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SUCCESS OF THE OIL PALM PIR PROJECT FROM THE PERSPECTIVE OF HOUSEHOLD INVESTMENT IN SUNGAI BAHAR

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Abstract

This research is based on the theory of farm household economics developed by Nakajima, modified by incorporating Miller's concept of household investment. The aim of this study is to determine whether the Nucleus Estate Smallholder (PIR) Project has succeeded in developing farmers' ability to invest at the household level. The research was conducted in the Sungai Bahar area, involving 100 independent smallholder respondents from the former oil palm PIR project. The collected data were processed descriptively. The findings show that during the middle period up to about two-thirds of the planting cycle, oil palm cultivation with a land area of 2 hectares still generates a surplus between revenue and costs, enabling farmers to make investments. However, after passing that period—entering the final stage of the planting cycle—there is an indication that 2-hectare oil palm farmers are no longer able to set aside income for replanting or other investments. Independent oil palm smallholders from the ex-PIR project who have successfully made investments are proven to be more resilient in maintaining oil palm plantations that have not yet been replanted, due to the availability of alternative sources of income. The findings of this study suggest that in the last phase of the planting cycle, when production decreases and maintenance expenses remain high, smallholder farmers do not have enough cash to replant. This highlights the need for state support (subsidies, soft loans, and revitalization initiatives) to keep smallholder farmers from becoming locked in a cycle of old, unproductive plantations. Furthermore, farmer empowerment programs should include household economic diversification, not simply palm oil output.

Keywords: Areal (2ha), Ex-PIR, Oil Palm, Policy, Smallholder.

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INTRODUCTION

Indonesia's success in developing its oil palm plantations has been quite impressive. Since 2007, Indonesia has managed to overtake Malaysia as the world's leading producer (Baudoin et al.). By 2018, Indonesia recorded CPO production of 41.67 million tons with total exports of 34 million tons, far surpassing Malaysia, which in that year produced only 1.67 million tons. This achievement was largely due to extensive large-scale expansion in oil palm development, in which various stakeholders—state-owned enterprises (SOEs), private corporations, and smallholder farmers—participated. As a result, the growth rate of oil palm plantation areas in Indonesia has far exceeded that of other plantation crops such as rubber. The oil palm plantation area now exceeds 6 million hectares—ten times larger than the area planted with rubber, which for a long time had been the country's main plantation crop.

The acceleration of oil palm expansion was also driven by the growth of smallholder plantations through a development initiative known as the **Nucleus Estate and Smallholders Project** (*Proyek Perusahaan Inti Rakyat* / PIR). This PIR program was first launched in 1977. In Jambi Province, the oil palm PIR project was implemented in 1983/1984 in the Sungai Bahar area, Muaro Jambi Regency. Given that the productive lifespan of oil palm trees is around 25 years (Pahan, 2012), by 2010 the smallholder oil palm plantations from the PIR project had already exceeded their economic age. Without replanting, they would no longer be economically viable.

Replanting requires **reinvestment**, as it involves substantial costs. The ability of farming households to reinvest depends heavily on how well they managed their income from oil palm plantations during the previous productive period. In other words, the household investment capacity of these farmers can serve as an indicator of the PIR project's success, since one of PIR's objectives is to increase farmers' income and welfare.

When facing the replanting phase, farmers gradually but inevitably lose their income from their 2-hectare PIR plots. This period is called the **"transition period"**—a critical phase between the end of the productive cycle of ex-PIR plantations (over 25 years old, with declining yields) and the time when replanted trees reach productivity. During this transition period, farmers face an **economic double burden**: covering household expenses while also financing the replanting costs. Therefore, farmers need to make investments not only for replanting their ex-PIR plantations but also in other productive activities that can help them escape the "transition trap" and sustain their livelihoods until the replanted palms begin producing.

The types of investments made by oil palm farmers are reflected in their livelihood diversification activities. Livelihood diversification is a common rural economic strategy aimed at achieving better living conditions (Culas & Mahendrarajah, 2005; Ellis, 2008; Amurtiya et al., 2016). For oil palm farmers with limited land, the absence of diversification can lead to a **deadlock** or being stuck in the transition period. When this happens, it is not surprising that some farmers opt for the "exit" strategy—selling their ex-PIR plantation assets to capital owners or successful local farmers. In this context, such farmers can be considered unsuccessful in sustaining the oil palm enterprise initiated under the PIR program. Conversely, successful farmers are those who took advantage of investment opportunities during the productive phase of their ex-PIR plantations and have managed to remain in the business to this day.

Diversifying an oil palm-based enterprise requires investment, which can only be done if the farmer household has funds or capital and is willing to allocate it for investment purposes. Household investment is not limited to economic goals such as livelihood diversification, but also includes non-economic goals like education and health. Investment funds can be accumulated (saved) and utilized if there is a positive margin between the revenues and costs of operating the ex-PIR oil palm plantation. At the very least, this financial position ensures that if a farmer undertakes a large investment with bank credit, there is still a reasonable guarantee that the loan can be repaid from ongoing operations and investment returns.

One key indicator of business success is the ability to accumulate capital through savings and to develop or invest in business activities from those earnings. Therefore, the success of the PIR oil palm program in improving farmers' welfare can be seen from household investment activities among oil palm farmers—assuming that only farmers who save are able to invest or expand their businesses. In this context, **investment** refers to capital allocation intended to develop a business and generate benefits in the future, whether from the same type of enterprise or other ventures.

A preliminary indicator to assess whether PIR program participants are relatively prosperous is the physical condition of their homes—whether they have permanent structures or remain as they were (wooden or plank houses). Therefore, this study focuses on PIR participants whose housing conditions are visually distinct from the early years and appear significantly improved, and examines whether they have been PIR participants from the start and whether they engage in investment activities. This study is based on **Nakajima's (1986)** theory of household economics, modified using **Miller's (1997)** household investment theory, which posits that successful farming households not only engage in production, consumption, and labor supply activities but also in both economic and non-economic (social) investments.

RESEARCH METHODS

This research was conducted in the Sungai Bahar District area, involving farmers from three villages selected based on their distance from the business center of Unit II PIR Sungai Bahar. The respondents were 100 farmers with permanent housing. The data collected included the size of the ex-project land, yard land, other oil palm land, respondents' income from oil palm farming as well as from other non-oil palm businesses, economic investment activities, social investments, and other types of investments. The data was analyzed using descriptive quantitative methods.

RESULTS AND DISCUSSION

Oil Palm Farming Land

The research findings show that, in addition to the plasma plantations from the ex-project that were allocated to PIR participants, respondents also owned oil palm land outside their allocated plots as a result of investments, which were categorized as shown in Table 1. Ex-project-I land refers to the allocated plots received by farmers when they became PIR participants. Ex-project-II land refers to ex-project land obtained by purchasing it from other PIR participants who originally owned ex-

project-I plots in the same area. Yard land refers to land located around the residence, planted with oil palm. Non-ex-project land refers to land located either inside or outside the research area, obtained by establishing plantations independently or by purchasing plantations previously developed by other owners.

Table 1. Area of Oil Palm Land from Plantation Investments Outside the Plasma Plantations Owned by Respondents in the Research Area

Land Category	Average Area (ha)	Number of Respondents (%)	Minimum Area (ha)	Maximum Area (ha)
Within Project Area	2,00	14	2	2
Yard	0,25	78	0,25	0,50
Around Project Area	1,46	17	0,75	6
Outside Project Area	1,60	7	0,75	2

Source: Data processed, 2023

From table 1, can be explained that 14 percent of respondents invested by purchasing plasma oil palm land from ex-project areas, with an average size of 2 hectares. Since the beginning of the PIR project, participating farmers were also allocated, in addition to plasma plantations, yard land for food crops covering 0.5 hectares. In reality, the majority—more than 75 percent—of farmers have converted this land into oil palm plantations. Furthermore, almost 20 percent of farmers, in addition to investing in purchasing oil palm plantations within the project area, also purchased oil palm land around the ex-project area, and nearly 10 percent bought oil palm land outside the project area.

Data also show a tendency for farmers who invest within the ex-project area to also own oil palm in their yards and in areas around the PIR ex-project, and even outside the ex-project. Land around the PIR ex-project area was acquired either by purchasing vacant land and planting it with oil palm or by purchasing already-established oil palm plantations, such as in Kumpeh Subdistrict, Muaro Jambi Regency, or in other locations outside the research area.

From the above description, it is clear that the oil palm land owned by some respondents is not limited to ex-project plasma plantations from the PIR program allocation of 2 hectares, but also includes land from several other locations, both within the PIR project environment and outside the PIR project area. In other words, respondents are highly aware of the negative impact of relying entirely on plasma ex-project land, since its contribution to household economics is limited to its economic lifespan—which, at the time of this study, had already shown its effects, namely low land productivity. At the time of the research, production from un-replanted plantations ranged from only 0.7–1.2 tons of fresh fruit bunches per hectare per month, whereas the ideal production previously achieved by 100 percent of respondents ranged between 1.5–2 tons per hectare per month.

Economic Investment

Investment in economic activities within oil palm farmers' households, which also reflects the diversification of farmers' livelihoods, has been taking place since the plasma oil palm from the ex-project reached its peak production. This can be seen from the transaction years, with the earliest recorded purchase of a plantation occurring in 1999—when the oil palm trees were 16 years old, or at the peak of their productivity.

The investment activities carried out by farmers were not limited to the expansion of oil palm plantations, as described above, but also included investments in non–oil palm ventures such as cattle/goat/fish farming, and non-agricultural businesses such as trading and service enterprises. The amount of investment and the period of its implementation are presented in Table 2.

The study also found that most oil palm plantation investment activities—whether through purchase or self-established planting—took place between 1997 and 2010. After this period, there were fewer plantation investments. The sources of funds used by respondents for these investments came from savings (10%) and bank loans (90%).

Table 2. Respondents Household Investments in Economic Activities

No	Type of Investment	Number of Respondents	Investment (IDR 000)			Investment Period
			Average	Min	Max	
1	Oil Palm within the Project Area	14	125.156	6.000	259.000	2000-2018
2	Yard	78	6.000	4.000	7.000	2006-
3	Oil Palm Around the Project Area	17	41.427	9000	300.000	1987-2010
	Oil Palm Outside The project area	7	44.300	25.000	120.000	2010-2015
4	Non-Oil Palm Business					
	• Cattle	5	16.667	100.000	240.000	2012
	• Goat	2	11.500	10.000	23.000	2010
	• Fish	1	8.000	-	-	2018
	• Trading	35	50.218	500	75.000	2007-2016
	• Palm Oil Transport Services	3	120.000	60.000	160.000	2008-2016
5	. Replanting	63	20.866	1.200	50.000	2012-2018

Source: Data Processed, 2023

Table 2 show that the research results on bank credit, it was found that 99 percent of respondents had borrowed money from a bank. The borrowing frequency ranged from one to nine times during their time as oil palm farmers. This clearly shows that banks' trust-based assets play a significant role in supporting household investment activities of oil palm farmers.

However, not all farmers borrowed for investment purposes — some used the funds for other needs, such as renovating their homes or purchasing vehicles, either motorcycle so four-wheeled vehicles. All respondents owned motorcycles, and about 3 percent of them, in addition to owning motorcycles, also had four-wheeled vehicles (cars).

The four-wheeled vehicles purchased also had an investment element, as they served a dual function — being used for transportation businesses (motorcycle taxi and car charter services). Regarding replanting investments, it was found that around 63 percent of farmers invested in replanting, with details showing that 39 percent of farmers fully replanted their plantations (clear-cut and replant), while 24 percent partially replanted their plantations (infill replanting). This study also found that more than half of the ex-plasma plantations had not undergone true replanting activities, meaning replanting with proper oil palm plantation management standards.

Social Investment

Social investment is a long-term investment, where the outcome is reliable, intelligent, and healthy human resources. The expectation from this investment is to produce a new generation with greater capabilities than their parents. In this context, social investment refers to financing education and healthcare, particularly in paying for children's schooling and participating in health insurance programs such as BPJS and others. The amount of expenditure for education and healthcare can be seen in Table 3.

Table 3. Investment in Family Education and Health (IDR/month)

No	Investment Description	Number of Respondents	Average	Min	Max
1	Education				
	• Currently ongoing	59	1.038.661	300.000	3.200.000
	• Children who have completed college	21	2.075.000	600.000	1.000.000
2	Health Insurance (BPJS,Prudensial and Medicines)	70	124.594	50.000	900.000

Source: Data Processed, 2023

From Table 3, it can be seen that education is one of the aspects most highly prioritized by the respondents. Respondents are willing to finance their family members' education up to the university level. A total of 21 respondents stated that they had successfully sent their sons and daughters to higher education, with some having completed their studies. Meanwhile, 20 percent of respondents no longer had any dependents for family education expenses. In terms of health, 70 percent of respondents have participated in health insurance programs, namely BPJS (68 respondents) and Prudential (2 respondents). Apart from social investments, there is also a source of passive income in the form of gold jewelry, though it is difficult to obtain detailed information about it. However, all respondents stated that gold investment was intended as jewelry for wives or children. In addition, purchasing gold was also meant as a safeguard (disposable) for urgent needs, so it could be quickly liquidated when necessary. Meanwhile, investment in the form of stock purchases was not carried out by any respondent, as stock investment is still unfamiliar and therefore unappealing to them.

Income's Respondent

The easiest measure to assess a business decision is by looking at the net income from an investment. The purpose of investment is to increase income, so it is expected that by investing, respondents' earnings will rise significantly. Given the respondents' background as oil palm farmers from ex-project areas who initially owned only 2 hectares of land, with the right decisions made at the right time—namely investing in household enterprises while plantation productivity was still high—farmers eventually had the opportunity to gain palm oil income from other plantations as well.

Respondents' income refers to the monthly net receipts after deducting expenses, calculated from both farming and other business activities. Table 4 below illustrates the income of independent oil palm farmers from ex-PIR project areas from various sources.

It can be seen that income from ex-project plasma plantations that require replanting is already very low, namely below two million rupiah, and in some cases even below one million rupiah per month. If farmers have no other sources of income, oil palm farming is no longer viable. If calculated monthly, the maximum potential from oil palm is only IDR 1,700,000—far below Jambi Province's 2019 minimum wage (UMP) of IDR 2,423,888. Therefore, it will be difficult for PIR project oil palm farmers to sustain their farming if they do not anticipate the replanting phase long before it arrives, through investment activities.

Table 4. Average Income of Respondents from Oil Palm and Non-Oil Palm Sources

Income Source	Number of Respondents	Income		
		Average (IDR000/Month)	Minimum (IDR000/Month)	Maximum (IDR000/Month)
1. Oil Palm				
-Plasma Project	100	1.795,5	648	3.402
-Within the Project Area	14	1.863	1.134	3.240
-Yard	78	345	324	525
-Around The Project Area	17	1334,7	405	1.386
-Outside The Project Area	7	1714	1200	2350.
2. Non-Oil Palm	43	2.192,4	105	6.895
3. Palm Oil Transport Services	3	2500	1500	4000

Source: Data Processed, 2023

Table 4 show that the PIR oil palm project has transformed the face of the Sungai Bahar area, which was originally a dense forest, into one of the new economic growth centers in less than three decades. Various types of production and service businesses have developed in addition to the main oil palm production activities.

From the farmers' performance perspective, there has been a process of land acquisition among PIR participant farmers, where the plasma farms of unsuccessful farmers were purchased by successful PIR participant farmers. Household investments made by successful farmers occurred because they were able, from the beginning, to manage their finances effectively and appropriately. Unsuccessful farmers, on the other hand, demonstrated an inability to manage finances from the same plasma land allocations provided by the PIR project.

The current condition of independent farms from the ex-project varies: some have been fully replanted, some partially replanted, and others have not been replanted at all despite declining yields. In general, farmers have attempted alternative livelihood diversification to meet their household needs. Therefore, the success of the PIR project can be seen in its ability to continuously contribute to various productive and sustainable economic activities in the community.

The continuity of oil palm cultivation affects the sustainability of other productive businesses because the multiplier effect originates from oil palm. Thus, oil palm remains the leading sector in regional economic development. In other words, oil palm continues to be the driving force behind ongoing investments in other sectors, all of which support and synergize with one another. The PIR oil palm project has successfully fostered various investment activities in the rural economy, resulting in the creation of a new economic growth center.

However, the success of the PIR project in fostering new economic activities (investments) in the study area has not been matched by success in sustaining the core-plasma partnership. The core-plasma relationship failed to continue because there was no longer a binding element between the two parties in farm management and palm oil marketing, as had been the case from the start until near the end of the project. At present, the status of PIR plasma farms has shifted to independent oil palm farms.

This is marked by indications that the Core Company has fully replanted its own nucleus farms but failed to carry out replanting cooperation with the farmers. Farmers have had to find their own ways and means to replant their plasma farms, from sourcing capital to carrying out the technical aspects of replanting. At the time this research was conducted, most of the plasma farms from the ex-project had not yet been replanted. In the next phase, the government introduced a policy through the Palm Oil Plantation Fund Management Agency (BPDPKS) to assist farmers in accelerating replanting. The farmers' or oil palm growers' responses to the BPDPKS replanting program were not disclosed in this study, as this would require more specific research.

The findings of this study suggest that in the last phase of the planting cycle, when production decreases and maintenance expenses remain high, smallholder farmers do not have enough cash to replant. This highlights the need for state support (subsidies, soft loans, and revitalization initiatives) to keep smallholder farmers from becoming locked in a cycle of old, unproductive plantations. Furthermore, farmer empowerment programs should include household economic diversification, not simply palm oil output as income diversification as a resilience factor.

CONCLUSION

From the research results, it can be concluded that the PIR oil palm project—where companies and farmers worked together in synergy to develop nucleus-plasma plantations—has successfully stimulated community economic development through household investments.

Household investment activities included oil palm–based agriculture, non-oil palm agriculture, and livestock or fisheries. Outside the agricultural sector, there were non-agricultural activities such as trade and services. However, with the declining production of ex-project plantations, especially during the transition phase, coupled with the low price of fresh fruit bunches (FFB), household investment activities have stagnated as farmers' focus has shifted more toward meeting their families' basic needs.

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