

# The Analysis of Insurance Agriculture Performance and the Risk of Risk Farming in Java

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## ABSTRACT

The aims of this research are; (1) to determine the level of risk production and cost risk in rice farming. And (2) to find out the factors effects of the risk rice farming in Java. The research locations are in three provinces, Central Java, East Java and West Java Provinces. Each province are represented by Kudus, Kebumen, Bojonegoro and Bandung. The sample are 220 farmers. The data analysis method used is to use the cobb-douglass production function to see the production risk factors and the coefficient of variation (CV) to determine the level of risk faced by farmers. The results of this study are the risk of production, where the coefficient of variation is 0.704 or 70.4%, which means that the risk of farmers in rice farming activities has a high risk of production. Where the high production risk is due to natural disasters, floods and pests that attack rice farming, resulting in failure of rice farming, while the cost risk shows a coefficient of variation (CV) of 0.6821 or 68%, which means that the cost risk faced by farmers in rice farming is high. Where the cost risk faced by farmers is caused by the increase in the price of urea fertilizer and the price of pesticides. Production risk factors that affect rice farming are seeds and labor.

**Keywords:** *Farming risk, The factors of influence risk, Farmer response, and agricultural insurance*

## 1. INTRODUCTION

Indonesian agriculture sector has a very important role, because the agricultural sector is one of the sectors that concerns the lives of the wider community. In addition, business in the agricultural sector is one type of business that has high risks and uncertainties. External sources of risk and uncertainty (which cannot be controlled by farmers) come from the socio-economic environment, especially those related to the behavior of farm input and output markets, the dynamics of business links between the agricultural and non-agricultural sectors, inconsistencies in economic policies, social conflicts. And the natural environment, especially climate, natural disasters, or the exploitation of plant pests (OPT). Related to this, the government issued Law Number 19 of 2013 as an effort to protect the agricultural sector, especially for farmers, one form of protection in agriculture is through agricultural insurance.

Indonesia's economic growth in the third quarter of 2017 reached 5.06 percent (yoy) or 3.18% (qtq), higher than the same period in the previous year which reached 5.01% (yoy). Based on data released by BPS, it can be seen from the production side that the agricultural sector

is the second most influential sector for economic growth, after the manufacturing and service industry sectors. In the second quarter of 2017 the agricultural sector in a broad sense contributed 13.92%, while in the first quarter of 2017 its contribution was 13.59%, an increase of 0.33%. (Economic Development Report October 2017, 2018)

Empirically, agricultural insurance in developed countries such as the United States, Japan, and several European countries, agricultural insurance is developing rapidly and effectively to protect farmers. Therefore, agricultural insurance is one strategy to adapt to price instability. This condition is different in developing countries. The development of agricultural insurance has been mixed and has not shown satisfactory results. In Taiwan, agricultural insurance is well developed. In India, Bangladesh and the Philippines the development is slow, while in Thailand it is less developed. The realization of agricultural insurance for rice farming in Indonesia from 2016-2017 was dominated in East Java, West Java and Central Java.

Agricultural insurance is not intended for all farm risks. For example, the result of crop failure in a very

large area which is potentially very prone to catastrophic natural disasters. This research will be conducted in Indonesia to find out how big the response of farmers to agricultural insurance is, to measure the risks faced by farmers and the behavior of farmers in facing the risk of crop failure losses caused by “castorotropic disasters”.

## 2. REFERENCE

Commonly, The farming can't be separated from the risks faced by farmers, in line with research conducted by Fauziah, Alys (2011) on how to manage the risks faced by farmers in order to increase the productivity of agricultural products. In this study, a study was conducted on agricultural insurance that has been applied in Indonesia. In the article (Boer, 2012; Aryanti, 2014; Pasaribu, et al., 2010; Nurmanaf, et al., 2007) describes the development of the application of the insurance system for agriculture in Indonesia, and agricultural problems in Indonesia are described in the Indonesian National Institute of Agriculture Research Journal (2013). In other literature (Insyafiah and Wardhani, 2014) discussed agricultural insurance and premiums. The discussion on the coordination of agricultural insurance premium payments between the central and local governments is obtained from Yasin (2014). Regarding the legal basis for implementing agricultural insurance in Indonesia, it is discussed in Bramantia (2011).

Based on research conducted by Kumbhakar (2002), it is explained that the relationship between production risk and production choices and production efficiency. Where the research was conducted using cross section data from cultivation in Borwegia. The results showed that most fishermen have risk-averse traits, where fish feed has the potential to increase production risk, while human labor can reduce production risk, while when viewed from the technical efficiency system it is found that fish feed increases technical inefficiency while labor reduces the level of inefficiency technical.

Research conducted by Supartoyo and Kasmiyati (2014) explains that the agricultural insurance program is an economic institution for managing risks faced by farmers. One of the goals is to stabilize farmers' income by reducing the level of losses experienced by farmers due to yield losses. Although the implementation is quite difficult, it does not mean that it is hopeless. Several countries have implemented agricultural insurance with proven success. Agricultural insurance in Indonesia, which plans to be implemented in 2014, is something that needs to be encouraged by various academic studies so that its implementation does not result in failure but results in success. Agricultural insurance is very important because it provides protection and a sense of security in doing farming so that it encourages and motivates farmers to be able to increase the productivity of agricultural products, which often experience various unexpected and difficult to overcome problems. Agricultural insurance is a strategy to overcome the threat of agricultural sustainability in Indonesia by

providing protection for farmers as well as a solution for farmers to get out of the poverty trap so that farmers can be independent, productive, and prosperous they can contribute to achieving the nation development.

## 3. MATERIALS AND METHODS

### 3.1. Locations and Times of Research

This research was conducted in Java Island, with three provinces as research samples, East Java, Central Java and West Java. Where for East Java is represented by Bojonegoro, Central Java is represented by Kudus and Kebumen, West Java is represented by Bandung. The location selection was determined purposively by considering the agro-ecosystem of the area of each sample which represented the risks of each of these areas. The research will be conducted in August 2020.

### 3.2. Population and Sample Research

The sampling technique used in this research is purposive random sampling, where this technique is the determination of the sample using certain considerations. Where the sample for Central Java which is represented by Kebumen and Kudus, East Java which is represented by Bojonegoro and West Java which is represented by Bandung is an area that has agroecosystems that have a high farming risk due to flooding. With a random sampling technique, the number of samples is 200 farmer respondents who participate in the agricultural insurance program, where each sample of the Regency is 50 farmer respondents.

## 4. RESULT AND DISCUSSION

This research are evaluates the performance of agricultural insurance and the risk of rice farming in Java. Kudus Regency, Kebumen Regency, Bojonegoro Regency and Bandung Regency were chosen as research locations because they are districts that have the highest rice farming insurance (AUTP) participants in each province. Interviews were conducted with 220 rice farmers, of which 55 rice farmers in Kudus Regency, 55 farmers in Kebumen Regency, 55 farmers in Bojonegoro Regency and 55 farmers in Bandung Regency. So that the total sample of respondents in this study were 220 rice farmers. Based on the results of the research conducted, the following results were obtained:

From the results of the analysis conducted by the researcher, to see the level of risk, the researcher uses the calculation of cost risk and production risk. Where for these calculations analyzed using the coefficient of variation (CV). Where the small coefficient of production variation will show the variability of the average production value is small and vice versa.

**Table 1.** Risks of Rice Farming Production

Uraian	Risiko Produksi
The Production average (Kg)	6165
Standar deviasi	4343,606
Koevisien Variasi (CV)	0,704558962
CV (%)	70%

Source: Primary data processed, 2020

The risk of agricultural sector production is greater when compared to the non-agricultural sector, it is because greatly influenced by nature, such as weather, pests, temperature, drought and floods. The risk in agricultural production is due to the dependence of agricultural activities on nature, where the bad influence of nature will affect the total agricultural output. From the results of research conducted by researchers, it was found that the coefficient of variation was 0.704 or 70.4%, which means that the risk of farmers in rice farming activities has a high production risk. Where the high production risk is due to natural disasters, floods and pests that attack rice farming, resulting in failure of rice farming production.

**Table 2.** The Risk of Rice Farming Costs

Uraian	Risiko Biaya
Average cost (Rp)	29.318.725
Standar deviasi	19999063,45
Koevisien Variasi (CV)	0,682125963
CV (%)	68%

Source: Primary data processed, 2020

The cost risk occurs due to the fluctuation of the input price of rice farming, such as seeds, fertilizers, pesticides and labor costs. The results showed that the coefficient of variation (CV) was 0.6821 or 68%, which means that the cost risk faced by farmers in rice farming is high. Where the cost risk faced by farmers is caused by the increase in the price of urea fertilizer and the price of pesticides. This

is because the majority of farmers do not get subsidized fertilizer, so farmers use non-subsidized fertilizers. From the results of the analysis that has been done, the level of production risk and level of cost risk, both have a coefficient of variation (CV) > 1/2, so the level of risk faced by farmers is high, so that rice farmers have a tendency and opportunities for losses to be suffered.

From the results of multiple linear regression analysis (Table 3) shows that the coefficient of termination (R<sup>2</sup>) using four variables shows that 99% has been explained by the model, this indicates that the dependent variable (Y) in this case is the result of rice production influenced by the independent variable where (X1) is explained by land area, (X2) is explained by the use of seeds, (X3) is explained by the use of urea and (X4) is explained by the use of labor. The results of the regression conducted explained that the factors that had a positive effect on the risk of production were the use of seeds and labor. With a probability value <5% significance level. This shows that seeds have a significant effect on rice production, because seeds are the production factor that most influences rice production. Apart from seeds, another variable that has a significant effect is labor. This suggests that an increase in labor can reduce rice production and increase production risk.

## 5. CONCLUSIONS

The results of this research are the risk of production, where the coefficient of variation is 0.704 or 70.4%, which means that the risk of farmers in rice farming activities has a high production risk. Where the high production risk is due to natural disasters of floods and pests that attack rice farming, resulting in failure of rice farming, while the cost risk shows a coefficient of variation (CV) of 0.6821 or 68%, which means that the cost risk faced by farmers in rice farming is high. Where the cost risk faced by farmers is caused by the increase in the price of urea fertilizer and the price of pesticides. Production risk factors that affect rice farming are seeds and labor.

**Table 3.** Results of Multiple Linear Regression Analysis

Koefisien	Beta In	t	Sig.	Partial Correlation			
					Tolerance	VIF	Minimum Tolerance
Area	-,846 <sup>b</sup>	-,313	,755	-,023	3,430E-6	291516,177	3,430E-6
Seeds	2,999 <sup>b</sup>	3,078	,002	,225	2,506E-5	39901,119	2,506E-5
Urea	-,846 <sup>b</sup>	-,313	,755	-,023	3,430E-6	291516,177	3,430E-6
Labor	3,026 <sup>b</sup>	2,260	,025	,167	1,359E-5	73586,159	1,359E-5

Noted :

R<sup>2</sup> = 99%

Durbin Watson = 1,507

F Hitung = 3,927

Source: Primary data processed, 2020

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