Analysis of Farmers' Safety Capability Reserved Costs of Rubber Gardens

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Abstract

The research aims to find out analysis ability of saving farmer to handle rubber replanting cost for traditional farmer and modern farmer. Primary data was collected on August until November 2016 from the samples of traditional farmers and modern farmers. The sample size is 120 respondent household farmers in Musi Banyuasin districts, South Sumatra province. The data analysed by economic analysis.

The result showed that the saving traditional farmer and modern farmer are ability to handle rubber replanting cost because only 8 % from saving per year.

Keyword: Analysis economic, saving of farmer

1. Introduction

Natural rubber plantations in South Sumatra are very strategic because this province in 2015 is the main producer of natural rubber in Indonesia with total production of 576,676 tons or 35.66% of Indonesia's rubber production. The contribution of natural rubber to Gross Regional Domestic Product (PDRB) of South Sumatera amounted to IDR 2.861 million or 9.07% of total GDP and from 62% exported rubber production which is US $ 280.4 million (34%) of the country's foreign exchange South Sumatera exports as well as a living necessity of about 429,846 families or about 2 million people in South Sumatra (Plantation Office of South Sumatra Province, 2015).

The development of smallholder rubber development in South Sumatera from various assisted government projects (Project of Civic Enterprise and Project Implementation Unit, Partial) for 25 years (1997/1998 s / d 2002) was recorded reaching 224,721 ha or about 8,988 ha / year. Assuming the project is still running at the same rate of growth, to rejuvenate the old rubber / damaged area of 129,757 ha it will take about 14 years. Yet every year there will be about 2.5% of the area of young plants that will enter the rejuvenation.

Since 1992-2003 the local government in South Sumatera has implemented a 1,248 ha rejuvenated / participatory rubber rejuvenation through the District Administration's assistance facility ie Muara Enim Regency covering 724 ha covering 362 farmers, Musi Banyuasin Regency pilot project 24 ha, Entris 4.2 ha and training of 240 farmers, and 500 ha of Ogan Komering Ulu District, 24 ha entric garden, 120 farmers training (Supriadi and Nancy, 2004).

The local government of South Sumatera has calculated the cost of rejuvenating 100,000 ha of rubber plantations of around IDR 776.25 billion programmed over a 10 year period (2005-2014) (Plantation Office of South Sumatra Province, 2004). If the entire funds are charged to the local government budget would be burdensome. Therefore, the allocation of family labor of farmers needs to be encouraged optimally and facilitated to rejuvenate their rubber plants independently. The facilities that can be provided by the local government are partial assistance (rubber plant material), technical guidance and counseling (Supriadi et al., 2001).

From the hope and reality can be concluded that the main problem is how much farmers saving ability to bear the investment cost of rejuvenation of rubber garden independently? This research generally aims to analyze the size of farmers' saving ability to bear the cost of rejuvenation of their rubber gardens independently. The results of this study are expected to be useful to explain the economic characteristics of smallholder rubber households related to the income, cost and saving activities of families of smallholder rubber farmers.

2. Literature Review and Approach Models

Regular rejuvenation will provide tremendous benefits as proposed by Wargadipura (1978) which is an opening opportunity to use; (1) new plant material in the form of high quality clones of breeding and final selection, (2) recent results in cultivation fields, (3) more efficient results in management. According to Supriadi et al. (1999), the rubber rejuvenation effort by applying the advanced technology independently has been done by some farmers, but the implementation is relatively slow and the success rate is low, because it faces various obstacles.

The results of Supriadi et al. (2001), in Musi Banyuasin district South Sumatera revealed that most of rubber farming expenditure (82-83%) is used for basic consumption needs. The expenditure on garden maintenance is very small, at about 3% in cloudy river sub-district and less than 1% in Babat Toman Sub-district. The main reason for the low expenditure on this investment is the lack of farmers' income as well as the lack of motivation to invest.

The result of Rifai (2000) research reveals that the income earned by farmers participating in Plantation Cultivation Development Project (PBPR) is IDR 6,934,958.33 per ha per year. The results of Gunawan and Supriadi (1988), conducted at the People's Rubber-Unit Development Project Prabumulih, South Sumatra showed that farmers prioritized the use of their income for food consumption by 61 percent.

The approach model that explains the problems and objectives of the research that have been defined can be explained by the framework of research analysis of farm laborers in rejuvenation of rubber plantation such as Figure 1.
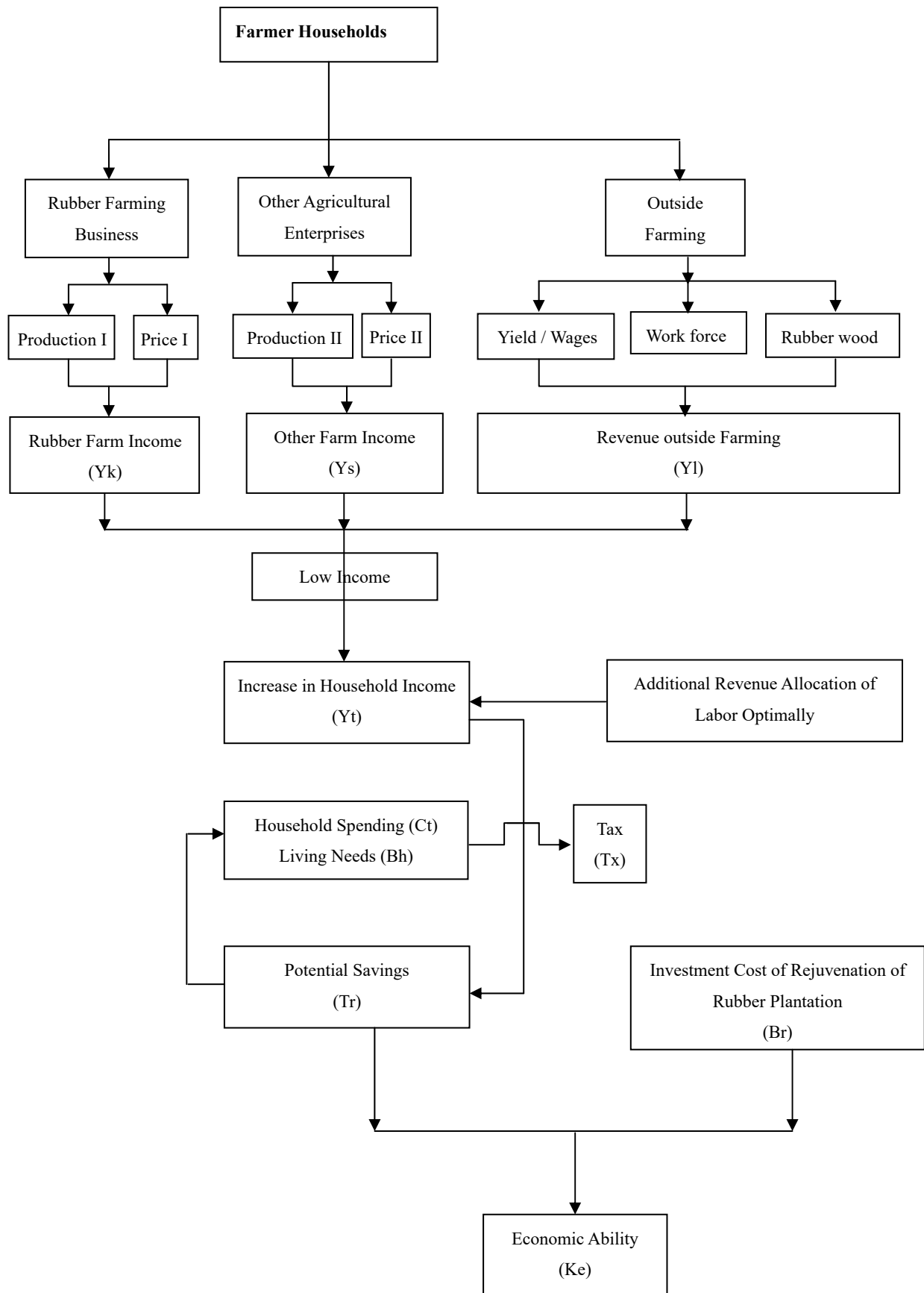
Figure 1. Framework for Research Thought of Family Labor Analysis Farmers In Rejuvenation of Rubber Garden

Description : Y_k = Rubber farm income L_k = Area of rubber farming area

Y_s = Other farm income P_k = Price of rubber

Y_l = Out-of-farm income Q_t = Rubber production

Y_t = Total income of rubber farmers Q_k = Rubber productivity

Y_P = Total income of farmers intercropping pattern T_c = Production cost of rubber

C_t = Household expenses T_x = Tax

C_c = Expenditures for consumption P_R = The price of old rubber / damaged rubber

Cl = Other expenses T_r = Household savings

T_K = Total allocation of family labor T_k = Farm family labor

A_k = Allocation of labor for rubber farming A_i = Allocation of labor to rest

A_s = Allocation of labor to other farms J_k = Number of family members

A_l = Allocation of labor for outside farming U_p = Wages of labor

B_r = Investment cost of rejuvenation of rubber plantation U_k = Age of rubber plant

Kp = Ability to meet the needs of life Ke = Economic ability of farmers

Kk = Ability to allocate family labor U_s = Age of farmers

P_d = Formal education of farmers

D = Rejuvenation model (1) = traditional, (2) = forward

In Figure 1 it can be explained that the income of rubber farming (Yk), other farm income (Ys) and the income of low-income farmers (Yl), which in turn will result in low farm household income (Yt) and household savings Tr) is low, which in turn leads to low farmer farming ability and results in farmers being unable to bear the investment costs of rejuvenating their rubber gardens independently.

Efforts to increase farmer saving ability can be done by optimally allocating family labor so that family income increases and farmers 'savings are expected to increase so farmers' farming ability increases. If the farming capability is high then rubber rejuvenation will be able to be implemented.

Based on the research objectives to be achieved then put forward the hypothesis: "Allegedly saving ability of farmers cannot afford to bear the cost of rejuvenation of rubber garden independently".

Operational limitations of the following terms:

1.   Old or damaged rubber plants are rubber plants older than economic (> 25 years), while rubber plants are damaged as a result of poor maintenance and tapping.

2.   Household family in the economic sense is a group of people living in one house managing the family economy, division of labor, income, consumption, type of production and services produced.

3.   Rubber farmers in this study were smallholders of smallholders who owned rubber plantations and worked on their own as a basic livelihood.

4.   Traditional farmers are smallholders of smallholders who use non-clonal or seedling materials.

5.   An advanced farmer is a smallholder farmer who uses superior clones plant material.

6.   Rubber plantation rejuvenation is the planting of rubber plantation that is done on old crop land measured in acres.

3. Research Methods

Research is developed with a scientific approach through deductive and inductive processes. The sequences of such scientific approaches are identifying problems, defining research objectives, developing hypotheses, designing research procedures, analyzing data and information, and interpreting data and drawing conclusions.

The research sites are selected villages or farm households in Musi Banyuasin Regency of South Sumatra Province. The research area of Musi Banyuasin Regency of South Sumatera Province was chosen with the consideration that this district can represent South Sumatera province has the widest area of rubber plantation in Indonesia which is 27.5% from total area of rubber plantation. In addition, South Sumatra is the main producer

of rubber in Indonesia which is 35.6% of total production. While the time of this research will be conducted from August to November 2015.

Sampling used is a gradual sample (multi stage sampling) with quota of sub district and village. From each sub-district deliberately selected 6 villages as representative with the criteria of the widest rubber area. From each village, a random sample of 20 farmer samples were collected from the selected village sample framework. quota sample of advanced and traditional farmers 50% that is 60 advanced farmers and 60 traditional farmers.

Methods of collecting data through direct interviews with sample farmers and conducting a deepening study of the results of data collection. Interviews were conducted using a list of questions that contained open and closed questions relating to variable costs, income and savings.

The data processing collected from the survey is processed following the procedure for the formulation of the hypotheses that have been formulated. Tabulation of data is processed by using Excel program. Hypothesis testing is done by comparing descriptively percentage of economical ability of farmer if the proportion (percentage) of farmer can not afford majority (50%) hence Ho accepted mean farmers saving mostly unable to bear the investment cost of rejuvenation of rubber garden independently.

4. Research Result and Discussion

4.1 Analysis of Rubber Plantation

The average income, expenditure and potential savings of traditional and advanced farmers' Households in Musi Banyuasin South Sumatra can be seen from Table 1.

Table 1. Average Potential Saving of Traditional and Major Farmers' Households in 2014

Number	District	Total Household Income (Rp.)	Household Spending (Rp.)	Potential Savings (Rp.)		
				Household	Rubber Sales Wood	Amount
1	Traditional	7.247.000	5.194.000	2.024.000	1.220.000	3.244.000
2	Advanced	8.575.000	5.521.000	3.022.000	1.221.000	4.243.000

In Table 1 it can be seen that the average potential savings of advanced farm households amounted to IDR 3,022,000 per year greater than the traditional farmers of IDR 2,024,000 per year. When associated with the necessity of saving farmers for the investment cost of rejuvenation of rubber plantation then it will not experience difficulties because only about 8% of farmers' savings per year.

The age relationship of rubber plant (Uk) with total revenue (TR) and total production cost of traditional farmer farming (TC) can be made graph as shown in Figure 2.
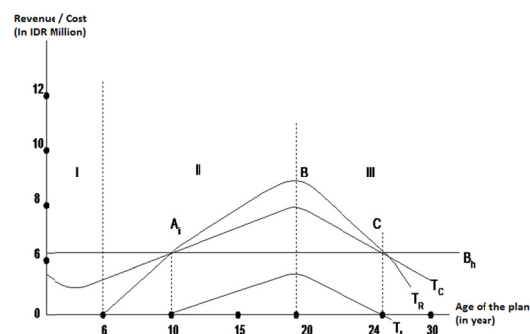

Figure 2. The Relationship of Rubber Age (Uk) With Total Acceptance (TR) And Total Production Cost (TC) of Traditional and Traditional Farmers Farming

Description II   = Rubber plants produce increased   B = T_R The highest

          III = Rubber plant produce decreased   C = $T_R = T_C$ (During rejuvenation)

In Figure 2 it can be seen that the initial planning of rubber plantation rejuvenation started from point A of rubber

age 9 years (TR = TC) and at age 28 years where (TR = TC) at this time rejuvenation of rubber garden should be done. After this age farmers begin to lose (TR <TC). Assuming that the investment cost of rubber plantation rejuvenation is IDR 11,252,625, - which is in the tube for 15 years, and with the interest of 18% commercial bank then using the sinking fund factor formula can be known every year traditional farmers have to save IDR 184,600 per year and IDR 170.000 Per year for advanced farmers.

Hypothesis Testing Farmers' Savings Capability

The ability of farmers to bear the cost of rejuvenation of rubber farmers traditional and advanced can be seen in Table 2.

Table 2. The Number Of Traditional And Forward Farmers In Rejuvenating Their Rubber Gardens In 2015 Based On Farmers Saving Capabilities

| Number | Economic Capability | Number of Farmers | | | |
| | | Traditional Farmers | | Forward Farmers | |
		KK	(%)	KK	(%)
1	1	36	60,00	26	43,89
2	2	11	17,22	15	25,00
3	3	13	22,78	19	31,11
	Total Amount	**60**	**100,00**	**60**	**100,00**

Description: Classification Economic ability   1: <= 35% classified as incapable

2: 36-70% are moderate

3:> 70% are high ability

In Table 2 it can be explained that the number of traditional farmers who can not afford the rubber plantation rejuvenation cost is 36 KK (60%), while the advanced farmers who are not able to bear the investment cost of rubber plantation rejuvenation is about 26 families (43.89%), This means that the hypothesis for advanced farmers is rejected as the majority (> 60%) is able to bear the cost of rejuvenating their rubber plantations. While the traditional farmers hypothesis is accepted because the majority (> 50%) of the farmers can not afford the cost of rejuvenating their rubber plantation.

The ability of traditional farmers to rejuvenate as many as 11 families or 17% have the ability to rejuvenate 36% -70% is moderate, meaning the ability of farmers can do rejuvenation in two stages or two years of planting without the help of banking credit. If the need for banking assistance farmers will get credit of 38% -47% of the total investment cost of rejuvenation. Farmers as many as 13 families or 23% have renewal capacity> 70% is high, meaning that farmers can rejuvenate once in one year planting. If farmers need banking assistance, they need only 25% - 30% investment rejuvenation investment.

The ability of the farmers to do rejuvenation as much as 15 families or 25% have the ability to rejuvenate 36% -70% moderate means the ability of farmers can do rejuvenation in two stages or two years without the help of banking when requiring assistance banking farmers need credit of 38% - 47 %, Farmers as many as 19 families or 31% have high rejuvenating capability because the value of the ratio is located between> 70% means that farmers can rejuvenate the rubber plantation as well as one year planting.

5. Conclusions and Recommendations

From the analysis and discussion on the analysis of farmers saving ability to bear the cost of rubber rejuvenation can be drawn some conclusions as follows:

1.   Traditional and advanced farmers who cannot afford the cost of rejuvenating their respective rubber gardens are 108 households (60%) and 79 families (43.89%). This means that the second hypothesis is rejected for advanced farmers as it is proven that majority farmers (> 50%) are able to bear the cost of rejuvenating their rubber gardens. While the second hypothesis is accepted for traditional farmers as it is proven that majority traditional farmers (> 50%) cannot afford the investment cost of rejuvenating their rubber plantations. For farmers who are able to carry out the rejuvenation of their rubber gardens simultaneously or gradually.

2.   Savings of households of advanced farmers amounted to IDR 3,022,000 per year greater than traditional farmers amounting to IDR 2,024,000 per year. When associated with the necessity of traditional farmers and advanced savings of IDR 184,600 per year and IDR 170,000 per year for 15 years   from the age of 9 years to

the economic age of 24 years of investment financing rejuvenation of rubber gardens, it will not experience difficulties because only about 8% Saving farmers per year.

In order to sustainable economic empowerment of farm households, the policy is needed:

1.   Development of business diversification and use of family labor of farmers as the best source of income for farmer households through the utilization of leisure time for activities outside of farming. Improving the technical capability of rubber farmers and increasing productivity in accordance with the potential through the use of superior seeds and recommendations or technical recommendations of related institutions.

2.   Providing capital loan assistance for procurement of recommended technology package through credit with land certificate guarantee. Counseling and fostering of farmers' financial institutions to collect potential savings funds to increase the economical ability of farmers to bear the investment cost of rejuvenating their rubber plantation during their economic life. Macroeconomic development policies that favor peasants with regard to trade, price, fiscal, monetary and investment policies.

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