ANALYSIS OF COFFEE FARMERS' DECISION TO TAKE CREDIT IN PATI REGENCY

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ABSTRACT

Coffee Commodities in Pati were undeveloped compared to some other areas in Central Java as a coffee production center. Coffee farmers have some problems in the production of coffee: scarcity of subsidized fertilizers, difficulty to take credit, lack of dried coffee beans, and damaged roads that lead to expensive production costs. Coffee farmers play a role in the production activities as decision makers that will directly affect income. The aim of this research was to identify factors that influence the decision of coffee farmers to take credit. The study was conducted in coffee plantations of Klakahkasihan Village, Gembong, Pati. Cross-section data from Sido Makmur farmer group in Klakahkasihan village were collected directly from 52 respondents. They were 32 farmers who took and 20 farmers who did not take credit. The method used to analyze was probit method analysis. The results showed that the land area and the age of coffee plant variables had a negative coefficients, which means the smaller the land area and the younger the coffee plants, the higher the chances to take the credit. While the number of family members had a positive coefficient, which means that the greater the number of family members, the more chances farmers will take credit. Based on the above results it can be concluded that the farmer's decision to take credit is not for production process, but for other purposes.

Keywords: farmer decisions, access credit, coffee plantation, Sido Makmur farmer groups, Pati

ABSTRAK

Komoditas kopi diKabupaten Pati belum berkembang dibandingkan dengan beberapa daerah di Jawa Tengah sebagaisentra produksi kopi.Petani kopi memiliki beberapa masalah dalam produksi kopi, yaitu: kelangkaan pupuk bersubsidi, kesulitan untuk mengambil kredit, kekurangan biji pengering kopi, dan jalanan rusak yang menyebabkan biaya produksi yang mahal.Petani kopi berperan dalam kegiatan produksi sebagai pengambil keputusan yang secara langsung akan mempengaruhi pendapatan.Tujuan dari penelitian ini adalah: Untuk mengidentifikasi faktor-faktor yang mempengaruhi keputusan petani kopi untuk mengambil kredit. Penelitian dilakukan di perkebunan kopi rakyat Desa Klakahkasihan, Kecamatan Gembong, Kabupaten Pati. Data cross-section dari kelompok tani Sido Makmur di Desa Klakahkasihan dikumpulkan langsungsebanyak 52 respondenmeliputi 32 petani yang mengambil kredit dan 20 petani yang tidak mengambil kredit. Metode yang digunakan untuk menganalisis adalah metode analisis probit.Hasil penelitian menunjukkan bahwavariabel luas lahan dan umur tanaman kopi memiliki parameter negatif, yang berarti semakinkecil luas lahan, dan semakin mudaumur tanaman kopi akan meningkatkan peluang untuk mengambil kredit.Sementara jumlah anggota keluarga memiliki parameter yang positif, yang berarti bahwa jumlah anggota keluarga semakin besar, makapeluang petani untuk mengambil kreditakan meningkat. Berdasarkan hasil di atas dapat disimpulkan bahwa keputusan petani untuk mengambil kredit bukan untuk proses produksi, melainkan untuk keperluan yang lain.

Kata kunci: keputusan petani, akses kredit, perkebunan kopi, kelompok tani Sido Makmur, Kabupaten Pati

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INTRODUCTION

Coffee is one of the traditional plantation commodities that have an important role in Indonesian economy. The role is as a foreign exchange source, supplier of employment, and the main income of coffee farmers and other economic agents. Coffee plantation can be divided into three types based on its management, namely big private coffee companies, state coffee plantation, and people's coffee plantation (Jaya, 2012). One of the characteristics of people's plantation that makes farmers' income decrease is lack of capital (Ertherington, 1984). Therefore, coffee farmers need an access to get credit for the production process.

According to Mosher (1978), credit is one of the factors that can improve agricultural development. To increase production, farmers need a big capital so that they can apply agribusiness technology optimally. The availability of rural credit is expected to accelerate agricultural production and productivity to improve farmers' welfare (Briquette, 1999). Coffee farmers play an important role in making decision for their production activities, so that it can affect the household income.

Coffee commodity in Pati Regency has not developed well compared to some other areas in Central Java, a coffee production center (Patikab, 2014). People's coffee plantation in Gembong District located in Sitiluhur Village, Klakahkasihan Village and Ketanggan Village, whose altitude each is 570 – 790 above sea level. Coffee farmers have some problems in their coffee production, namely low adaptability, mastery and utilization of technology, low productivity, competitiveness, less conducive environment, and low quality of farmer's institution (Dishutbun, 2015).

The local government has some policies to tackle those problems: carrying out incentive building, giving out coffee bean seeds, facilitating and encouraging farmers to take care of coffee plantation (Dishutbun, 2015). However, these policies are not yet realized in Gembong District so that capacity building was carried out with their own budget, and purchasing superior seeds from middlemen. Therefore, some farmers in Klakahkasian Village rebuild Sido Makmur farmer group that was established 1999.

The research results from Hastuti and Supadi (2001) showed that non-formal credit was more flexible, the procedures were easy, and creditor and debtors knew each other. According to de Rosari et al. (2014), the farmers' decision to take credit and add capital had an impact on the households' economic behavior such as production, consumption and saving. Muayila and Tollen (2012) in their research concluded that the increasing access of farmers' households to take credit increased the farmers' economic welfare. This research was aimed to identify factors that influenced the coffee farmers' decision to take credit.

Access is the farmer's ability, either individually or in groups, to get capital facilities and finance services from the bank or financial institutions (Arief et al. 2013). A household has access to a certain credit source as long as they are able to get loans from that credit source, although for various reasons they will choose to ask for loan (Diagne and Zeller, 2001). A number of factors have been identified by previous research as key factors that can influence the households' access towards credit, among others, age, education, land area, proximity to credit sources, and easiness to get a loan (Arief et al. 2013). Age of the head of family is one of the factors that determine the household's access towards credit (Diagne, 1999; Mohamed, 2003; Simtowe, 2006; Komicha, 2007; Yehuala, 2008; Sai Tang, Zhengfei Guan and Songging Jin, 2010).

Access to credit influences household's welfare through three ways. The first way is alleviation of capital constraint for agricultural input outcome, foods and goods – non-food goods –that happens during plants' growth and vegetation, while the farmers' income can be obtained after harvest a few months later (Arief et al. 2013). The credit the farmers take is used for production and consumption. Therefore, consumption can measure the benefits of credit, which becomes an indicator of short-term welfare.

The aim of the research was to identify factors that influenced coffee farmers' decision to take credit. This research is expected to give information about some factors that influence farmers to decide to take credit, which in turn influence their farming business. The scope and boundary of the research were as follows: it was focused on Sido Makmur Farmers' group. Respondents used were coffee farmers that were automatically the members of the farmer group. This research used data cross section that was carried out to the members of Sido Makmur farmer group in Gembong District, Pati Regency.

METHODS

This research was carried out in Gembong District, Pati Regency, Central Java, from January to February 2015. The type of data used was cross-section, which consisted of primary as well as secondary data. The primary data was obtained from direct interview with all the members of Sido Makmur Farmer group. The secondary data, however, was obtained from AEKI data (Association of Indonesian Coffee Exporters and Importers), BPS (Statistics Bureau), Statistics of Plantation in Pati Regency, and other related data.

Respondents used in this research were 52 coffee farmers that were also members of Sido Makmur, which included 32 respondents who took credits and 20 respondents who did not. Thus, the method used in this research was total sampling. To respond to the aim of the research, statistics analyses of probit method was used.

This regression analyses was used to find out the impacts between independent variables and dependent variables. Probit regression method is a development of logistic regression model using a cumulative logistic function. The term 'probit' stands for probability unit that was introduced by Chester Bliss (1930). Probit model is a non-linear model that is used to analyze relationship between independent parameters and dependent parameter. This model is often called normit model or normal equivalent deviate (ned). Probit model was developed b Mcfadden (1973); probit regression is a modified logistic regression by determining logit regression following normal distribution. By using probit regression, $\beta_0+\beta_1\chi_1+...+\beta_p\chi_p$ can be seen as the score of standard Z that had followed normal distribution, the chance of Y = 1 (the chance to get score 1) was noted as ρ, and the result was:

$$P = \frac{\exp(Z)}{1+\exp(Z)} \quad \text{atau} \quad ln\left[\frac{\rho}{1-\rho}\right] = Z$$

The function of transformation in probit model was cumulative distribution function (CDF) that mapped the linear function $\chi'\beta$ on interval [0; 1]:

$$P(Y=1\mid\chi_i)=F(\chi'\beta)$$

This equation is based on normal distribution (Φ) below so that the probit regression was identified with $\Phi(\chi'\beta)$. Symbol Φ showed that invers standard normal distribution was applied and $\emptyset(z)$ was the chance thickness function (fungsi kepekatan peluang).

$$P(Y=1|x_1) = \Phi(x_i'\beta) = \int_{-\infty}^{x_i'\beta} \emptyset(z)dz$$

Or it can be formulated as follows:

$$P(Y=1) = \int_{-\infty}^{\beta_0+\beta_1 x_1+\cdots+\beta_p x_p} \frac{1}{\sqrt{2\pi}} e^{-\frac{z^2}{2}} dz$$

In general the probit model can be expressed as follows:

$$P=F(Z)=F(\beta_0+\beta_1 x_1+...+\beta_p x_p)$$

F is cumulative chance function and Xi is an ordinal independent variable. Therefore, the probit chance model is related to normal chance function. Thus, a simple probit chance model can be written as follows:

$$Z =\beta_0+\beta_1 x_1+\beta_2 x_2+\beta_3 x_3+...+\beta_p x_p$$

To get an assumption of Z value, invers from cumulative normal function can be used, so that the result will be as follows:

$$Z =F^{-1}(P)= \beta_0+\beta_1 x_1+\beta_2 x_2+\beta_3 x_3+...+\beta_p x_p$$

A dependent variable that is used for probit model in this research is the age of the farmer that takes credit. The dependent variable is Y = 1 (credit taker) and Y = 0 (non credit taker). The independent variables are land area, age, education, length of membership, number of family members, and experience of coffee farming. This method was completed with the help of computer using eViews program, 3.0. Version. The regression equation model was written as follows:

$$Y= \beta_0+\beta_1 x_1+\beta_2 x_2+\beta_3 x_3+\beta_4 x_4+\beta_5 x_5+ \varepsilon$$

where:

Y	:	coffee farmer's decision to take a credit (1 = take a credit; 0 = not take a credit)
$\beta 0$	:	constant
χ_1	:	age of farmer (year)
χ_2	:	land area (ha)
χ_3	:	age of coffee plant (year)
χ_4	:	number of family members (person)
χ_5	:	education (year)
ε	:	random Variable

Parameter signs: $\beta 1$, $\beta 2$, $\beta 3$, $\beta 4$, $\beta 5 > 0$. Complete research frame of thought in Figure 1.
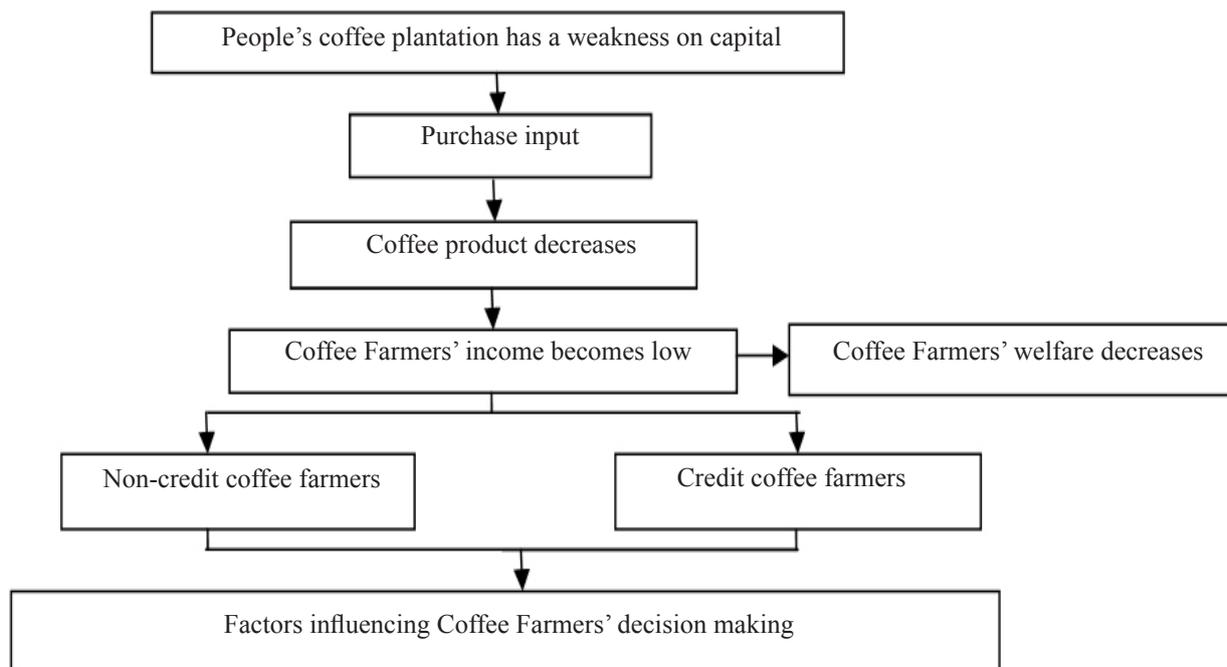
Figure 1. Conceptual framework

RESULTS

Characteristics of Coffee farmers and their Farming Business

Coffee farmers that became respondents in this research are of productive age, namely between 20 and 60 years old. All coffee farmers that take credits ages ≤ 50 years, whereas those that did not take credits mostly aged ≤ 50 years and the rest aged between 51 and 60 years old. Age is one of socio-economic factors that can influence the performance of the coffee farmers and their production. When the farmers are getting older, their performance will also decrease, which will in turn reduce coffee production because their energy also decreases.

Averaged education of coffee farmers is only elementary school. However, there are one farmer that has reached Diploma 3 or bachelor degree that take credits, and 2 other farmers that do not take credits. Farmers that have high education can make it possible for them to manage their farming business more professionally because they have capability to find and process information and technology (Ogada et al. 2010).

The number of dependents of the farmers that have taken credits is 2 or 3 persons, namely a wife and two children. On the other hand, the coffee farmers that do not take

credits have 2 dependents. The number of dependents can determine farming business management because there will be a decision to take in terms of capital utility in the form of labor or capital availability in the form of money (Wati, 2015). The complete characteristics of coffee farmers can be seen in Table 1.

Table 1. Characteristics of coffee farmers

Respondent characteristics	Taking credits		Not taking credits	
	Total	%	Total	%
Farmers' age (year)				
20–30	9	28,13	2	10
31–40	11	34,38	8	40
41–50	12	37,49	7	35
51–60	-	-	3	15
Education (Year)				
No education (0 year)	1	3,12	3	15
Primary School (1–s6 year)	20	62,50	8	40
Junior High School (7–9 year)	6	18,75	6	30
Senior High School(10–12 year)	4	12,50	1	5
DIII/S1 (13-16 year)	1	3,13	2	10
Dependents (person)				
1 person	2	6,25	3	15
2 persons	13	40,62	10	50
3 persons	11	34,37	5	25
4 persons	6	18,76	2	10

Characteristics of Farming Business

Coffee farmers that take credits mostly have a land area of ≤ 2, 00 hectares (96.88%), whereas a land area of more than 2.00 hectares is mostly owned by coffee farmers that do not take credits. According to Murbyarto (1989), land is one of the production factors that become a supporting tool for the products the farmers get.

Most coffee farmers that take credits have experience for ≤ 10 years, while those who have more than 10 years' experience are the ones that do not take credits. Coffee farmers that have longer experience will have more nerve to take the risk compared to those who have less experience. (Wati, 2015). Coffee farmers that have not enough experience will find difficulty to manage their expenses for production, so that they will get loss and thus need credit.

Age of plants of farmers that take credit is mostly ≤ 9 tahun, whereas that of farmers that do not take credits is above 9 years. Considering the young age of plants, intensive care is necessary, compared to older ones. In general the age of coffee plants grown by farmers is an ideal age, and if their age is more than 20 years, they are considered too old. Characteristics of Farming Business can be seen in Table 2.

Table 2. Characteristics of farming business

Respondent characteristics	Taking credits		Not taking credits	
	Total	%	Total	%
Land area (Ha)				
0,10–0,50	8	25	1	5
0,51–1,00	13	40,63	3	15
1,01–2,00	10	31,25	6	30
> 2,00	1	3,12	10	50
Farming experience (year)				
0–5 year	9	28,13	1	5
6–10 year	19	59,38	9	45
> 11 year	4	12,49	10	50
Age of coffee plants (year)				
0–4 year	9	28,13	-	-
5–9 year	19	59,38	2	10
10–14 year	1	3,13	14	70
15–20 year	3	9,36	1	5
> 20 year	-	-	3	15

Total Income of Coffee Farmer's Households

Total income of coffee farmer's households is obtained from on-farm, off-farm, mortgage or land selling, and others. The total income of each household can be seen in Table 3.

Table 3. Coffee farmer's household income

Income (Rp)	Taking credits		Not taking credits	
	Total	%	Total	%
< 20.000.000	-	-	2	10
20.000.001 – 35.000.000	15	46,87	3	15
35.000.001 – 50.000.000	10	31,25	1	5
> 50.000.001	7	21,88	14	70

The total income of coffee farmer's household who takes credit is ≤ Rp 50.000.000 or 78,12%, while that of coffee farmer's household who does not take credit is more than Rp 50.000.000 or 70%. It can be concluded that the farmers who have low total income will find capital difficulty for coffee production activities, so they will make a decision to take credit. On the other hand, the farmers who have higher total income will not have capital shortage in their farming so they will not take credit.

Factors influencing the Coffee Farmers' Decision to Take Credits in Pati Regency

The Probit analyses results applied to find out factors influencing the farmers' decision to take credit in Pati Regency. There are three factors that can determine a coffee farmer's decision to take credit (Table 4.). These factors are land area, age of coffee plants, and the number of dependents in a household. The farmer's age and education do not influence the farmers' decision to take credits. (Because they do not influence statistically).

Of the three factors, two of them influence the credit-decision making negatively, namely land area and age of coffee plants, while the number of dependents influences the farmer's decision to take credit positively. The many number of coefficients that are not relevant to the hypotheses are due to the data obtained that do not vary; one farmer is similar to another.

Based on the estimation results in Table 4, it can be seen that independent variables that influence credit-decision making are age of coffee farmer, land area, age

of coffee plant, number of dependents, and education. LR Statistic value (5 df) is 43,88989 and its probability (LR Stat) is 2,44E-08, which means that there is one variable that significantly influences the chance of the coffee farmer's decision to take credit. McFadden value R_2 is 0,633396, so the independent variables in the above probit model are good enough to explain the dependent variable as much as 63,33% and the rest is explained by independent variables outside the model.

Table 4. Estimation results of credit-decision making

Variable	Coefficient	Prob.
Constante	2,727186	0,1251
Age of coffee farmer	-0,033852	0,3948
Land area	-1,537967*	0,0033
Age of coffee plant	-0,125319*	0,0061
Number of dependents	1,170667**	0,0127
Education	-0,029675	0,6757
LR statistic (5df)		43,88989
Prob (LR statistic)		2,44E-08
McFadden R-squared		0,633396

Coefficient of farmer's age variable has a negative value of -0,033852, this means that the younger the age of the farmer, the more chance the farmer's decision to take credit. This is in line with the research results by Wati (2014) and Anyiro and Oriaku (2011) who also have negative coefficient for independent variable of the coffee farmer's age. However, if it is seen statistically, this research result does not have significant influence. Land-are variable has a negative coefficient as much as -1,537967 and it affects significantly as much as one percent, which means the bigger the land area owned by a farmer, the lesser the farmer's decision to take credit. Based on the field observation, a coffee farmer who has a big land will have a bigger total production and thus will not take the credit. This research result is not in accordance with that by Wati (2014), who says that the bigger the land area to cultivate, the bigger the chance for a farmer to decide to take credit. It can be concluded that a coffee farmer who has a narrower land area tends to increase capital in order to increase production. On the other hand, a coffee farmer who has a bigger land has an assumption that his big land will make production increase without taking any credit. Based on the above discussion, it indicates that a coffee farmer takes credit for other than production process.

The age of coffee plants has a negative coefficient -0,125319 and significant influence 1%, where the younger the coffee plant, the more chance the farmer's

decision to take credit. Coffee farmers in the research area have the assumption that the older the age of coffee plant the more it will produce coffee seeds and the plant has produced maximum results. This is not in accordance with the theory, which says that the older a coffee plant, the more it needs capital for caretaking so that the seed quality will be good. A coffee farmer that takes credit should use the credit for revitalizing older coffee plants. However, the fact is farmers use it for other than production process.

The variable of dependents has a positive coefficient and significant influence 5%. This means the more the number of family members, the more chance the coffee farmer takes credit. According to Wati's research (2014) the more number of family members, the lower the credit worthy of the coffee farmer. This is because a credit institution will make it as a benefit where farmers will not get access to credit. On the other hand, the more number of family members the more money the coffee farmer has to spend. Nuryanto (2007) says that the more the number of family members, the more benefit of the credit constraint. Besides, coffee farmers that are credit worthy will increase their loan to meet the family's daily needs. This is because the more number of family members, the more necessities the coffee farmers need.

The last independent variable is education, whose coefficient is negative. This means that the lower the farmer's education, the more chance the farmer's decision to take credit. In the research location coffee farmers feel more proud of the experience they have got. They prefer to find out development of technology, innovation, and others from an extension worker. As for education, they are not really interested; they prefer to work on their coffee plantation. Coffee farmers who have low education will find difficulty to get a job of high salary, so they need more fund to meet their daily needs.

Managerial Implications

These research results are expected to be able to give a picture and explanation about the impacts of credit on the coffee farmer's household economy in Pati Regency. Besides, this research is also expected to give useful information to policy makers to evaluate credit program for coffee farmers that is carried out by farmer group, and to give comparative reference and stimulant for further research.

CONCLUSIONS AND RECOMMENDATIONS

Conclusions

Based on the estimation result that has been carried out, it can be concluded that the results showed that variable 'land area' and 'age of coffee plant' have negative parameter on the farmer's decision to take credit. This shows that the coffee farmer's aim to take credit is not for coffee business production, but for household consumption. Therefore, it can be said that credit from farmer group of Sido Makmur has not succeeded to improve the coffee farmer's income and welfare. This credit needs to be revised a lot to reach its goal, namely to increase coffee production of all members of Sido Makmur farmer group.

Recommendations

For the management of farmer group of Sido Makmur, they must be more selective to give credit to coffee farmers. For example, they must make more detailed, firmer and clearer requirements. Then it is necessary to conduct site survey to the plantation of the members that have borrowed money, so the management is really sure that its members have met the requirements. This action cannot be separated from the interference of extension workers and local government to help the management to carry out survey and firm credit utilization.

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