

Financial access of farmers and factors associated with the access: empirical evidence of banana farms in West Java, Indonesia

E Wulandari¹, Ernah¹ and D Supyandi¹

¹Faculty of Agriculture, Universitas Padjadjaran,
Jl. Raya Bandung – Sumedang KM. 21, Jatinangor 45363, West Java, Indonesia

E-mail: eliana.wulandari@unpad.ac.id

Abstract. Access to finance has an important role in managing agriculture. Farmers in Indonesia can access finance from different sources of finance such as from banks, micro finance institutions, government through farmers' associations, buyer/traders, agricultural input kiosks, and from other sources of finance including family and friends. The objective of this research was to analyse the financial access of farmers and factors associated with the access. A survey was conducted to collect data especially from one hundred banana farmers in the centre of banana production in West Java, i.e. Cianjur and Ciamis District. The data were analysed using descriptive statistics and logistic regression. The results show that the majority of farmers had access to finance from government distributed through farmers' association, and from family and friends. Furthermore, the results show that factors associated with the financial access of farmers differ among the sources of finance. Age and farming experience have statistically significant association with the access to finance from bank. Moreover, education and farm size significantly associate with the access to finance from buyer/trader.

1. Introduction

Agricultural sector in Indonesia has faced problems in the provision of business capital, particularly in small and medium business scale farmers. Small farmers in terms of farm size have relied on the part of profit that they earned from previous season.

In general, the provision of finance for agriculture can be accessed from formal and informal financial sources [1, 2, 3]. Formal financing institutions provide finance in the form of credit from bank, while informal financing can be provided by agricultural input seller, agricultural product buyer, money lenders, friends, relatives and government aid in the form of agricultural inputs such as fertilizers and seeds [3]. The study of Wulandari et al [4] has shown that farmers also have access to finance from agricultural input kiosk in term of the flexibility payment of inputs.

The main challenges in accessing finance from formal sector such as from banks relate to administrative procedure [5] and the lack of collateral [6]. Most of farmers in rural areas have access to finance from non-formal financial sources such as from middleman, though a relatively higher interest but they provide easier access to finance [7].

Banana is one of agricultural commodities that have been developed in Indonesia. In Indonesia, the production of banana has a positive growth during the last five years, i.e. from 2013 to 2017 as much as 14.07%. On average, the banana production has reached 6922181 tonnes during the years. West Java is one of the centres of banana production in Indonesia, which has a positive growth as much as 3.04%.

Farmers in Indonesia have not implemented high technology yet in their banana farming [8], hence may affect to banana production. This may because of limited access of the farmers to financial sources. Lack of farming capital, causing limited costs to fulfil agricultural inputs required in farming such as



fertilizers, pesticides and other needs [9]. This study aims to analyse the financial access of farmers and factors associated with the access.

2. Materials and methods

The focus of this study is on banana farms since banana has been identified by Indonesian Ministry of Agriculture as one of the important crops for horticultural development in Indonesia [10]. The methods used in this study was survey, which involves one hundred banana farmers in the centre of banana production in West Java, i.e. Cianjur and Ciamis District. According to the data of Indonesia Statistic that is presented in Figure 1, on average, Cianjur and Ciamis District had the highest production of banana from 2012 to 2016 in West Java.

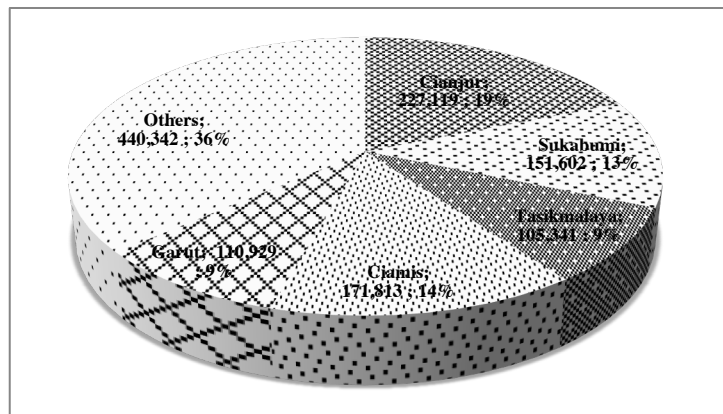


Figure 1. The average of banana production in West Java from 2012 to 2016

This study was conducted to collect data from May to September 2017 using a structure questionnaire. The data that were used in the study were the experience of farmers in obtaining access from various financial sources and socio-economic variables. Farmers' access to finance was analysed in terms of access to commercial credit from bank and micro finance institution (MFI), in-kind finance (non-cash finance) from trader and farmers' association, flexible payment of inputs from agricultural input kiosk and finance from other financial sources including from relatives, neighbours and friends. The socio-economic variables include gender, age, education level, farming experience and farm size.

The data were analysed using descriptive statistics and logistic regression. Logistic regression was used in this study to determine factors related to farmers' access to finance from various financial sources. The form of logistic regression used in this study is presented below.

$$y_i^* = \beta_1 + \beta_2 \text{gender} + \beta_3 \text{age} + \beta_4 \text{education} + \beta_5 \text{farming experience} + \beta_6 \text{farm size} + \varepsilon_i \quad (1)$$

$$i = 1, 2, \dots, \dots, 100 \text{ (farmers)}$$

Where the dependent variable y_i^* denotes farmers' access to finance from various financial sources. The independent variables (x_i) are the socio-economic factors, which were expected to relate to farmers' access to finance. The socio-economic variables are gender, age, education level, farming experience and farm size.

All the variables, except for dummy variables, were standardised prior to the regression. Moreover, the problem of homoscedasticity was checked using the Breusch-Pagan test. Following the method of VIF of Rook et al. [11], a test of multicollinearity was performed by calculating the Variance Inflation Factors (VIF) for each variable.

3. Results and discussion

3.1. Farmers' access to finance from various sources of finance

The descriptive statistics of the respondents in 2017 is presented in Table 5. As shown in Table 5, the majority of the respondent was male (93 per cent). The Table 1 also shows that, the average age of the farmers was 51 years and most of the farmers obtained primary school as the highest level of education. On average, the farmers had 23 years in farming experience and had less than one hectare of farm size. The accessibility of farmers to different financial providers is presented in Figure 2.

Table 1. The descriptive statistics of the respondents

Variables		Value
Gender (portion)	Male	0.93
	Female	0.07
Age (years)		51
Education (portion)	No formal education	0.02
	Primary school	0.67
	Junior high school	0.11
	Senior high school	0.17
	University	0.03
Farming experience (years)		23
Farm size (hectares)		0.58

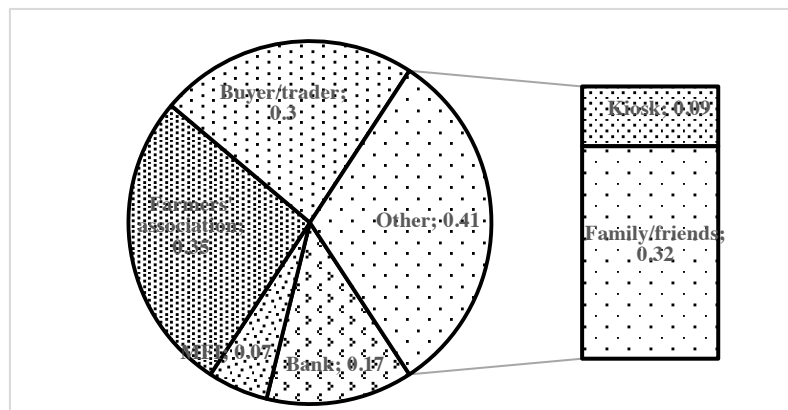


Figure 2. The accessibility of farmers to different financial providers

As shown in Figure 2, finance that could be accessed by the majority of farmers was finance from family and friends (32 per cent). Furthermore, Figure 2 shows that finance provided by formal institutions such as bank and MFI could not be accessed by many farmers since not more than 20 per cent of the farmers who could obtained finance from those finance providers. Farmers in Indonesia has faced difficulty in accessing finance from formal institution [6]. Informal finance has been a major financial source for households [12]. With regard to access to in-kind finance, the Figure 1 shows that this type of finance could be accessed by farmers from government through farmers' association (35 per cent). Government has provided agricultural finance subsidies or other kinds of incentive for stimulating farmers in improving their production [13]. Another study on finance has shown that finance provided by government had helped farmers in increasing their production [14]. Figure 2 also shows that farmers had access to in-kind finance from buyer/trader (30 per cent). Improving access to agricultural inputs can be attempted by having a contract with trader [15]. Of the financial access from agricultural

input kiosk, the result shows that only few farmers (9 per cent) had access to finance from the kiosk in form of the flexibility of input payment.

3.2. Factors related to farmers' access to finance from various sources of finance

The results of logistic regression model in determining factors related to access to finance from different financial sources are presented in Table 2.

Table 2. Factors determining access to finance from different financial sources

Variable	Bank	MFI	Farmers' association	Trader	Agricultural input kiosks	Others
Constanta	-3.655 (1.665)	-3.367 (2.347)	-1.266 (1.427)	-1.022 (1.780)	-1.664 (2.105)	-1.990 (1.692)
Gender	-	-1.657 (1.382)	-0.010 (0.916)	0.350 (1.180)	-0.960 (1.251)	0.918 (1.151)
Age	0.058 ^b (0.031)	0.069 (0.045)	0.004 (0.024)	0.018 (0.030)	-0.002 (0.040)	0.013 (0.025)
Education level	-0.136 (0.285)	-0.341 (0.467)	0.150 (0.220)	-0.860 ^a (0.345)	0.105 (0.335)	-0.328 (0.254)
Farming experience	-0.037 ^b (0.022)	-0.023 (0.030)	0.025 (0.018)	-0.016 (0.020)	0.025 (0.029)	-0.010 (0.018)
Farm size	0.299 (0.647)	-0.780 (1.185)	-0.700 (0.520)	0.902 ^b (0.542)	-0.980 (0.987)	0.714 (0.488)

^a Significant at 5 per cent and ^b significant at 10 per cent level.
Standard error in parentheses

The outcomes of the logistic regression model show that socio-economics factors have different relation to access to finance from different financial sources. The results presented in Table 2 show that some socio-economics factors have relation to access to finance from bank and buyer or trader, while the relation has not been found to access to finance from the other financial sources. For instance, age and farming experience have statistically significant association with the access to finance from bank. Age positively relates to access to finance from bank implying that older farmers have higher opportunity to have access to finance from bank. The positive relation may associate with the fact that older farmers focus in improving efficiency [16], which may lead to a higher opportunity to have access to finance from bank. However, farming experience has a negative association with the access to finance from bank indicating that farmers who have less experience in farming experience have more access to finance from bank.

With regard to access to finance from buyer or trader, education and farm size significantly associates with the access to finance from this type of financial source. Education has a negative association with the access to finance from buyer or trader implying that more educated-farmers have less access to finance from buyer/trader. The negative association might be because farmers who have higher education level tend to have off-farm jobs [17], in which farming may not become their main activity and thus less effort to look for finance from financial sources including from buyer. Conversely, farm size positively relates to access to finance from buyer/trader implying that farmers who have larger farm size have higher opportunity to have access to finance from buyer/trader. A possible explanation for this finding is that farmers with larger farm size have more knowledge of the important requirements to access finance to banks [18], hence may have higher probability to obtain finance from bank.

4. Conclusion

This study aims to analyse the financial access of farmers from various sources of finance and factors associated with the access. The study used a survey method involving one hundred banana farmers in the centre of banana production in West Java, i.e. Cianjur and Ciamis District. Descriptive statistics and logistic regression were performed for the data analysis. The results show that the majority of farmers had access to finance from government distributed through farmers' association, and from family and friends. Furthermore, the results show that factors associated with the financial access of farmers differ among the sources of finance. Age and farming experience have statistically significant association with the access to finance from bank. Age positively relates to access to finance from bank, while farming experience has a negative association with the access to finance from this financial source. Moreover, education and farm size significantly associate with the access to finance from buyer/trader. Education has a negative association with the access to finance from buyer/trader, on the other hand, farm size positively relates to access to finance from buyer/trader. In the light of the findings, this study suggests the need to enhance farmers' access to finance especially from bank and buyer/trader. For instance, the enhancement may be performed through a higher opportunity for younger farmer to be able to access to finance from formal financial institution such as bank.

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