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THE IMPACT OF CONTRACT FARMING ON THE PROFIT OF VIRGINIA TOBACCO FARMING IN LOMBOK ISLAND, WEST NUSA TENGGARA

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ABSTRACT

This study aims at explaining the impact of contract farming on the profit of Virginia tobacco farming in Lombok Island. Does partnership influence profit? We used survey data of 147 farmers, they are partners of tobacco processors and independent farmers. By utilizing profit function analysis, it is concluded that: (1) partnership positively affected the profit of Virginia tobacco farming in Lombok Island; (2) productivity, prices of tobacco, fertilizers (NPK, KNO), pesticide, kerosene, and labor wage significantly affected the profit. These are followed by: (1) that farmers should reduce the use of human labor, while partner company and local government should endeavor to find alternative technology to substitute human labor with machinery labor; (2) that the government is recommended to continue subsidy provisionof at least for short term program until cheaper alternative fuels, such as coal, solar energy, biomass energy, or others, are available.

Keywords: *impact, partnership, profit, Virginia tobacco*

INTRODUCTION

In fact, imperfect information spreads over those running on farming, whereas, perfect information in the theory of the neoclassical economics becomes a main condition for a balance market (Bates, 1995:31; North, 1995:17). Furthermore, that imperfect information is combined with uncertainty and high transaction cost assumed not to exist in the neoclassical economics (North, 1995: 18). To handle the problem, it is considered important to have formal institution involved. One of the forms of that institution, as stated in the theory of New Institutional Economics (NIE) is contract farming (Grosh, 1994; Key & Runsten, 1999).

Contract farming is a way to manage farming production, in which small farmers, under a contract with certain farming company, should deliver their harvest in accordance with the criteria determined within the contract (White, 1997). In many developed countries, contract farming system brings both success and failure. In Africa, this system has raised the farmers' income and given positive multiplier effect on villages' economies (Glover, 1994). However, there are many critiques of anthropologist, economist, politician, sociologist, and geographist (Grosh, 1994), saying that contract farming has marginalized farmers due to their lack of participation within the contract arrangement (Watts, 1994; Little, 1994).

Basically, both farmers and companies have same motivation in conducting contract farming: reducing risks while optimizing

profits. For the farmers, their involvement in contract farming is to minimize the risk of uncertainty to sell their harvest (Kirsten & Kurt Sartorius, 2002). This is in fact what constituted the contract farming system by Virginia tobacco farmers in Lombok Island, West Nusa Tenggara in 1970s. Besides having certainty in marketing, the Virginia tobacco farmers within the contract get production inputs such as seeds, fertilizers, pesticides, kerosene, and even business capital in the form of credit from the partner company to which the debt would be paid after the harvest time. Even more, in the frame of warranting the quality of the harvest, the partner company provided elucidators to supervise farmers working their farming from the seeding time up to the harvest processing.

Some empirical studies on the impacts of contract farming show that partnership can increase production and farmers' income as the effect of new technology use and transportation and marketing costs reduction. In Africa, the presence of contract farming increased the farmers' income and gave a positive double impact on the village economy (Glover, 1994; Little & Watts, 1994). Warning & Key (2002), in their research in Senegal, found out that small peanut farmers joining contract farming received higher income than those not joining the contract farming. Winter, *et al,* (2005), in his research on the evaluation contract on hybrid corn seed between farmers and American multinational company in East Java concluded that (i) partnership was significantly influential towards the income of farmers, in which partner farmers received gross profit of 2.22 times higher than non-partner ones; (ii) partnership was significantly influential towards the use of labor force, of which partner farmers utilized work force 1.43 times higher than did non-partner farmers; (iii) partnership was significantly influential towards the expenses of chemical inputs such as pesticide, herbicide, and fertilizers for which partner farmers spent the cost of chemical input up to 2.1 times higher than did non-partner farmers.

An empirical study on contract farming was also conducted by Tatlidil & Akturk (2004) focusing on comparative analysis between contracted farmers and non-contracted farmers of tomato farming in Biga District, Canakkale province, Turkey. The survey was on 102 contracted and non-contracted farmers. The findings are: (i) contracted farmers used more seeds and chemical fertilizers than their counterparts, (ii) production cost per unit output was lower than that of non-contracted farmers, and (iii) the net profit of contracted farmers was 19% higher than that of their counterparts. In the case of Virginia tobacco partnership, Sudarmin (2005) found that partnership brought positive and significant influence on the production of Virginia tobacco in East Lombok Regency, West Nusa Tenggara.

Virginia tobacco partnership in the island is unique. Although partnership has been going on since 1970s, in fact some farmers do not join the partnership, and there are free buyers potentially troubling the continuation of the partnership (Hamidi, et al., 2005). This study aims at explaining the impact of contract farming on the profit of Virginia tobacco farming in Lombok Island. Does contract farming influence profit? Are differences among productivity, output prices, and input prices significantly influential towards profit as the impact of the partnership? To answer these questions, the writer then carried out a research by doing a survey on 147 farmers consisting of 102 contracted farmers and 45 non-contracted farmers. The writer used profit function analysis model.

THEORETICAL FRAMEWORK

Scientifically, maximizing profit can be broken down from production and cost functions as carried out by Nicholson (1998:377).

Production function:

$$q = \gamma X^{\alpha} Z^{\beta} \quad (1)$$

q = quantity of outputs
X = quantity of variable inputs
Z = quantity of fixed inputs
γ = intercept (constant)
α and β = output elasticity from input X and Z

Cost function:

$$c(q) = vZ + \omega X \quad (2)$$

v : fixed input capital lease
ω : prices of variable inputs

Profit function: $(\pi) = TR - TC$

TR = total income
TC = total cost

If ω and p are input and output prices, the profit function (π) becomes:

$$\pi(X,Z) = Pq - C(q)$$
$$= Pf(X,Z) - (\omega X) \quad (3)$$

The primary condition to maximize profit is that the first break down of profit function (π) is zero.

$$\pi = P\gamma X^{\alpha} Z^{\beta} - \omega X$$

$$\partial \pi / \partial X = \alpha P \gamma X^{\alpha - 1} Z^{\beta} - \omega = 0$$

(4) $\alpha P \gamma X^{\alpha-1} Z^{\beta} = \omega$

(5) $X^{\alpha - 1} = \left(\frac{\omega}{\alpha P \gamma Z^{\beta}} \right)$

(6) $X^{*} = \left(\frac{\omega}{\alpha P \gamma Z^{\beta}} \right)^{\frac{1}{\alpha - 1}} \quad (7)$

Equation (7) shows that production factor quantity (X) that is required to maximize profit depends on output prices (p), input prices (ω), and Z. By substituting equation (7) with equation (1), the optimum output quantity (q*) is gained through the following formula:

$$q = \gamma X^{\alpha} Z^{\beta}$$

$$q = \gamma \left[\left(\alpha \gamma Z^{\beta} \frac{P}{\omega} \right)^{\frac{1}{1-\alpha}} \right]^{\beta} Z^{\beta}$$

$$= \gamma \left[\left(\gamma Z^{\beta} \right)^{\frac{1}{1-\alpha}} \left(\alpha \frac{P}{\omega} \right)^{\frac{1}{1-\alpha}} \right]^{\alpha} Z^{\beta}$$

$$= \gamma \left[\left(\gamma^{\frac{\alpha}{1-\alpha}} \right) \left(\alpha \frac{P}{\omega} \right)^{\frac{\alpha}{1-\alpha}} Z^{\frac{\beta}{1-\alpha}} \right]$$

$$= \gamma^{\frac{1}{1-\alpha}} \left(\alpha \frac{P}{\omega} \right)^{\frac{\alpha}{1-\alpha}} Z^{\frac{\beta}{1-\alpha}} \quad (8)$$

Equation (8) shows that optimum output quantity (q*) resulted to gain maximum profit depends on output prices (p), input prices (ω), and Z. The formula is written down as follows:

By substituting equations (7) and (8) into the profit function $\pi = P\gamma X^{\alpha} Z^{\beta} - \omega X$ the maximum profit (π) is gained through the following way:

$$= P \left[\gamma^{\frac{1}{1-\alpha}} \left(\alpha \frac{P}{\omega} \right)^{\alpha/1-\alpha} Z^{\frac{\beta}{1-\alpha}} \right] - \varpi \left[\gamma \alpha Z^{\beta} \frac{P}{\omega} \right]^{\frac{1}{1-\alpha}}$$

$$= P \left[\gamma^{\frac{1}{1-\alpha}} \alpha^{\frac{\alpha}{1-}} \left(\frac{P}{\omega} \right)^{\frac{\alpha}{1-\alpha}} Z^{\frac{\beta}{1-\alpha}} \right] -$$

$$\omega \left[\gamma^{\frac{1}{1-\alpha}} \alpha^{\frac{1}{1-\alpha}} Z^{\frac{\beta}{1-\alpha}} \left(\frac{P}{\omega} \right)^{\frac{1}{1-\alpha}} \right]$$

$$= \gamma^{\frac{1}{1-\alpha}} \alpha^{\frac{\alpha}{1-\alpha}} (1-\alpha) Z^{\frac{\beta}{1-\alpha}} P^{\frac{1}{1-\alpha}} \omega^{\frac{-\alpha}{1-\alpha}} \quad (9)$$

Equation (9) shows that maximum profit (π*) received by Virginia tobacco farmers depends on output prices (p), variable input prices (ω), and Z. The formula is written down as follows:

$$\pi^* = \pi^*(P, \omega, Z) \quad (10)$$

RESEARCH METHOD

Data Collecting and Area Sampling

A survey method through interviews with tobacco farmers in accordance with prepared questionnaires was used for data collecting. A multi stage sampling, in which it is an action of taking samples in stages started from village up to regency, was applied to determine the samples location. The survey was carried out in five villages i.e. Lekor Village and Montong Village Gamang in Central Lombok Regency, and Rarang Village, Rumbuk Village, and Sakra Village in East Lombok Regency. This was performed with a consideration that those villages had the largest Virginia tobacco farming in their districts.

Number of Respondents

The respondents of this research are both partner farmers and non-partner farmers. Determining the number of the respondents' samples was done through such a following formula (Sugiarto, *et al*., 2003:60):

$$n = \frac{NZ^2S^2}{Nd^2 + Z^2S^2} \quad (11)$$

n = total samples
N = total population
Z = standard distribution value (table-Z) on $\alpha_{0,05}$
d = deviation tolerance
S = variant value of Virginia tobacco farmers' land

Based on the data of Forestry and Plantation Office on Virginia tobacco farmers, in 2006 the population of partner farmers (N_1) was 1.853 farmers having farming area of about 1-6 hectares and the population of independent farmers (N_2) was 829 farmers having farming area of about 0.25-4 hectares. After the calculation, the variant value of farming area belonging to partner farmers (S_1) was 0.07058 and the variant value of farming area belonging to independent farmers (S_2) was 0.03125. The samples taken to represent partner farmers (n_1) were 102 farmers and those to represent independent farmers (n_2) were 45 farmers with a consideration that the level of reliance of the calculation was 95% while the deviation tolerance (d) was 5%.

Variable and Data Analysis

The collected data were then edited, tabulated, and analyzed. The model used to analyze was profit function involving nine clarifying variables (productivity, output prices, price of NPK fertilizer, price of KNO fertilizer, ZPT, pesticide, labor wage, kerosene, interest) and one partnership dummy variable. The variables were selected based on NIE theory saying that the presence of farmers within the contract might increase productivity as the impact of the use of new technology and the decrease of production cost as the impact of transaction cost reduction so that the input prices become cheaper (Jackson & Cheater, 1994). Besides, the result of previous empirical research shows that partnership can increase the farmers' income (Warning & Key, 2000; Winters, *et al.,* 2005). The empirical model of profit function in this research is presented through the following equation (12):

$$\pi_i = \phi v^{\sigma} \rho^{\vartheta} \sum_{i=1}^{7} \omega^{\delta} \lambda D_i \quad (12)$$

To simplify prediction towards equation (12) and to make profit data distribution (π_i) and factors determining profit close to normal, the equation was then changed into linear form by using logarithm. The equation is then as follows:

$$\ln \pi_i = \ln \phi + \sigma \ln v_i + \vartheta \ln \rho + \sum_{i=1}^{7} \delta_i \ln \omega_i + \lambda D_i + \varepsilon_i \quad (13)$$

π_i = Profit of either partner tobacco farmers or independent tobacco farmers in i (Rp)

ϕ = Node point of profit function

v_i = Productivity of Virginia tobacco produced by either partner tobacco farmers or independent tobacco farmers in i (kg/ha)

ρ_i = Price of Virginia tobacco received by either partner tobacco farmers or independent tobacco farmers in i (Rp/kg)

ω_i = Prices of NPK and KNO fertilizers factor (Rp/kg), ZPT and pesticide (Rp/liter), labor wage (Rp/HOK), loan interest (Rp), and price of kerosene (Rp/drum)

D_i = 1, if the farmers are partners
0, if the farmers are independent

$\sigma, \vartheta, \delta, \lambda$ = Coefficient of estimated regression

The hypotheses of empirical model of equation (13) are as follows:

(1) The productivity of Virginia tobacco was positively influential towards farmers' profit: the higher the productivity, the higher the profit ($\sigma > 0$).

(2) The selling price of Virginia tobacco was positively influential towards profit: the higher the selling price, the higher the profit ($\vartheta > 0$).

(3) Input prices of NPK, KNO, ZPT fertilizers, pesticide, labor wage, kerosene price, and loan interest were negatively influential towards profit: the higher the input prices, the smaller the profit ($\delta < 0$).

(4) Partnership had positive influence towards profit as shown by the coefficient of partnership dummy variable ($\lambda > 0$). Positive score indicated that partner farmers gained higher profit than did non-partner farmers (independent).

RESULT

High profit is the end goal of every businessperson including Virginia tobacco farmers. To test whether partnership in Virginia tobacco agribusiness was positively influential towards the farmers profit, a profit function should be carried out for each group of partner farmers, independent farmers, and the combined groups by inserting dummy variable. The result of the test is presented in the following table 1.

Table 1 show that the adjusted R^2 is 0.8894 for independent farmers; 0.8117 for partner farmers; and 0.8947 for combined groups of farmers model. This means that there is about 88.94 percent of profit variation for independent Virginia tobacco farmers, 81.17 percent of profit variation for partner farmers of Virginia tobacco, and 89.47 percent of profit variation for combined groups of Virginia tobacco farmers that can be explained through productivity clarifying variables consisting of tobacco products, tobacco price, NPK price, KNO price, ZPT price, pesticide price, kerosene price, labor wage, and interest. The rest is explained by other factors, outside the model namely is 11.06 percent for independent farmers, 18.83 percent for partner farmers, and 10.53 percent for combined groups of farmers.

In Cobb-Douglas production function level one, the influence of other factors excluded from the model can in fact be explained by intercept that at the same time becomes an indicator of economy efficiency. The result of regression analysis shows that the intercept of profit function for independent Virginia tobacco farmers is 126.1193. It is lower than that of partner farmers having 136.6337. Both are significant at α=1%. With the presence of partnership dummy variable, the intercept value rises to become 140.4850 and is significant at α=1%. According to Nicholson (1998:291), the rising intercept value indicates that economy efficiency of production system increases. The improve-

ment on efficiency for partner farmers cannot be separated from the influence of the use of new technology, technical supervision, production system improvement, and others carried out by partner company.

Table 1. Profit Function Estimation on Independent Farmers, Partner Farmers, and the Combined Groups of Farmers in Lombok Island, Plant Season 2007

No	Clarifying Variable	Profit Function		
		Independent Farmers	Partner Farmers	Combined groups
1	Intercept	126,1193 (3,8272)*	136,6337 (5,0145)*	140,4850 (6,6593)*
2	Productivity (ln PRODTV)	0,1037 (0,3190)	0,7430 (2,8328)*	0,5777 (2,7720)*
3	Tobacco Price (ln pPROD)	1,3742 (2,3791)**	0,6629 (2,5439)**	0,7904 (3,3747)*
4	NPK Price (ln pNPK)	-1,3394 (-2,7360)*	-0,5128 (-1,4190)	-0,8911 (-3,1621)*
5	KNO Price (ln pKNO)	-1,2394 (-1,8783)***	-1,1552 (-1,9684)***	-1,2134 (-2,7398)*
6	ZPT Price (ln pZPT)	-0,0017 (-0,5702)	-0,2294 (-0,5448)	-0,0016 (-0,4851)_
7	Pesticide Price (ln pPEST)	-0,5668 (-0,3354)	-4,3166 (-4,0099)*	-2,9507 (-3,1960)*
8	Labor Wage (ln wTK)	-0,8481) (-1,9515)***	-0,3886 (-1,6915)***	-0,4425 (-2,1751)**
9	Kerosene Price (ln pBBM)	-6,6228 (-2,8227)*	-4,5457 (-2,0693)**	-5,9741 (-3,6527)*
10	Interest (ln BUNGA)	-0,0463 (-0,6762)	-0,0384 (-1,2247)	-0,0459 (1,6777)***
11	Partnership Dummy (DUMMY)	-	-	0,1257 (0,0957)***
	Adjusted R^2	0,8894	0,8117	0,8947
	F	40,3152	49,3897	125,0474
	The number of Observation	45	102	147

Source: Processed Data.

Note:

Number between brackets indicates t statistic

*** means statistic significance α= 10%

** means statistic significance α= 5%

* means statistic significance α= 1%

Dependent Variable is ln profit (π/ha).

Table 1 also shows that F statistic value for independent farmers is 40.3152, which is lower than that of partner farmers having 49.3897. Both F statistic values are significant at α=1%. Thus, it can be concluded that those nine clarifying variables, i.e. tobacco products, tobacco price, NPK price, KNO price, ZPT price, pesticide price, kerosene price, labor wage, and loan interest paid by both partner farmers and independent farmers, slotted in the model altogether significantly influence the profit of Virginia tobacco farming in Lombok Island. Even more, with the presence of partnership dummy variable, the F statistic value for combined farmers rises into 125.0474 and is significant at α=1%. This increasing F statistic value is followed by significantly increasing number of clarifying variables.

However, based on the result of t test, it is known that not all clarifying variables have significant influence towards the profit of Virginia tobacco farming. Regarding the partner farmers, there are six variables having significant influence towards the profit of Virginia tobacco farming in Lombok Island. Those six variables are productivity, tobacco price, KNO fertilizer price, pesticide price, kerosene price, and labor wage. The other three clarifying variables, NPK fertilizer price, ZPT price, and interest are not significantly influential. Regarding the independent farmers, there are five clarifying variables having significant influence towards the profit of Virginia tobacco farming. Those five variables are tobacco price, NPK fertilizer price, KNO fertilizer price, labor wage, and kerosene price. The other four clarifying variables, i.e. productivity, ZPT price, pesticide price, and interest are not significantly influential. With the presence of partnership dummy variable in the model, it is only ZPT price that is not significantly influential towards profit, while the other eight clarifying variables are significantly influential at α=1%, 5%, or 10 %.

Concerning productivity clarifying variable (ln PRODTV), both partner farmers and independent farmers have positive regression coefficient (as expected). In relation to partner farmers, the productivity per hectare is influential towards the profit of tobacco farming. An addition of 1% of productivity increases profit as much as 0.7430 percent and is significant at α=1%. Regarding independent farmers, eventhough there is an increase of profit as much as 0.1037 percent when productivity rises 1%, it is not significant even at α=10%. With the presence of partnership dummy variable into the model, the coefficient of productivity clarifying variable increases to 0.5777 and is significant at α=1%. It means that the participation of Virginia tobacco farmers in the partnership program is sensitive to profit as the result of productivity growth. An addition of 1% of productivity might gain profit as much as 0.5777 percent. It is higher than the previous profit having as much as 0.1037 percent and significant at α=1%. This higher profit obtained by partner farmers is caused by higher productivity, which is 2,073.39 kg/hectare on average, while independent farmers produce as many as 1,827.49 kg/hectare. The difference is caused not only by the use of new technology, production system improvement, and technical guidance from their partner company, but is also most likely caused by different quality of lands (open air, good drainage, and good wellspring).

Upon tobacco price variable (ln pPROD), both partner farmers and independent farmers have positive regression coefficient (as expected) and each is significant at α=5%. On the subject of partner farmers, an addition of 1% of tobacco price raises the profit as much as 0.6629 percent. This is lower than that of independent farmers obtaining as much as 1.3742 percent. The reason of this low addition of profit gained by partner farmers is the relatively similar variation of tobacco selling price per kg. However, the tobacco

selling price of partner farmers is Rp 19,476/kg on average, and this is higher than Rp 18,417/kg, the selling price of independent farmers' tobacco. With the presence of partnership dummy variable, tobacco price variable towards profit is significant at α=1%, while previously it is significant at α=5%. It means that the participation of Virginia tobacco farmers in the partnership program is sensitive to profit increase as the impact of tobacco price augmentation.

Upon the variable of NPK fertilizer price (ln pNPK), both partner farmers and independent farmers have negative regression coefficient (as expected). For partner farmers, an increase of 1% of NPK fertilizer price will decrease profit as much as 0.5128 percent (not significant at α=10%). This is lower than the profit decrease experienced by independent farmers of as much as 1.3394 percent, and is even significant at α=5%. With the presence of partnership dummy variable in the model, the coefficient of clarifying variable of NKP fertilizer price is -0.8911 and is significant at α=1%. It means that the participation of farmers in contract farming system of Virginia tobacco in Lombok Island decreases profit as the effect of the increase of NKP fertilizer price from previously 1.3394 percent into 0.8911 percent when the price of NPK fertilizer rises as much as 1%. The proportion of profit decrease for partner farmers is lower than that of independent farmers, and it is because the average price of NPK fertilizer to be paid by partner farmers is cheaper, i.e. Rp 3,519/kg, than the price to be paid by independent farmers, i.e. Rp 3.829/kg.

Regarding the variable of KNO fertilizer price (ln pKNO), both partner farmers and independent farmers have negative regression coefficient (as expected) and each is significant at α=10%. For partner farmers, an increase of 1% of KNO fertilizer price will decrease profit as much as 1.1552 percent. This is lower than the profit decrease experienced by independent farmers of as much as 1.2394 percent. With the presence of partnership dummy variable in the model, the coefficient of clarifying variable of KNO fertilizer price is -1.2134 and is even significant at α=1%. It means that the participation of farmers in contract farming system of Virginia tobacco in Lombok Island can reduce the profit decrease as the effect of the increase of KNO fertilizer price from previously 1.2394 percent into 1.2134 percent when the price of KNO fertilizer rises as much as 1%. The proportion of profit decrease for partner farmers is lower than that of independent farmers, and it is because the average price of KNO fertilizer to be paid by partner farmers is cheaper, i.e. Rp 5.796/kg, than the price to be paid by independent farmers, i.e. Rp 6.113/kg.

Concerning the ZPT price variable (ln pZPT), both partner farmers and independent farmers have negative regression coefficient (as expected), but it is nor significant eventhough at α=10%. For partner farmers, an increase of 1% of ZPT price will decrease profit as much as 0.2294 percent. This is higher than the profit decrease experienced by independent farmers of as much as 0.0017 percent. It is because of two major things: the number of partner farmers using ZPT is limited (13.33%), and the volume is also very little, i.e. 0.36 liter/hectare, which is much lower than that used by partner farmers reaching up to 2.43 liter/hectare. The price to be paid by partner farmers is Rp 110,049/litre, lower than that paid by independent farmers, i.e. Rp 130,000/litre. However, with the presence of partnership dummy variable in the model, the coefficient of clarifying variable of ZPT price becomes -0.0016, while previously it was -0.0017. It means that the participation of farmers in contract farming system of Virginia tobacco in Lombok Island can reduce the profit decrease as the effect of the increase of ZPT price from previously 0.0017 percent into 0.0016 percent when the price of ZPT rises as much as 1%.

The same thing occurs to pesticide price variable (ln pPEST), in which both partner farmers and independent farmers have negative regression coefficient (as expected). An increase of 1% of pesticide price will decrease profit of partner farmers as much as 4.3166 percent. This is higher than the profit decrease experienced by independent farmers of as much as 0.5668 percent. It is because the volume used by partner farmers is mush higher, i.e. 2.85 liter/hectare, than that used by independent farmers of as much as 1.80 liter/hectare, whereas, the average price to be paid by partner farmers is lower, i.e. Rp 157,220/litre, than the average price to be paid by independent farmers, i.e. Rp 161,855/litre.

When it comes to labor wage variable (ln wTK), both partner farmers and independent farmers have negative regression coefficient (as expected). The coefficient value is -0.3886 for partner farmers, and -0.8481 for independent farmers, and it is significant at α=10%. It means that an increase of 1% of wage/HOK labor force will significantly decrease the partner farmers' profit of as much as 0.3886 percent, lower than the decrease of independent farmers' profit of as much as 0.8481 percent. It is because the average wage/HOK to be paid by partner farmers is Rp 16,624/HOK, while the one to be paid by independent farmers is Rp 17,566/HOK. With the presence of partnership dummy variable in the model, the coefficient of clarifying variable of labor wage becomes -0.4425 from previously -0.8481. It means that the participation of farmers in contract farming system of Virginia tobacco in Lombok Island can reduce the profit decrease as the effect of the increase of labor wage from 0.8481 percent into 0.4425 percent when the labor wage increases as much as 1%.

As to kerosene price variable, (ln pBBM), both partner farmers and independent farmers have negative regression coefficient (as expected). The coefficient value is -4.5457 for partner farmers and -6.6228 for independent farmers, and both are significant at α=1%. It means that an increase of 1% of kerosene price per drum will significantly decrease the partner farmers' profit of as much as 4.5457 percent, lower than the decrease of independent farmers' profit of as much as 6.6228 percent. There are two reasons that make the decrease of partner farmers' profit lower than that of independent farmers, (i) the use of kerosene by partner farmers to dry up tobacco is less (12.52 drum/hectare) than the use of kerosene by independent farmers (15.20 drum/hectare), (ii) the price of kerosene to be paid by partner farmers is cheaper (Rp 498,528/drum) than the one paid by independent farmers (509,757/drum). With the presence of partnership dummy variable in the model, the coefficient of clarifying variable of kerosene price becomes -5.9741. It means that the participation of farmers in contract farming system of Virginia tobacco in Lombok Island can reduce the profit decrease as the effect of the increase of kerosene price from 6.6228 percent into 5.9741 percent when the kerosene price increases as much as 1%.

Regarding the interest variable (ln BUNGA), both partner farmers and independent farmers have negative regression coefficient (as expected). The coefficient value is -0.0384 for partner farmers and -0.0463 for independent farmers, but not significant though at α=10%. It means that an increase of 1% of interest to be paid to the partner company or creditor will significantly decrease the partner farmers' profit of as much as 0.0384 percent, lower than the decrease of the independent farmers' profit of as much as 0.0463 percent. This is because partner farmers pay lower interest (Rp 1,457,558/hectare) than do independent farmers (Rp 2,589,125/hectare).

The presence of partnership dummy variable in the model of combined profit function gives a clue that the profit of Virginia tobacco farming in Lombok Island increases due to the existence of partnership institution.

It is true due to the fact that the coefficient of partnership dummy variable is positive of as much as 0.1257 and is significant at α=10%. It means that the participation of farmers in contract farming system of Virginia tobacco in Lombok Island increases the farmers' profit up to 0.1257 times. This profit growth as the effect of partnership is not only because of the use of new technology, production system improvement, and technical guidance from the partner company so that the products per unit land increase, but also because of the higher output price and the lower inputs prices covering up fertilizers, pesticide, labor wage, kerosene, and interest.

In NIE theory, that partnership dummy variable is significant brings forward a meaning that partnership as a form of institution in farming sector can augment profit as the impact of transaction costs reduction (North, 1995:18). Economy transaction costs such as research, seeking inputs supplier, transportation for inputs bargaining, credit, insurance, etc. that usually are the burden to bear by merely farmers then can be reduced because those costs are collectively borne by both farmers and company.

Based on the empirical test as explained in the previous pages, it can be concluded that that partnership impacted positively the profit of Virginia tobacco farming in Lombok Island is then accepted. The indicators are: (1) the intercept of profit function of partner farmers' Virginia tobacco farming is higher than that of independent farmers, (2) the coefficient value of partnership dummy variable is positive and significant at α=10%. This conclusion supports NIE theory stating that partnership as a form of institution in farming sector can augment profit as the impact of transaction costs reduction (North, 1995:18) so that production cost per unit output declines because farmers can obtain production inputs in lower price from their partner company as the consequence of collective decision in transportation (Hennessy, 1996). This conclusion also supports the results of previous partnership researches saying that farmers joining contract farming gain higher profit than those who do not join contract farming (Glover, 1994; Little & Watts, 1994, Warning & Key, 2000; Tatlidil & Akturk, 2004. Winters, *et al*., 2005).

CONCLUSIONS AND RECOMMENDATIONS

Conclusions

This article is aimed to explain whether differences of productivity, output price, and input prices were significantly influential towards the farmers' profit as the impact of contract farming on Virginia tobacco in Lombok Island. In concern to this case, the writer has conducted a research using a survey method towards 147 farmers consisting of 102 contracted farmers and 45 non-contracted farmers. This research has applied an analysis model of profit function resulting in the following conclusions:

1. Partnership positively influenced Virginia tobacco farming in Lombok Island. It is proven by (i) that the intercept of profit function of partner farmers' Virginia tobacco farming is higher than that of independent farmers; (ii) that the coefficient value of partnership dummy variable is positive and significant.
2. Productivity level, tobacco price, input prices of NPK fertilizer, KNO fertilizer, pesticide, labor wage, kerosene, and interest were significantly influential towards profit as the impact of partnership.

Recommendations

1. Although partnership impacted positively the profit of Virginia tobacco farmers in Lombok Island, the profit obtained significantly decreased because human labor wage was expensive. It is suggested to the farmers to reduce the use of human labor,

and to both partner company and local government to endeavor inventing alternative technology to substitute human labor with machinery labor.

2. In the case of the use of kerosene to dry tobacco, the farmers' profit decreased significantly as the impact of the high price of kerosene. Therefore, it is suggested to the government not to revoke subsidy until cheaper fuels such as coal, solar energy, and mass bio-energy are available to be utilized.

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