 1) An increase in the households' total annual expenditure in 2019 by IDR 7.6 million (26.55%). However, it had no significant effect on education and health expenditure;
- 2) A positive effect on food expenditure amounting to around IDR 1.6 million (14.95%). This was the biggest positive impact compared to other expenditure items;
- 3) A positive impact on LPG expenditure amounting to IDR 131,000;
- 4) An increase in all annual expenses related to vehicles (fuel, maintenance, and tax) by around IDR 2.3 million;
- 5) A positive effect on electricity consumption and annual spending on internet and phones which has amounted to around IDR 778,000;



**Table 3.** The Average Treatment Effect on The Annual Expenditure (IDR 1,000)

Variables	Treatment (N=207)		Control (N=245)		Difference (N=452)	
	Mean	sd	Mean	sd		
Total expenditures 2019	36,286.62	24,470.33	28,674.81	17,120.52	7,611.81***	(2,022.16)
Education	4,899.55	8,141.49	3,895.71	6,351.76	1,003.83	(696.34)
Health	518.45	2,998.63	167.07	858.37	351.38	(215.51)
Other routine expenditures:						
- Foods	12,518.82	7,506.91	10,890.91	6,381.91	1,627.91**	(653.26)
- Clothes	1,021.08	1,984.28	883.53	1,007.55	137.55	(144.81)
- Electricity	1,478.94	1,365.63	1,036.45	876.85	442.49***	(106.42)
- Internet and phone	1,424.38	1,260.53	1,087.98	1,221.07	336.39***	(117)
- Vehicle tax	1,172.05	2,023.10	627.68	1,040.00	544.37***	(148.12)
- Vehicle maintenance	905.85	2,649.32	443.05	566.29	462.80***	(173.74)
- Fuel	3,703.45	4,786.13	2,387.11	2,387.07	1,316.35***	(347.85)
- Land and housing tax	186.17	186.07	170.83	262.61	15.34	(21.78)
- Water	118.96	304.27	174.7	219.77	-55.74**	(24.72)
- LPG	862.98	700.79	731.2	448.29	131.78**	(54.54)
- Recreation	469.3	1,357.13	434.89	1,075.77	34.41	(114.49)
- Social relationship	2,507.05	1,816.72	2,186.74	1,570.68	320.32**	(159.34)
- Religion	1,322.78	4,324.41	589.39	1,223.13	733.39**	(289.01)
- Cigarettes	2,311.10	3,543.49	2,341.53	3,572.25	-29.53	(336)
- Insurance	165.76	864.9	63.38	333.3	102.38*	(59.91)
- Others	549.52	1,010.60	487.58	691.24	61.94	(80.47)

Notes: significance level: \*0.1 \*\*0.05 \*\*\*0.01

- 6) An increase in annual spending on religious matters and social relationships by around IDR 1 million and on insurance by around IDR 102,000;
- 7) A reduction in spending on the water by around IDR 55,000 which is the only annual expenditure that shows a negative impact.

Finding 1 provides new evidence that financial compensation for farmland acquisition has a positive impact on households' total annual expenditures. However, in terms of health expenditure, it does not support the previous study by Wang et al., (2019), which found that land acquisition harms the health status of the affected household in China. Finding 2 corresponds to the study by Bottazzi et al., (2018) who found that land acquisition for agricultural investment increases food consumption significantly. Meanwhile, this finding contrasts with a study by Ogwang & Vanclay (2019) who found

that land acquisition harms food security. Finding 2 also supports the study by Susilo (2010), who found that income is one of the main factors that affect the food security in rural area of Yogyakarta Province. He concluded that an increase in income induces the probability of improving food security by 1.09 times.

Finding 3 supports finding 2, these two findings show that a positive impact on food expenditure is indicated by the expenditure on LPG because more LPG is needed to process more food. Finding 4 indicates that the treatment group has more resources to increase their mobility than the control group because they have more vehicles and engage in higher spending on them. This finding supports the previous study on the YIA by Rijanta et al., (2019) which stated that there was a tendency for population mobility to increase in the affected villages since many private vehicles

were being purchased using the compensation money. Furthermore, they stated that this mobility increase emerged as a response to the change in rural dynamics that is brought by the new airport development.

Finding 5 implies that the treatment group had more money from the increase in income or from the compensation and this was spent on purchasing new electronic gadgets and appliances for daily or business purposes. It seems that the affected households have tended to improve their lifestyle in terms of communication and technology. Finding 6 shows that the affected households were more generous than the control group because the social relationship and religious spending were mostly in the form of charity. Additionally, the treatment group is more aware of insurance, which is possibly caused by them having their income increased and having more resources to be allocated to insurance and to donations to charity. Finding 7 implies that the treated households had to pay less to obtain clean water compared to the control group. The treatment group could be less dependent on the water company because they had more money to install artesian wells or other clean water sources, while the control group still depended on the water company for clean water; thus, they had to pay monthly bills.

A possible reason behind these findings is that the households in the treatment group seem to be trying to meet the rising demand created by the airport's existence as a way to sustain their livelihoods. The existence of a new airport has a positive impact on economic development through the passenger volume and the number of flights (Bilotkach, 2015). Rijanta et al., (2019) classified seven types of livelihood change seen in the affected households as they adjusted to the new circumstances. The compensation money was used for:

- 1) Broadening their economic base, such as purchasing substitute land, investing in new buildings, and buying new vehicles;
- 2) Enhancing asset utilization, such as renovating their current buildings for commercial purposes or buying agricultural machinery;
- 3) Diversifying asset utilization, such as creating new businesses or getting new jobs;
- 4) Depositing the compensation money in the bank;
- 5) Investing in new ventures, such as building boarding rooms or rented houses;
- 6) Speculating, such as buying new land parcels in the city for future profit;
- 7) Increasing the spatial mobility; this is because some in the treatment group had to look after their businesses or work outside the village.

These types of livelihood change seen in the households in the treatment group indicate that they utilized the financial compensation wisely because most of the actions they took were for sustaining their livelihoods.

There was a significant increase in the land price around the airport after the issuance of the airport location permit (Guild, 2019). It seems that the existence of the new airport has caused the land value around the location to rise. This advantage affects the entire residents living near the airport as their property values soar. A study by Andini & Falianty (2022) found that the effect of property prices is positive and significant on the stability of the financial system. So, the result of this study is also in response to the previous study by Purbawa (2021) who argues that the YIA development brought a positive impact in economic growth and urbanization.

## **CONCLUSION AND SUGGESTION**

On average, the financial compensation for farmland acquisition for the new airport

development has had a positive impact on the households' total annual income amounting to 32.06%, especially for income that is generated from self-owned business and farmland activity. Meanwhile, it has had a negative impact on the income that is generated from the transfers. On the expenditure side, it has had a positive significant impact on the households' total annual expenditures amounting to 26.55%, especially expenditures on food, energy (electricity, LPG, and fuel), vehicles, internet and phone, religion, social relationships, and insurance. Meanwhile, it has had a negative and significant impact on expenditure on water. This study highlights the fact that financial compensation for farmland acquisition for tertiary industry and the new airport development has had a positive impact on both the total annual income and the total annual expenditures. It also demonstrates that an increase in total income is associated with an increase in total expenditure. According to the findings in this study, the tertiary industry seems to experience an agglomeration effect, and the financial compensation examined in this study implies a fair compensation that conforms to what has been specified in the new policy.

One obvious limitation of a quasi-experimental study is its randomization which is often considered to be a non-randomized design (Harris et al., 2006). Although, in this study, the balance check showed the households in the treatment group are not so different from the households in the control group, the bias remains, especially from the perspective of the policymaker or government. The treatment group is selected based on the policymaker's judgment, and this study presents the agriculture land parcels that were owned by the treatment household as being concentrated in the southern part of the affected rural area. Furthermore, this study is unable to present the outcome variables in two different time points: pre-treatment and

post-treatment; instead, it has only a post-treatment measurement. The pre-treatment measurement could not be presented because it might be difficult for respondents to recall their income and expenditure in the past five years, therefore it was not possible to apply the difference-in-difference technique in this study. Since the balance check shows there is no difference between the treatment and control group, it is unnecessary for the propensity score matching technique to be applied. Many unobservable variables may affect the differences between the treatment and control group and, unfortunately, these cannot all be observed. However, this is the most optimal study that can be conducted in view of all the constraints.

Considering the study limitations mentioned above, especially the inability to apply the difference-in-difference technique, it is essential that future studies conduct a preliminary study first to establish a baseline before the main survey is carried out. After conducting the preliminary study, then the pre-treatment and after-treatment observations of the two groups (control and treatment) can be made. This sort of study requires multi-year observations to achieve more robust result. It is also suggested that future studies investigate further how the revenue from the land sale is used and it changes the household living arrangements in terms of supporting the result, because the changes to the welfare of the treated households can be explained by looking at how they utilized the compensation money and coped with the land acquisition.

## REFERENCES

- Andini, S. A., & Falianty, T. A. (2022). Property Price, Capital Inflows, and Financial System Stability in Asean-5 Economies: A Simultaneous Analysis. *Journal of Indonesian Economy and Business*, 37(1), 15–38. <https://doi.org/10.22146/jieb.v37i1.1406>

- Baumgartner, P., von Braun, J., Abebaw, D., & Müller, M. (2015). Impacts of Large-scale Land Investments on Income, Prices, and Employment: Empirical Analyses in Ethiopia. *World Development*, 72, 175–190. <https://doi.org/10.1016/j.worlddev.2015.02.017>
- Bilotkach, V. (2015). Are airports engines of economic development? A dynamic panel data approach. *Urban Studies*, 52(9), 1577–1593. <https://doi.org/10.1177/0042098015576869>
- Bottazzi, P., Crespo, D., Bangura, L. O., & Rist, S. (2018). Evaluating the livelihood impacts of a large-scale agricultural investment: Lessons from the case of a biofuel production company in northern Sierra Leone. *Land Use Policy*, 73(December 2017), 128–137. <https://doi.org/10.1016/j.landusepol.2017.12.016>
- Edita, E. P. (2019). *Aerotropolis: At What Cost, to Whom?* Lund University.
- Ghatak, M., & Ghosh, P. (2011). The land acquisition bill: A critique and a proposal. *Economic and Political Weekly*, 46(41), 65–72.
- Ghatak, M., & Mookherjee, D. (2014). Land acquisition for industrialization and compensation of displaced farmers. *Journal of Development Economics*, 110, 303–312. <https://doi.org/10.1016/j.jdeveco.2013.01.001>
- Guild, J. (2019). Land Acquisition in Indonesia and Law No. 2 of 2012. In *ADB Working Paper Series* (No. 1036). Tokyo.
- Harris et al. (2006). The Use and Interpretation of QUasi-Experimental Studies in Medical Informatics (A Position Paper). *Journal of the American Medical Informatics Association*, 13(1), 16–23. <https://doi.org/10.1197/jamia.M1749>
- Holtslag-Broekhof, S. M., van Marwijk, R., Beunen, R., & Wiskerke, J. S. C. (2016). Perceived (In)justice of Public Land Acquisition. *Journal of Agricultural and Environmental Ethics*, 29(2), 167–184. <https://doi.org/10.1007/s10806-015-9594-3>
- Irawan, T., Hartono, D., Irawan, F., & Yusuf, A. A. (2012). Infrastructure Improvement and Its Impacts on the Indonesian Economic Performance. *Journal of Indonesian Economy and Business*, 27(3), 293–302. <https://doi.org/10.22146/jieb.6235>
- Kadarisman, M. (2019). Policy Implementations of New Yogyakarta International Airport Development. *DLSU Business and Economics Review*, 28(3), 113–127. <https://doi.org/10.5281/ZENODO.3270542>
- Ogwang, T., & Vanclay, F. (2019). Social impacts of land acquisition for oil and gas development in Uganda. *Land*, 8(7), 6–8. <https://doi.org/10.3390/land8070109>
- Purbawa, Y. (2021). Large-Scale Land Acquisition and Economic Development : a Position Paper of the Yogyakarta International Airport (YIA) Development. *Jurnal Pertahanan*, 11(2), 146–152. <https://doi.org/10.53686/jp.v11i2.78>
- Rachman, F., Satriagasa, M. C., & Riasasi, W. (2018). Economic impact studies on development project of New Yogyakarta International Airport to aquaculture in Kulonprogo Coastal. *IOP Conference Series: Earth and Environmental Science*, 139(1). <https://doi.org/10.1088/1755-1315/139/1/012037>
- Rao, J. (2019). A ‘capability approach’ to understanding losses arising out of the compulsory acquisition of land in India. *Land Use Policy*, 82(December), 70–84. <https://doi.org/10.1016/j.landusepol.2018.11.042>
- Rijanta, R., Baiquni, M., & Rachmawati, R. (2019). Patterns of Livelihood Changes of the Displaced Rural Households in the Vicinity of New Yogyakarta International Airport (NYIA). *Advances in Social Science, Education and Humanities Research (ASSEHR)*, 313(ICoRSIA 2018), 259–263. <https://doi.org/10.2991/icorsia-18.2019.63>
- Rousseau, J. F. (2020). When land, water and green-grabbing cumulate: Hydropower expansion, livelihood resource reallocation

- and legitimisation in southwest China. *Asia Pacific Viewpoint*, 61(1), 134–146.  
<https://doi.org/10.1111/apv.12247>
- Shadish, W. R., Cook, T. D., & Campbell, D. T. (2002). *Experimental and Quasi-Experimental Designs for Generalized Causal Inference*. Boston, USA: Houghton Mifflin Company.
- Shee, S. P., & Maiti, R. (2019). Land acquisition, livelihood and income: the case of JSW Bengal Steel Plant at Salboni Block, Paschim Medinipur, West Bengal, India. *Environment, Development and Sustainability*, 21(6), 2997–3014.  
<https://doi.org/10.1007/s10668-018-0176-1>
- Stickler, B. M. M. (2012). Governance of Large-Scale Land Acquisitions in Uganda: The role of the Global Land Grabbing II. *International Conference on Global Land Grabbing II*, 10. Retrieved from: <http://www.cornell-landproject.org/download/landgrab2012papers/stickler.pdf>
- Susilo, Y. S. (2010). Factors Affecting Food Security in Rural Areas in Yogyakarta Province. *Journal of Indonesian Economy and Business*, 25(2), 239–250.  
<https://doi.org/10.22146/jieb.6298>
- Ty, P. H., Van Westen, A. C. M., & Zoomers, A. (2013). Compensation and resettlement policies after compulsory land acquisition for hydropower development in Vietnam: Policy and practice. *Land*, 2(4), 678–704.  
<https://doi.org/10.3390/land2040678>
- Wang, Y., Li, W., Xiong, J., Li, Y., & Wu, H. (2019). Effect of land expropriation on land-lost farmers' health: Empirical evidence from rural China. *International Journal of Environmental Research and Public Health*, 16(16).  
<https://doi.org/10.3390/ijerph16162934>