Determinants of the KKPE Credit Program Repayment of Cattle Farmers in Central Java, Indonesia

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Abstract

The sustainability of the credit programs, including the Food Security and Energy Credit (KKPE), is very important to developing countries such as Indonesia, not only to overcome farmers' limited capital but also to support the achievement of food security. Therefore, the purpose of this study is to analyze the determinants of the KKPE credit program repayment as the important factors in judging the sustainability of a credit program. The data used is mainly primary data collected through interviews of 40 cattle farmers in Central Java, a cattle production center, which are determined using purposive sampling method. The results of the study which used the linear regression models of the ordinary least square (OLS) approach demonstrated that the factors influencing the repayment rate are production risk, administration cost, the interest rate, the condition of the farmers' group and collateral ownership.

Keywords: KKPE credit program, credit repayment, cattle farmers, OLS

1. Introduction

1.1. Background of the Research

In the effort to overcome farmers' lack of capital and to create sustainable food security, the government, especially the Ministry of Agriculture, has developed funding facilities in the form of the credit program "Food Security and Energy Credit" (Kredit Ketahanan Pangan dan Energi-KKPE). The KKPE credit has been routinely distributed every year since 2007 and in the period 2009-2013 the cumulative total, both for the ceiling and the realization, has continued to rise. The KKPE credit program is distributed to all provinces and the province of Central Java is one of the largest targets which receives a huge amount of credit because Central Java is one of the livestock production centers, specifically for cattle. The amount of KKPE credit channelled for cattle farming is relatively large (Ministry of Agriculture, 2013).

The KKPE credit program is provided by the government for businesses, especially for as capital or investments. Therefore, the utilization of the credit program by farmers does not only improve the farmers' access to agricultural financing but it could also improve the availability of production inputs, function effectively as an instrument to facilitate the adoption of new technology which could increase production, income and employment opportunities at farmer level which in turn is expected to improve the farmers' welfare and become a driving force for agricultural development in Indonesia, particularly in achieving the goals of food security programs. Several study results demonstrate the effect of credit on production and income increase at farmer level and its impact on agricultural development and food security (Diagne, 1998; Nwachukwu et al, 2010; Nuswantara, 2012; Ammani, 2012; Dadson, 2012). On the other hand, some study results demonstrate that most farmers need capital support in order to run their businesses (Diagne, 1999; Mohamed, 2003; Poliquit, 2006; Simtowe and Zeller, 2006; Komicha, 2007; Yehuala, 2008; Sai Tang, Zhengfei Guan and Songging Jin, 2010).

In conclusion, the success and sustainability of the development of the KKPE credit program must be safeguarded and one of the important factors which determines the success and the sustainability of this program is the credit repayment rate (Pasha and Negese, 2014). According to Okorie (2004), in developing countries the low repayment rate is a tremendous problem in the agricultural credit program adminstration, especially for small-scale farmers who have limited collateral. Therefore, Onyeagocha, Chidebelu and Okorji (2012) stated that in the effort to overcome problems in credit repayment, the factors which determine credit repayment need to be studied.

1.2. Research Problems

The KKPE credit program is an improvement of a preceding credit program. In this KKPE scheme, the government gave a fairly large credit interest subsidy which were mostly channelled through farmers' groups so that the credit program could really improve the farmers' access to credit and also have a good credit repayment rate. However, the KKPE credit program repayment rate, specifically in Central Java, was relatively low, demonstrated by the amount of NPLs which reached 12 percent.

The results of previous studies demonstrated that many factors affect credit repayment and Tundui and Tundui (2013) stated that the factors which affect credit repayment do not only differ between programs but also between countries, depending on the country's economic and business conditions. According to Onyeagocha et al, 2012, Oladeebo and Oladeebo, 2008; Eze and Ibekwe, 2007; Kohansal and Mansoori, 2009 credit repayment factors could be classified into the borrowers' characteristics (willingness, ability and other characteristics) and the business characteristics of the creditor (product design, the compatibility of the product to the borrowers, etc.). In some studies, the borrowers' characteristics were classified further into socio-economic characteristics and credit characteristics. Business conditions which determine credit repayment according to Ugbomeh, Achoja, Ideh and Ofuoku (2008) are interest rates and the

price of the most unstable agricultural commodity. In addition, in some studies in which credit is channelled through groups, group characteristics or the nature of membership of the borrowers in the group is included as a variable (Sharma and Zeller, 1997; Adeyemo and Agbonlahor, 2007; Pasha and Negese, 2014). Whereas according to Mehmood *et al* (2012), the factors which cause non-performing loans are, among others, business failure, careless bank employees and group membership.

Based on the background and these phenomena, the main question that this study aims to answer is what factors cause non-performing loans in the the KKPE credit program in cattle farmers in Central Java. It is hoped that the findings of this study could provide a basis for policy recommendations in order to improve and perfect the program.

1.3. The Study Aims and Benefits

Based on the background and problems stated above, the aims of this study is to analyze the factors that determine the repayment rate in the KKPE credit program in the cattle farmers of Central Java.

2. Research Framework

To answer the problems and fulfill this study's aims, a conceptual framework, which can be seen in Figure 1, was developed. This framework was based on theories and results of other studies and the characteristics of the KKPE credit program channelling. In general, repayment of the KKPE credit program would be determined by the farmers' socio-economic characteristics and the institutional characteristics of the KKPE creditors.

From the economic point of view, the farmers' economic capacity in repaying credit is affected by current conditions and how utilization of the credit could increase the income from the business which is financed by the credit. However, repayment of the KKPE credit program by c attle farmers is not only influenced by the economic condition of the businedd financed by the credit but also by the household economic conditions, including posession of main household assets such as agricultural land. In general, farmers in developing countries such as Indonesia are small-scale farmers whose financial management is based on household financial management. This is because farmer households in general, in cluding cattle farmers, have mulitple livelihood patterns; there is a sharing of income and expenses and there is no clear distinction between the financial management of the agribusiness and the household (Rahmanto, 2004; Zulfanita et al, 2009; Sumadi, 2010).

The social aspect tends to describe the farmers' characteristics which indicate their willingness to repay the credit. Some social aspects which influence credit repayment in previous studies are educational level, occupation, age, number of dependants, experience in agribusiness, and experience as a group member.

Credit repayment rate is not only influenced by the borrowers' socio-economic characteristics, but also by the institutional characteristics of the creditor which include group features, interest rate, administration fees, and the availability of collateral. Interest rates will affect credit repayment because according to the Keynesian and the Modern Theory of Interest, interest rate is basically the price or the cost of capital, so an increase in interest rate would decrease investment value and vice versa, and this would in turn affect real income through the multiplier effect (Keynes, 1936). A demanding system and difficult procedures would result in an increased credit cost which would lower the credit repayment rate as demonstrated in previous studies (Mehmood et al, 2012; Akpan et al, 2014).
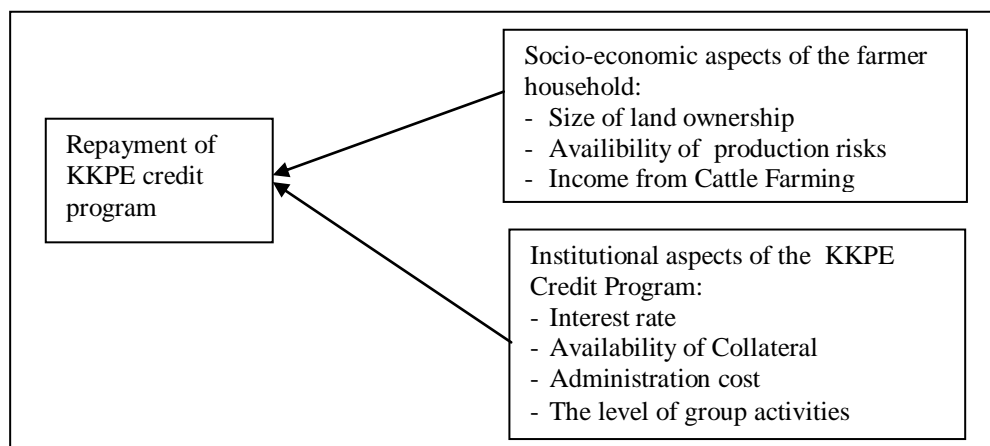

Figure 1. Conceptual Framework of The Research

3. Study Method

3.1. Location

This study was conducted in Central Java Province because out of the 34 provinces in Indonesia, Central Java is both the second largest in the KKPE credit scheme absorbption and a cattle production center. This study was done using the survey method, and Semarang District was selected as the sampling location because the credit absorption was quite substantial and the number of non-performing loans was also the largest.

3.2. Data Type, Source and Collection Method

As stated above, this study was conducted using the survey method; therefore, the data used is mainly primary data supplemented by some secondary data. The primary data were obtained through interviews with respondents, cattle farmers households, and structured questionnaires for the informants, especially for the stakeholders who are related to the channelling of the KKPE credit scheme such as farmer groups, banks, and technical government agencies (Animal Husbandry Agency). Secondary data were obtained through the perusal of literature from various sources, books, articles, documents and publications from related agencies such as the local Province/Regency Agricultural Agency, the Central Bureau of Statistics, banks, etc.

3.3. Sampling Method and Size of the Samples

    The respondent samples in this study were cattle farmers who received KKPE credit and the unit of analysis was the cattle farmer household. Sample respondents were determined using the purposive sampling method which considers the type of the cattle farmers group (performing and non-performing loans)and the cattle business scale (small and large scale). The number of samples in this study was 40 cattle farmer households which were recipients of the KKPE credit program.

3.4. Data Analysis Method

    To analyze the factors that determine credit repayment in the KKPE credit program in cattle farmers in Central Java, primary data were collected and then processed using the SPSS program dan analyzed using an econometric model, a multiple linear regression model. The parameters in this regression model were estimated using the Ordinary Least Square (OLS) method. The regression model developed linking credit repayment as a dependent variable and independent variables which were assumed to influence the credit repayment ratecan be seen below.

$$Y = \beta_0 + \beta_1 \ast X_1 + \beta_2 \ast X_2 + \beta_3 \ast X_3 + \beta_4 \ast D_1 + \beta_5 \ast D_2 + \beta_6 \ast X_6 + \beta_7 \ast D_3$$

where:

- Y = credit repayment rate (%);
- β_0 = intercept (constant);
- β_1 - β_7= the coefficient of regeression of each variable;
- X_1 = size of land possessed (ha);
- X_2 = adminstration cost (million IDR);
- X_3 = interest rate (%);
- D_1 = production risk (D = 1, disruptions present, D = 0, no disruptions).
- D_2 = group activity (D = 1, active, D = 0, inactive).
- X_6 = income of the cattle farming (million IDR);
- D_3 = collateral ownership (D = 1, present, D = 0, none).

4. Findings and Discussion

4.1. The Credit Repayment Rate at the Study Location

    The credit repayment rate, in this case proxied by the Non Performing Loan (NPL) and NPL level at the study location (Semarang District) is relatively high, higher than the NPL rate at province level (Central Jawa). The NPL value represents the level of credit repayment, the NPL relatively large value indicates the level of credit repayment is relatively small and vice versa. The NPL value of the KKPE credit program for cattle in Central Java is approximately 12 percent, whereas the NPL of Semarang District for the years 2013 and 2014 were much higher than 12 percent. In the period 2011-2014, the NPL of the KKPE credit program for cattle in Semarang Regency showed an increasing trend except in 2014. This indicates that the rate of the KKPE credit program repayment decreased until 2013, and vice versa in 2014. The decrease in NPL in 2014 was because the banks which channlled the credit took some control measures and these succeeded in reducing the number of non-performing loans or NPL (Figure 2).

    By differentiating between beef cattle and dairy cows, it can be seen that the NPL for the KKPE credit program for dairy cows was higher than that of the beef cattle (Figure 2). This was caused by several factors, (1) some dairy cows were inflicted by a metabolic disorder (milk fever), causing paralysis and even death, occuring mainly post partum and this is related to bad maintenance; (2) the price of catttle is unstable; the price tends to rise significantly during the KKPE credit liquidation and drops when repayment installations are due, 3) the utilization of the KKPE credit is often unsuitable and 4) the presence of rentseekers or moral hazards in the channelling of the KKPE credit, especially within farmer groups.
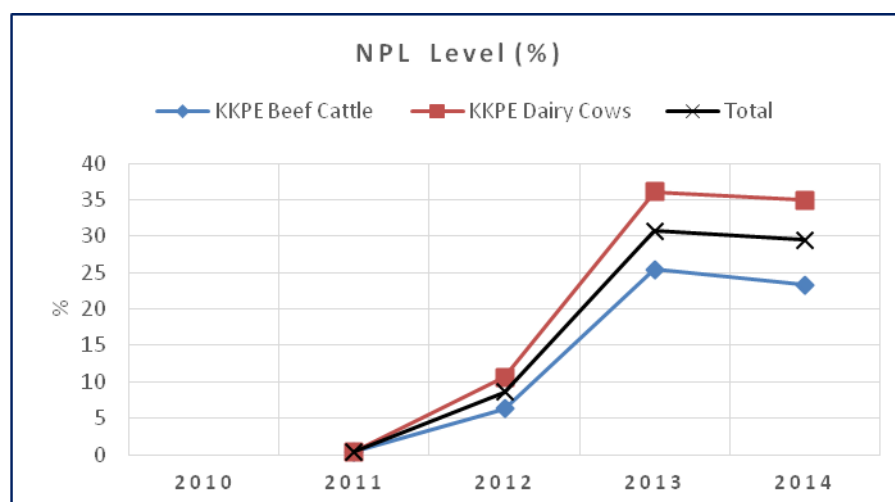

Figure 2. The Development of NPL in the KKPE Credit Program in Semarang District

4.2. Determinants of the KKPE Credit Program Repayment of Cattle Farmers

    As already stated that to analyze the determinants of the KKPE credit program repayment in Central Java is used multiple linear regression model where the parameters in the model are estimated using OLS method. The estimation result shows that the model of the KKPE credit program repayment is a good model that can be seen from the Adjusted R-squared (R2), which reached 74.3 per cent and value of F-statistic is significant. This means that all the independent

variables are jointly significant and are able to explain the variation of the dependent variable at 74.3 per cent, the rest is explained by variables outside the model.

Table 1 demonstrates the results of the analysis of determinants of the KKPE credit program repayment where there are seven independent variables suspected to affect the credit repayment differentiated between socio-economic characteristics of farmer households with the institutional characteristics of the lending. Socio-economic characteristic of the farmer household covers size of land ownership $(X1)$, income of the cattle farming $(X2)$ and production risk $(D1)$; while the institutional characteristics of the lending include condition of the cattle farmer group $(D2)$, ownership of collateral $(D3)$, the interest rate $(X3)$ and administration costs $(X4)$. For the dependent variable of the KKPE credit program repayment, the indicator is the ratio between the value of credit installment that have been paid to the value of credit installment that should have been paid in due time that is counted in percent. Only one of socio-economic variables of farmer households that have significant influence on the credit repayment, namely the risk of production. While all of the variables in the institutional characteristics of lending significant effect on the KKPE credit program repayment. Collateral ownership and farmers' group condition have a positive impact and the other factors, namely administarion cost, interest rate and production risk have a negative impact.

Tabel 1   Estimation Result of the Regression Model of the KKPE Credit Program Repayment

Model	Unstandardized Coefficients		t-statistik	Sig.
	B	Std. Error		
(Constant)	132.723	15.804	8.398	.000
Size of Land	.958	1.842	.520	.607
Administration cost	-3.330E-005	.000	-3.541***	.001
Interest rate	-9.069	2.176	-4.167***	.000
Production risk	-11.213	3.653	-3.070***	.004
Farmer's Group condition	5.605	2.978	1.882*	.069
Income of the cattle farming	3.075E-008	.000	1.423	.164
Collateral	16.357	7.032	2.326**	.027
R-squared	0.743			
Adjusted R-squared	0.687			
Prob(F-statistic)	0.010350			
F-statistic	13.236			

Source: Primary data
Note:
*** = significant at $\alpha =$ 1%
**   = significant at $\alpha =$ 5%
*   = significant at $\alpha =$ 10%

In detail, the influence of the socio-economic characteristics of farmer household and the characteristics of institutional lending to credit repayment will be explained as follows:

a. Size of the land ownership (X_1)

In accordance with the hypothesis, variable of the size of the land ownership have a positive influence on the KKPE credit progam repayment, although the effect is not apparent. Size of the land ownership is suspected positive effect on credit repayment for farmers because the land is an asset and a major source of capital in conducting their business activities. Size of the land ownership had no significant effect because the farmer's land ownership relatively small.

b. Income of the cattle farming $(X2)$

As the extent of size of land ownership, income of the cattle farming is also a positive effect on the KKPE credit program repayment, but had no significant effect. Cattle farming is a farm activity that is financed by the KKPE credit program, expected with such financing will improve the performance of cattle farming so that it will improve the ability to return their credit.

c. Production Risk $(D1)$

Dummy variable of production risks (illness, death and others) has a positive and significant influence on the the KKPE credit program repayment at the 1 percent of confidence level. This means that cattle farmers who experienced production risks, their credit repayment are smaller than cattle farmers that avoid the risk of the production. This is due to disease or death of cattle is very significantly lowering sale price or the level of productivity of dairy cows that in turn will reduce income and credit repayment ability in which the KKPE credit program repayment is determined by the sale of cattle.

d. Farmers' group condition $(D2)$,

In accordance with hypothesis, dummy variable of the farmers' group condition has a positive and significant influence on the KKPE credit program repayment at 10 percent of confidence level. This means that cattle farmers of the active group, their rate of the credit repayment is greater than the cattle farmers of the inactive groups. Active group very helpful to the smoothly process of credit repayment because this active group is the group that has activities regular meetings (about 40 days which is usually called "Selapanan"), whose members often reminding each other about credit installment payments, has a joint economic activities such as provision of input and or marketing of products, as well as manage the installment payment more regularly before it comes due.

e. Collateral ownership $(D3)$,

Ownership of collateral provide a significant and positive effect to the KKPE credit program repayment at 5 percent of confidence level. Positive relationship between dummy variable of collateral ownership with the credit repayment indicates that the rate of repayment credit of the cattle farmer who has collateral is better than the rate of credit repayment of the cattle farmer who has no collateral. Existence of collateral is very essential for banks in deciding on

lending. It is used as collateral by farmers will encourage them to be obedient and diligent in returning the principal and interest of the loan. This is consistent with study of Anigbogu et al (2014) that indicates that by greater the value of the collateral, the spirit of the borrower to repay credit up to the keel will be even greater. They worry about collateral will spout or even disappear if their credit repayment have bad performance.

f. Interest rate (X_3)

Although interest rate of the KKPE credit program is smaller than the market interest rate because of getting subsidies, but this variable significantly and negatively affect the credit repayment. This means that the increase in interest rates of this credit could reduce the repayment of credit. This is because for the cattle farmer, credit value they receive is relatively large so that the nominal value of the interest rate as borrowing costs is great enough so that the payment of the interest rates can reduce the value of investments and ultimately lower income and repayment capacity of the credit. Every six months, loan interest rates is evaluated and sometimes amended so that for a different time of credit application allows to pay for the credit by different interest rates.

g. Administration cost (X_4)

Similar to interest rates, the cost of administration provide a significant and negative effect to the KKPE credit program repayment at 1 percent of confidence level. This means that increase in the cost of administration can lower the rate of credit repayment. Administrative cost is the filing fee of credit where credit application is on behalf of a group then the fee is charged to each member. The administrative cost is relatively great and the largest contribution to the administration costs is the cost of a notarial deed. Therefore, administration costs can affect the repayment of credit.

5. Conclusion and Recommendation

5.1. *Conclusion*

The KKPE credit program that has been utilized by cattle farmers in Semarang District as livestock production centers in Central Java, their credit repayment have a poor performance shown by NPL that tends to increase and is relatively large. Results of regression analysis using OLS shows that factors affecting the KKPE credit program repayment of cattle farmers is more influenced by factors of institutional lending. Institutional factors that significantly influence the repayment of credit are the interest rate, administration costs, ownership of collateral and the farmers' group condition; while the farm household socio-economic factors that have a significant effect on the repayment of credit is only production risk. Collateral ownership and farmers' group condition have a positive impact and the other factors have a negative impact.

5.2. *Recommendation*

Based on the conclusions of this research to increase the loan repayment and encourage sustainability of the KKPE credit program then control by lending institutions to the KKPE credit program requirements, especially administration costs and interest rates are very important and that the control should have to consider the appropriateness and its impact on feasibility of the credit financed farming. Besides that, the government is expected to facilitate the certification of farmers' land assets in order to increase accessibility to the credit and better repayment performance. Tightening selection and provide assistance to cattle farmers groups both for technical and managerial aspects will also be able to encourage the development of sustainable the KKPE credit program.

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