EasyChair Preprint

№ 601

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October 31, 2018

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ABSTRACT

The role of oil palm plantations in improving smallholders' income has been widely accepted. However, lack of managerial skills and capital causes smallholders to receive high interventions from third parties. This study is conducted to analyze the impact of various partnership models to the inclusive oil palm smallholdings. The data is collected from 390 smallholders in North Sumatra, South Sumatra, Jambi and Riau. Four types of partners including state, local private, foreign private companies, and NGO are covered. Inclusive levels are measured with ownership, voice, risk and reward, and compared with Mann Whitney test. Binomial Logit Model is applied to estimate the inclusive influencing factors. The results show that all types of partnerships improve smallholders' ownership and voice, but decrease their participation in risk management. The inclusive scores are significantly influenced by existence of contract, involvement in planning and FFB pricing, and endowment.

Keywords: oil palm, partnership, smallholders, inclusivity, voice, risk

INTRODUCTION

Indonesia is the biggest palm oil exporter in the world. More than 72% of the Indonesian production is distributed to various international markets (BPS, 2017). Masahisa and Nobuaki (2014) suggested that internationalization could enhance efficiency and growth in normal condition, but also increase risk for the long and complex supply chain.

Fresh Fruit Bunches (FFB) that are harvested by the oil palm growers need to be processed in a number of stages before sold to end consumers. Such a condition is challenging, especially for smallholders. However, oil palm businesses are highly

profitable, giving incentives for smallholders to start and expanding their oil palm plantations (Rist and Feintrenie, 2010; Duryat and Cannon, 2013, Kawanichi and Mimura, 2013; Euler, 2015). Bronkhorst et al (2017) argue that inclusiveness in planning and best management practice would improve the equal distribution in smallholders' return. Akiko et al (2018) suggested that the development of oil palm plantation could increase new employment, income in rural areas, spillover effect on other sectors through the increasing demand for products, improving infrastructure and access to public goods, and human capital in the long run.

Effective participation in Value Chain Development (VCD) requires a minimum set of assets, including land and financial capital, knowledge, skills, social capital and access to sources of technical support. In fact, most smallholders' performances are far behind other players in the international supply chain. Therefore, smallholders need partnerships with big companies, while at the same time big companies would also enjoy a secure and stable supply from smallholders. Recently the smallholder and companies' partnerships are likely shift from short-term transactional into long-term cooperative relationships. This is important for FFB supply, which has a 3 months of low season per year and a 25 years of economic age.

Individual smallholders need to be engaged in group management to reduce transaction costs and market risks and enabling collective action. By engaging in organisations or integrated horizontally, smallholders could reach economies of scale, improve their efficiency, and strengthen smallholders' bargaining power (Sjauw-Koen-Fa et al., 2016). Many smallholders do not have sufficient managerial ability to engage in the group management, thus the government often provide trainings and facilitate meetings for smallholders. In certain conditions, the government also support

smallholders through regulations, tax collection and legal framework both at the national and local levels (Pradhan et. al., 2012; Birthal et.al, 2007). However, the inclusion of smallholders in the palm oil sector is still left unaddressed (Kusumaningtyas and Gelder, 2017).

UNDP defines inclusive business as a model that aim to include poor producers, employees or consumers into value chains (Gradhl et al. 2010:3). Chamberlain (2017) differentiates the inclusiveness into internal and external inclusiveness. Internal inclusive covers ownership, voice, risk and reward, while external inclusiveness refers to linkage to either input or output markets. In contrast with the good purpose of the inclusive VCD, merging individual smallholdings into a single management might decrease the role of individual smallholders (Jennifer and Haux, 2017; Gcanga, 2014). Comparing 3 types of partnership in Central Kalimantan, Indonesia, Daud and Panuntun (2015) shows that best smallholders' management needs partners are full involvement in the plantation maintenance. Gcanga (2014) concluded that inclusiveness is economically profitable, environmentally and socially responsible, integrates smallholders in the value chain by taking into consideration the voices and interests of smallholder farmers. Paglietti and Sabre (2013) suggested that the level of inclusiveness is measured by shared values among partners.

Devaux et al (2018) found that traditionally the agricultural R&D approach focuses more on improving smallholders' production and marketing. In fact, production and marketing depends on the evolving demands of processors and consumers. Therefore, R&D also needs to focus on the improvement in the linkages of production and marketing. Previous studies indicate the shift of smallholders and companies relationship from CSR approach to business opportunity. Companies support for

smallholders are no longer aimed for acquire a social licence-to operate but rather treated as a supply sourcing strategy that secures supply (Carrol and Shanama, 2010; Singh et al, 2014, Perrot,2013, Giovanna de Luca, 2014). This study is conducted as an effort to define the concept of smallholder inclusiveness and to seek the type of partnership that would optimize the smallholder inclusiveness.

METHOD

This study was conducted in 4 oil palm smallholding centre provinces, namely North Sumatra, South Sumatra, Jambi and Riau. North Sumatra represents the smallholders' partnership with state company, South Sumatra with foreign private company, Jambi with NGO and local private company, and Riau with local private company. South Sumatra and Riau have been certified, Jambi was recently certified and North Sumatra is in progress to be certified. Samples covered both schemed and independent smallholders, with 210 independent and 210 schemed smallholders in each province. Due to the completeness of the respondents' answers, only 390 samples were included in the estimations, with 190 of them are the schemed smallholders. Complementary data is also collected from each of the partner institution staffs.

Inclusivity is measured with ownership, voice, risk and reward components. Ideally inclusive business does not only aim to generate revenue but also to produce beneficial social impacts (Makwenda, 2010). In this case, revenues refer to the ownership and reward components, while social benefit is represented by voice and risk. Ownership is measured with the ownership status, land size and group assets. Ownership status is scored 1 if the land is certified, otherwise zero, while land size is 1 if 2 ha or more. Group assets refer to those which can be used by the respondents. Voice is scored with

the smallholders' involvement in the price meeting, bargaining power with traders and mills, and the membership in smallholder's organization. In North Sumatra, the price meeting is organized weekly by the Province Plantation Office. The inclusiveness in risk refers to smallholders' involvement in dealing with the risks. The price risks include the trade system, which is scored 1 if individually conducted by the smallholder, and zero if collectively through their group, and 1 if the smallholder needs to make some bargains with the traders, and zero if using the government price at the mills. The production risk score is 1 if smallholders need to directly manage, and zero if companies manage it. Reward refers to the productivity, selling price and income. The score of productivity and selling price are each 1 if they are higher than the average level, otherwise zero, while the income score is 1 if the same or higher than the regional minimum salary, otherwise zero. Total of these components shows the level of inclusivity from each type of the partnership, which is then tested using the Mann-Whitney compare mean test, by using the following formula:

$$U_1 = n_1 n_2 + \frac{n_1(n_1+1)}{2} - R_1$$

$$U_2 = n_1 n_2 + \frac{n_2(n_2+1)}{2} - R_2$$

in which R is the sum of ranks in each group of the compared samples, and n is the number of items in each group of the compared samples. To analyse the possible influencing factors of the inclusiveness, 7 variables' namely the existence of contract (X_1), involvement in planning (X_2), membership in smallholders' group (X_3), involvement in FFB price determination (X_4), knowledge (X_5), networking (X_6) and endowment (X_7) are regressed with Binomial Logit Model. X_1until X_4 are categorical with 1 and zero values for the existence and non-existence of each factors, respectively.

X_5 is measured with the smallholder respondent's knowledge on types of seeds and harvesting criteria, with zero and 2 as the minimum and maximum scores. X_6 is measured with the involvement of other parties in pest and disease prevention activities, deciding market destination for selling FFB and place for buying fertilizers, with 0 and 3 as the minimum and maximum scores, respectively. X_7 is measured with the smallholder's endowment of land and family labour, with 2 and 6 as the minimum and maximum score, respectively.

$$ln\left(\frac{p}{1-p}\right) = \beta_0 + \beta_i X_i$$

In which p and $(1-p)$ are the probability of Y=1 and Y=0, respectively. Y=1 if the inclusivity score is same or higher than the average value, otherwise zero. The instantaneous rate of change (marginal effect) of the continuous variable is calculated by using the following formula:

$$\frac{dp_i}{dX_i} = \hat{\beta}_i \hat{p}_i (1-\hat{p}_i)$$

In which $\hat{\beta}_i$ and $\hat{p}_i$ are the predicted coefficient and probability of Y=1 (high inclusivity) values, respectively, while $(1-\hat{p}_i)$ is the probability of Y=0 (low inclusivity. The probability is measured with

$$\left(\frac{p}{1-p_i}\right) = exp(\beta_1)$$

RESULTS AND DISCUSSION

Estimation results show that the government and foreign private companies develop partnerships with smallholders' cooperatives, while the local private with associations. The state company partnership was started in 2014 with Koperasi Unit Desa (Village Unit Cooperatives). In the first 5 years, the state company fully managed the

smallholding replanting and cultivation. All of the harvest needs to be sold to the state mill for credit instalments. Then in the next 17 years, smallholders manage their plantations under the state technical supervision. In this period, smallholders only have the obligation to sell all of their FFB to the state company if they still have some unfinished credit instalments.

In local private partnerships, the company cooperates with the smallholders' association. The partnership was started in 2011, when smallholders' trees average age is twelve years old. Since then the company helps smallholders in applying the recommended cultivation technique. Smallholders obtain fertilizers and pesticides from the company and will pay through monthly deductions made by the association. Spraying is carried out by teams appointed and trained by the company, but the fertilization is managed by the smallholders. In foreign private partnerships, the company cooperates with smallholders' cooperative. The company assists smallholders both in marketing and cultivating activities. One of the most important things in cultivation is fertilizing, which need to be applied continuously based on the recommended quantity and types. Initially smallholders never conducted any soil or leaf test. After binding in the partnership, the company conducts the test and provides the required fertilizers and pesticides. Fertilization and spraying are carried out by a team that has been trained by the company. KUD administrators play a role in regulating the schedule for harvesting, fertilizing and spraying, while expenses are covered by smallholders' FFB sales. The company will buy all of the smallholders' FFB at least at the same weekly price determined by the provincial pricing team meeting. In Jambi, the smallholder association also needs help from the non-government organization (NGO).

Table 1

The results show that all type of partnerships improves ownership and voice. The ownership improvement mostly reflects the smallholders' land certificates that are received after being engaged with the companies. The voice improvement is achieved through the smallholders' group collective actions. Reward improvements only appear in smallholders that have been certified (Riau and South Sumatra) and those engage with the government partnership. The latter is still in the preparation stage for proposing certification but their partnership has reached the second cycle period. All partnerships also show the increase in companies' interventions in managing risks. Details can be seen in the following table.

Table 2

The Mann Whitney compare mean test shows that all partner smallholders' ownership and risk are significantly lower than the independent. The certified local partner smallholders in Riau also enjoy higher price rewards. However, the certified foreign partner smallholders do not receive similar prices, as on average their oil palm trees have aged more than 20 years. The results also indicate that the longer the partnership the better voice the smallholders get, which likely stemmed from their collective action through the smallholders' groups. Details of the Mann Whitney test can be seen in Table 3.

Table 3

Theoretically, high risk is rewarded with high return. In fact, the independent smallholders' return, both in ownership and reward appear to be the lowest among all types of partnership. The independent smallholders have the freedom to choose among all traders and market, but with low yield quality and lack of bargaining power they rarely receive good selling price. This is also reflected in the low voice score, which

stems from their un-representation in the FFB price determination meetings. Details of each inclusive component in each types of partnership can be seen in Figure 1.

Figure 1

Figure 1 shows that the voice of independent smallholders is very low. Without engaging in a group, the independent smallholders are hardly involved in any decision making process. A number of public and private initiatives have been made to address compliance barriers, but most are not effective. The main reason is because the initiatives are designed for homogenous group members, as those for the schemed smallholders, while the independent smallholders are likely more heterogenous (Jelsma et al., 2018). This can be seen in their variations in all inclusivity components in Table 3, which indicating the trade-off between the increase of benefit share and participation in the inclusive of smallholders. If the focus is increasing the smallholders' income, the existing of partnership types could effectively fulfil the aim. However, if the focus is to empowering smallholders, the partnerships also need to improve the smallholders' upgrading process. In the long run having the ability to make decisions and handle production and price risks is important to maintain smallholders' equality and sustainability.

Table 4

The level of inclusiveness for each type of partnership is influenced by a number of variables, which in this study is estimated using the Binomial Logit Model. The Hosmer and Lemeshow test with Chi-Square 14.291 shows that this model is suitable with the dataset usage. The dependent variable inclusive score is differentiated into those the high (Y=1), and the same and low than the average score (Y=0), respectively. The Classification Table shows that the observed of Y=1 and Y=0 are 55.7% and 62.6%

correctly predicted. The Omnibus Tests Chi-square 34.383 indicates that simultaneously independent factors significantly influence the dependent variable

Table 5

Table 5 shows that with 5% of significance level of the Wald test, the smallholders' inclusiveness is significantly influenced by the existence of contract, the involvement in planning, the involvement in FFB pricing and endowment, while other variables are not. The existence of contract appears to be the most influencing factor, showing by its significance and exp(B) magnitude. The value of exp(B) shows that having a written contract could improve the smallholders' inclusivity 3.586 times better than those without. In this case almost all schemed smallholders have a written contract with their partners. Having written agreement between smallholders and processing companies is important in palm oil case. Not all of the partnership started from the planting process of the smallholdings. Both need intensive and long term accompaniments of partner companies to improve smallholders' quantity and quality yield. As a return, companies will have good quality FFB supply for their mills. The written contract will guarantee the agreement will run as planned. On average oil palm trees have 3 months of low season and 3 months of high season per year. FFB prices could significantly change with the production change. In this case, contract in all types of partnership stated that all of the smallholders' harvest should be supplied to their partners' mill. This helps companies to maintain their mill capacity and utilization ratio. On the other side, smallholders' FFB will not be rejected or waiting for a long time to be processed during the high season. Such a strong vertical integration is necessary as FFB is not an end product that can be directly sold to end consumers. Some schemed smallholders in Jambi (34.85%) do not have contracts, which mainly stem from their nescience. Their

low management ability has attracted an NGO, which has helped the smallholders even before the partnership with the company started.

Theoretically, smallholders' membership in a group will improve their collective action and bargaining power, hence their voice and inclusiveness. West and Haug (2017) suggested that with a small business scale, individual smallholders' production share is not significant, hence their role is decision making and bargaining power is weak. In many cases, developing collection actions through smallholders' groups are proposed as a solution. In fact, a number of the groups are still not active, hence do not accommodate their members' needs nor act on behalf of the smallholders. Smallholders should have access, directly or through their group, either in input usage planning or in FFB pricing. The 2.379 and 1.865 exp(β) estimations of the planning and pricing in Table 4 shows that the probability of involving smallholders in planning or in pricing are 2.379 and 1.865 times than those are not involved. In fact, among the 390 respondents, only 49,5% are categorized as schemed smallholders, but 68.21% have been registered in groups. The independent smallholders need to become a member in order to receive subsidies from the government. With this main purpose many of them do not actively manage the group and establish cooperation with palm oil companies. Furthermore, not all of the schemed smallholders have written contracts for the partnerships.

Endowment also significantly influences the smallholders' inclusivity. With exp(β) of 0.763 and $\beta = -0.271$, the marginal effect will be -0.067, showing that the higher their land size and the higher the share of family labour will be, the lower the smallholders' inclusiveness probability. In this case, smallholders with greater land size have higher possibility independently run their business. However, the land size has not reach the

minimum economic scale that can significantly influence the market share or provide them with a good bargaining position. Similarly, smallholders with more family labour usage would not use the group labour facilities for fertilizing and spraying activities.

CONCLUSION AND POLICY IMPLICATIONS

In conclusion, all of these findings show that overall partnerships improve smallholders' share in the added value. The partnership could also improve the smallholders' participation, mostly through their groups although with some trade off possibility between improvements in added value share. Among all types of partnerships, the balance of improving the smallholders' added value and participation appears in the foreign private partnership. This justifies the government program in developing palm oil smallholders' group in a number of their policies. Private companies also need to have their mills and direct marketing to obtain high selling prices, avoid long marketing chains and less profit share for smallholders.

ACKNOWLEDGEMENT

Funded by Ministry of Research, Technology and Higher Education, of The Republic of Indonesia in accordance with Hibah Strategis Nasional Konsorsium Research Contract No 170/UN5.2.31/PPM/ KP-RDPM/2018 dated 16 February 2018

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Table 1. Number of samples based on types of partnership

No	Type of partnership	Sample	
		Location	**Number**
1	Government	North Sumatra	23
2	Local private	North Sumatra, Riau	93
3	Foreign private	South Sumatra	38
4	Local private and NGO	Jambi	39
5	No partnership/independent	North Sumatra, South Sumatra, Riau, Jambi	197
Total			390

Table 2. Compare means Mann Whitney test result

Type of Partnership	Ownership		Voice		Risk		Reward	
	partner	indep	partner	indep	Partner	Indep	partner	indep
Local private (Riau)	2,96	1,00	1,07	0,48	0.00	3,65	2,85	0,52
Local private (NS)	1,23	1,12	0,70	0,63	2,41	3,90	0,86	1,00
Foreign private (SS)	2,97	1,82	1,39	0,64	0.00	4,00	2,08	1,86
Local private + NGO (Jambi)	1,38	1,14	0,90	0.00	1,26	4,00	1,69	1,68
Government (NS)	1,43	1.12	1,22	0.63	0,13	3.90	2,00	1.00

Table 3. Z score Mann Whitney test result

Type of Partnership	Ownership		Voice		Risk		Reward	
	Z	Sig	Z	Sig	Z	Sig	Z	Sig
Local private (Riau)	-6,92	,00**	-4,30	,00**	-6,71	,00**	-6,40	,00**
Local private (Sumut)	-,86	,39	-,92	,36	-10,70	,00**	-1,21	,23
Foreign private (SS)	-7,43	,00**	-3,86	,00**	-8,06	,00**	-1,01	,31
Local private + NGO (Jambi)	-1,27	,20	-5,78	,00**	-6,72	,00**	-,23	,82
Government (NS)	-2,11	,04*	-4,12	,00**	-10,55	,00**	-6,29	,00**

** and * show the 1% and 5% significance level, respectively.

Table 4. Scores of components of Inclusivity based of types of partnership

No	Type of partnership	Components of inclusivity			
		Ownership	**Voice**	**Risk**	**Reward**
1	Government	0-2	1-2	0-2	2
2	Local private	0-3	0-2	0-4	0-3
3	Foreign private	2-3	1-3	0.00	1-3
4	Local private and NGO	0-3	0-3	0-3	0-3
5	No partnership (independent)	0-3	0-2	0-3	0-3

Table 5. Estimation Results

Variables	B	Wald	Sig.	Exp(B)
Existence of Contract (1)	1.278	12.294	.000	3.588
Involvement in Planning (1)	.867	3.902	.048	2.379
Membership in Smallholders' Group (1)	-.454	2.872	.090	.635
Involvement in FFB pricing (1)	.623	4.279	.039	1.865
Knowledge	.062	.097	.756	1.064
Networking	.115	.424	.515	1.122
Endowment	-.271	7.712	.005	.763
Constant	-1.060	3.203	.073	.346

Figure 1. Types of partnerships and inclusivity