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Economics Efficiency of Share Cropping System, Evidence from West-Java Indonesia

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Rice is a staple food of the Indonesian people. The majority of rice farmers still live below the poverty line, due to their land holdings not achieving economies of scale. Susenas (2013) showed the average area of land ownership increased while the number of households farming food crops decreased. This indicates a high inequality in land ownership. The government has been trying to resolve this issue with their various policies eg. new paddy fields and land consolidation as a mandate of the UUPA 1960, even if the result is not yet optimal. As institutional land, sharecropping system has existed since ancient times as an alternative to providing land for small farmers or tenant. Nevertheless, the pros and cons of the experts are still ongoing. Sharecropping systems are considered as exploitation of small farmers or tenants, in contrast, it also shows the provision of land to small farmers or farm workers. This article seeks to explore the numerous problems of sharecropping systems in West Java. This study used a mixed research method with proportional random sampling. The results showed no difference in the efficiency of sharecropping farming and land farmers. Sharecropping gives benefit to both parties, providing additional income for small farmers or tenants and a way to preserve the land for landowners.

Key words: *Sharecropping, Efficiency, Farmers, Inequality, West Java.*

Introduction

Rice is the staple food of the Indonesian people as a priority in agricultural development in Indonesia, including in West Java. Farmers as rice producers are mostly still below the poverty line, due to their lands not reaching economics of scale. The majority of rice producers as small farmers have areas under 0.5 hectares. The number of households (RT) of farmers in West Java is around 2 million . This number is lower compared with the number of households in 2003 (Agricultural Census, 2013). Rice farming is the main livelihood of 2.4 million farmer-owner farming families and 2.7 million farm laborers. It plays an important role in the economy sector in West Java. The rice production in West Java is able to meet the rice needs for 42.2 million people, and provides more than 1 million tons surplus of rice for people outside the province of West Java.

The Agricultural Census of 2013 showed the number of smallholders at around 2.3 million households. Based on the data, generally agriculture in West Java is carried out by small farmers whose concerns are economically no longer profitable (dis-economics of scale). The poor structure is a condition of Indonesian farmers, because the relatively small scale of business, narrow land, and low : productivity, capital accessibility, simple technology and capacity of farmers are weak, making it difficult to increase income. Geertz in Setiawan (2012) calls the peasants "liliput farm" or smallholders.

Table 1 shows the average area of wage landownership per household in Indonesia and West Java. The area has increased 0,099 in Indonesia and 0.166 in West Java during ten years periods. This indicates a high gap in land ownership (Susenas, 2013).

Table 1: Average Land Tenure per Farmer's Household in Indonesia and West Java Year 2003-2013

Type of Land	2003	2013	Difference
Indonesia (ha/households)			
Paddy fields	0,100	0,199	0,099
Non rice fields	0,250	0,659	0,409
Total of Land	0,350	0,858	0,508
West Java (ha/households)			
Paddy fields	0,071	0,237	0,166
Non rice fields	0,057	0,179	0,122
Total of Land	0,128	0,416	0,288

Source: BPS, 2015

The government has tried to solve this problem through various policies e.g. the printing of new fields and consolidation of land, which is the mandate of UUPA since 1960, although it is not yet optimal. The land acquisition system as an institution has existed since ancient times, seen as providing an alternative to providing land for small farmers or farm labourers. Nevertheless, the pros and cons of the experts' opinions are ongoing. Sharecropping, considered as exploitation of small farmers or farm laborers, on the other hand, provides roads for small farmers or farm laborers in the provision of land. Therefore, this study aims to analyse the sharecropping system with its issues in West Java, particularly the relation of sharecropping with efficiency farming and comparing the gap of income with and without the sharecropping system.

Literature Review

Profit sharing contracts for land analysis can be based on two opposite models (Karmana, M.H. 1991; Hayami dan Otsuka, 1993) as follows:

1). Marshalian Model
The traditional view of Marshalian says the nature of the inferred revenue-sharing contract is inefficient. The profit-sharing farmer will work effectively if □ = 1, and if □ <1, the farmer will neglect his work and a moralhazard issue arises. In this case, farmers maximise EV by taking into account L, expressed in:

EU1 □ □ F1 + EU2 ≤ 0 .... (1)

The equation suggests that contracts with fixed wages (□ = 0), workers have no incentive to do everything. Therefore, there is inequality in the equation (1) and the subject will choose L = 0, which is clearly inefficient. The production factor allocation in the production sharing contract (1> □> 0) is not the best efficiency, since the expected marginal product of effort (F1) is not equal to the marginal rate of substitution between the expected effort and output (-EU2 / EU1□). The last model of profit-sharing has derived from equation (1) with the assumption of uncertainty, risk aversion from endoworous sharing and endogenous contracting (determined by the model). Under the assumption, the Neo-Marshallian model equation (1) expresses the reaction function of the farmer's effort to share in the form:

L = L (□,□, K) .... (2)

Which working insentive influence by □, □, K
Assuming the farmers mobilize L1's business unit and competitive wage level (W), in addition to deploying L on the farm, as assumed in the previous model, the equation is reformulated into:

U (□Q + □ + WL1, D = L1) = V .... (3)

The Marshallian thesis showed the inefficiency of the profit-sharing contract has assumed the contract cannot be applied because the worker determines the level of L. The maximisation of U in equation (3) with respect to L and L1 will result in:

U1□F1 + U2 = 0 .... (4)
U1W + U2 = 0 .... (5)

From the above equation we can obtain:
□F1 = W .... (6)

This is a well-known equation of Marshallian inefficiency since most (□) marginal products are equated with competitive market wage rates.

2). Cheung Model
The Cheung argument bases his theory on the idea that landowners can force or employ using labour (L) perfectly to achieve optimalisation. In this case, the land is substituted with capital, so the owner of capital not only determines □, □, K but also L to maximise the expected utility.

The Cheung model assumes that in a balanced state the worker's 'profit' (Y1) is zero therefore the excess number of workers who need a profit-sharing contract will be invisible, its meaning:

Y1 = □ F (L, K) = □ - WL = 0 .... (7)

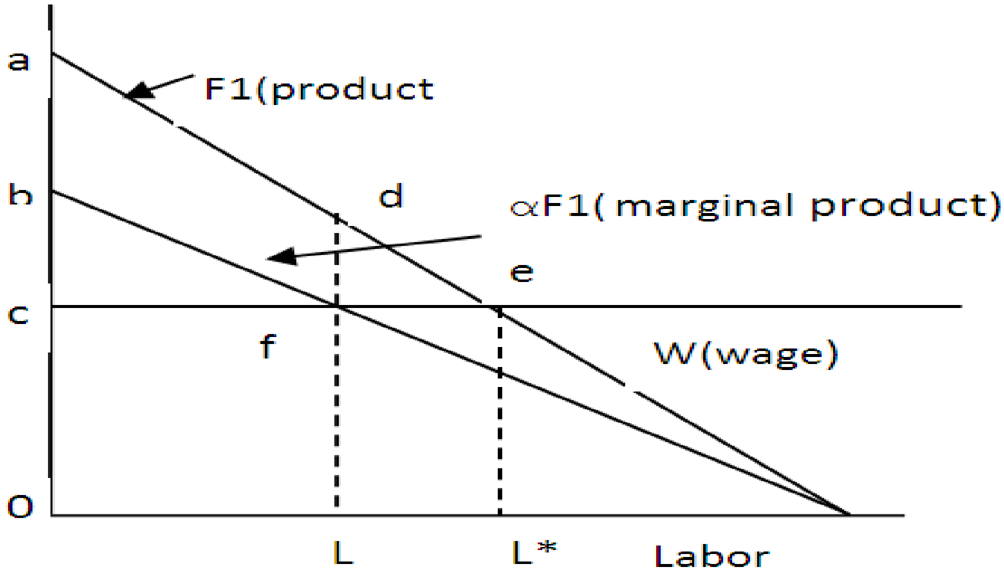
In fact, the Cheung model, □ is assumed to be zero, but here it is also assumed more generally that □ is also determined endogenously. Furthermore, the optimiser of the owner of capital reaches the maximising level of the capital owner's utility in terms of □, □, N, K, □, which is the subject of resistance in equation (8).

The capital owner's optimiser will produce the following Pareto optimum conditions:

F1 - W = 0 .... (8)
F2 - F2 = 0 .... (9)
(F - WL) - Kf2 = 0 .... (10)
U1f1 + u2 = 0 .... (11)

Due to the assumption of a linear and homogeneous production function, equations (8), (9), and (10) are interdependent. The equations only determine the optimum level of NK, L / K and l. By entering the optimal business or capital (L / K) ratio into equation (7), the combinations of and will be obtained, and this will result in the optimal Pareto level. The differences in Marshallian and Cheung models will be expressed in Figure 1. For simplification, it is only a matter of determining the optimum level of L, which will be discussed under the assumption of a 'pure' profit sharing contract (= 0), as an alternative to a fixed lease contract and a permanent employee's wage.

Figure 1. The choice model of contract in "certainty" (Hayami and Otsuka, 1993)



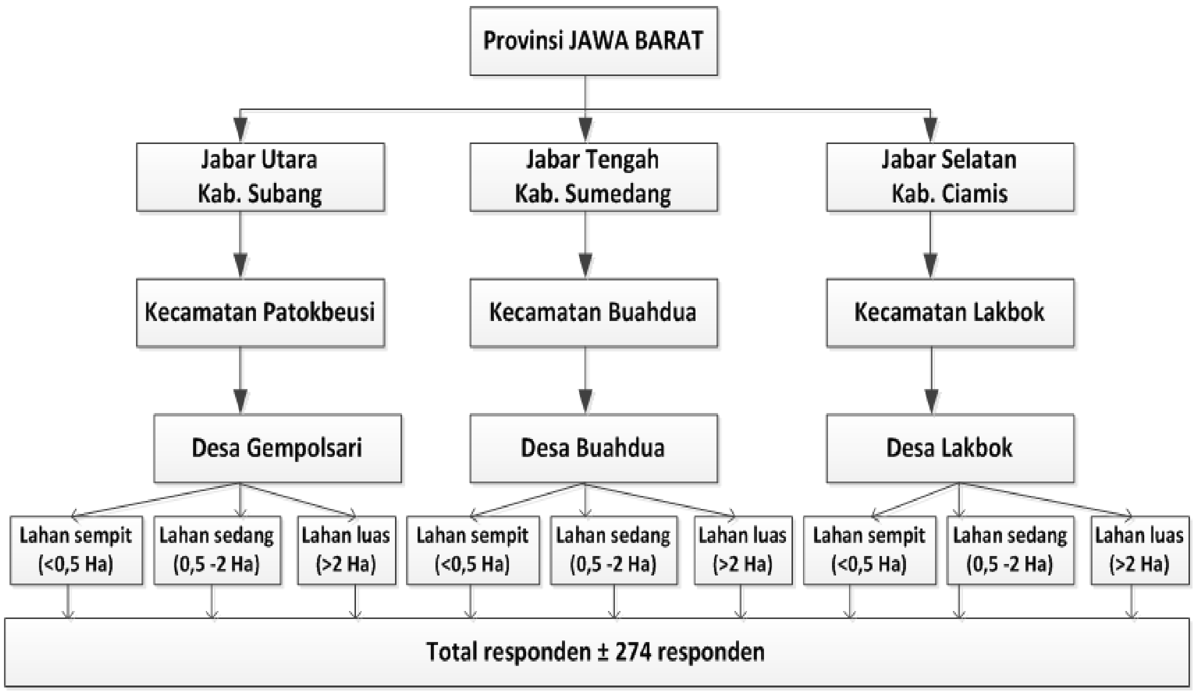
According to Figure1, assuming Marshalian for the amount of capital (K) and profit sharing (), the optimiser of the yield-sharing farmer is determined at the value of f, whereby the marginal product of the working product (F1) is included in the level equation competitive market wages. The work of the production sharing contract (L) is lower than the optimal Pareto effort (L*), which is in line with the equation between the marginal product of business (F1) and the market wage (W) determined at point e in the fixed lease and the farmer owner. However, the balance cannot be obtained at f. Since the rent received by the owner of a capital in the production sharing contract (area adfb) is less than the aec lease (area aec), there will be no owner of the capital to receive the production sharing contract. At the same time, the yield of the bfLO shareholder is higher than the yield that can be obtained by the same amount of work of fixed wage employment in the competitive market (CFLO area) in the bfc area. Excess profits in the bfc area will increase the excess labour force who want a profit-sharing contract, as all will prefer this type of contract. This excess workforce arises on completion according to the Marshallian model because this settlement ignores the optimisational behaviour of the capital owner. When a capital owner's optimisation is taken into consideration, he will not receive a lower rental fee than a fixed rental fee. He will try to eliminate the farmer's profitability by asking the farmer to pay a fixed amount comparable to the bfc (<0) area, and he will also try to increase with the intention that the farmer will not increase his work effort. The balance of this system will lead to a fixed lease contract as long as the terms of the farmers' business contracts are difficult to enforce. The Marshallian settlement can appear in equilibrium only when the owner of his capital is a benefactor who supports the income of a poor tenant at the cost of his income.

In the Cheung assumption of the applicable profit-sharing contract, the farmer's business in the contract is detailed at the optimum level (L *) for a given level of K. The output-sharing rate is adjusted by the owner of the capital so that the revenue share equals the fixed rental cost, ie. the area of bfc = feg area. However, the same balance can also be achieved for certain levels of melalui through the manipulation of values.

Research Methods

The research method for the socioeconomic research used in this study is mixed methods research with a sequential explanatory design which combines quantitative and qualitative research methods in sequence. Combined research methods are chosen to address the formulation of quantitative problems and the complementary qualitative problem formulation. Quantitative methods are used to obtain measurable quantitative data that can be descriptive, comparative and associative, with qualitative methods to expand and deepen the quantitative data already obtained.

Figure 2. The Sampling Technique Scheme



The agro-ecosystem side of the West Java Province can be divided into three areas, namely North of West Java (Pantura), West of Java Central and South of West Java. The sampling technique was carried out by using the cluster-random sampling method. The number of farmers was made up of about 30 respondents in each group of farmers (Figure 2).

The analysis used is descriptive analysis including the form of the cooperation of the prevailing arrangements, the benefits and losses felt by both parties, as well as the reason why the ability is still valid. The Cobb Douglass production function, Relationship Test (Spearman correlation), and Gini Index for income distribution analysis are used as the quantitative analysis. The analysis using the Cobb-Douglas stochastic frontier production function model on land owned and certified in West Java was analysed separately using the formula:

$$\ln Y_i = \beta_0 + \sum_{j=1}^{7} \beta_j \ln X_{ji} + v_i - u_i$$

Where:

Y_i	= Output of paddy production from farmer i (kg)
X_{1i}	= Total area of paddy farmer i (hectare)
X_{2i}	= The number of seeds used by farmers i (kg)
X_{3i}	= The amount of manure used by farmers i (kg)
X_{4i}	= The amount of Urea used by farmers i (kg)
X_{5i}	= The amount of SP-36 used by farmers i (kg)
X_{6i}	= The amount of KCL is used by farmers i (kg)
X_{7i}	= The amount of NPK is used by farmers i (kg)
X_{8i}	= The amount of pesticides is used by farmers i (liter)
X_{9i}	= The amount of Labor is used by farmers i (HOK)
β_0	= Constanta (vector parameter)
β_j	= Vector parameter of function production (j=1,2,...,9)
v_i	= Random error term
u_i	= Non negative error term

Soekartawi (1994) showed the Cobb-Douglas function has several advantages, namely:

1. Its homogeneous nature and it can be used to measure return to scale.
2. The completion of the Cobb-Douglass function is relatively easier than any other function, such as the quadratic function, because the Cobb-Douglass function can be transferred to a linear form.
3. The result of line estimation through the Cobb-Douglass function will produce regression coefficient which also shows the elasticity quantity.

4. The magnitude of elasticity at once shows the level of magnitude returns to scale. Thus there are three possibilities, namely:

A. Decreasing Return to Scale, if b1 + b2 + ... + bn <1, it means that the proportion of adding factor of production exceeds the proportion of additional production.
B. Constant Return to Scale, if b1 + b2 + ... + bn = 1, means that the addition of the production factor will be proportional to the addition of the obtained production.
C. Increasing Return to Scale, if b1 + b2 + ... + bn> 1, it means that the proportion of adding factor of production will result in additional production which is a larger proportion.

Therefore, by using the production function model, the factors that influence the production level and production scale of rice farming can easily be known. In the relationship between production factors (input) and production level (output), the scale of effort (return to scale) describes the response of output to the proportional change of the input.

Results

Land Management, Farmer's Income and Farmer's Motivation to Implement Sharecropping

The narrow land ownership problem, the unequal distribution of land ownership, and the heavy population pressure on the land, resulted in cooperation between large landowners and smallholders, or farmers (Hayami and Kikuchi, 1987; Fujimoto, 1996; Sangwan, 2000; Sharma, 2000; Hartono et al 2001 inside Sowarto, 2010).

Table 2: Distribution of Farmers Base on the Total Area in West Java

Categories Based on Total Area	Agro-ecosystem Zone						West Java	
	Pantura		Jabar Central		Jabar South			
	Person	%	Person	%	Person	%	Person	%
Small (<= 0,5 Ha)	3	3,4	77	80,2	82	91	162	58,6
Moderate (0,501 - 1 Ha)	54	60	18	18,8	6	6,7	78	28,2
Large (> 1 Ha)	33	36,6	1	1	2	2,3	36	13,2

Table 2 reveals the area of Central Java and South West Java is dominated by farmers with narrow land, while the area of Pantura is dominated by farmers with medium land and large land. While generally the peasant farmers still dominate, ie 58.6% in West Java. This information can be used as supporting data in the analysis of village elite conception per agro-ecosystem region. So the heterogeneity of perception about village elite and innovation gate or agent of change / vanguard (Ploeg, 2012) in each agro-ecosystem region can be described.

This will contribute to the determination of the proposed development model to prioritise the locality aspect to achieve an optimal diffusion and dissemination process. The average of land tenure owned by farmers in the three agro-ecosystems in West Java is 0.93 hectares per farmer, with the most narrow land occupation of 0.5 ha and the widest 33 ha. In the Pantura region, the average land tenure is 2.16 ha, with the smallest area of 0.5 ha and the widest 33.3 ha. The Central Jabar region has the average of the most narrow land tenure of 0.33, with a minimum area of 0.03 ha and a maximum of 1.19 ha. While in South Java, the average land ownership is 0.34 ha with a minimum area of 0.07 ha and a maximum area of 1.96 ha. The data can illustrate the high disparity of land among farmers in West Java. The high disparity can affect the determination of the access point and the point of dissemination when the development program will be implemented. This is due to the close relationship between land tenure and social status, especially in rural areas. Village elites are often used as gateways for a development program to be disseminated to other farmers. In addition, the land area also determines the farmer's income level (Table 3):

Table 3: Income Farming Base on Areas (Rp. /season/ha)

Descriptions	Small Areas (000 Rupiah)	Moderate Areas (000 Rupiah)	Large Areas (000 Rupiah)
West Java	10,647.38	18,030.41	21,794.26
Pantura	18,512.18	20,916.17	22,868.35
Jabar Central	10,854.80	12,155.50	12,669.82
Jabar South	10,164.86	9,683.34	8,633.83

The more land owned by the farmers, the greater the income earned in Table 3. This is possible because in general, farmers with larger lands have wider efficiency space. This efficiency can occur from starting bulk purchases of agro-inputs that will ultimately reduce the prices and costs of transportation, maintenance, harvesting and post-mechanisation that will impact on labour cost pressures, and at the marketing level where farmers with high production usually have better bargaining positions and wider market options and high production usually has better bargaining positions and wider market options. However, this does not apply to the South Jabar agro-ecosystem region. This is because the characteristics of agriculture in South Jabar region are less developed when compared with other agro-ecosystem areas. The South Jabar agro-ecosystem region is dominated by swampy rice fields, with low productivity characteristics and a quality of rice that is less preferred by the market. In this case, in the South Jabar region the wider land is less influential on the farmer's revenue, on the other hand, the cost required for the maintenance of large areas is relatively large so that the profit received by the farmer becomes smaller.

The Sharecropping System is a temporary surrender of rights to work on land for others under certain agreements (sharing of production costs and production), and after the designated time, the land returns to the owner. The variation of the system is very diverse in West Java, there is a division of yield between the owner and 1: 1 sharecroppers, called "Maro", there are owners and sharecroppers 1: 2 called "Mertelu", or owner and sharecroppers 1: 3 or called "Merapat." In the risk system of failure is also a shared burden between the landowner and the tiller. The more the number of sharecroppers in the region while the agricultural land is limited, then the share received by the owner will be greater. Conversely, if the more land area whiles the power sharecroppers a thin, then the owner is also getting smaller.

Implementation of the system of sharecropping has been going on from the feudal era, colonialism and after independence, while the changes that occur are: (1) Change of rights and obligations of landowners and sharecroppers, where the rights of sharecroppers are reduced; increased obligation of sharecroppers, (2) Increasing pattern of relationships between landowners and peasants from patron clients to patron clients and kinship; (4) On patron-client relationships there is a reduction of the goods that the patron provides to the client, as well as the client not providing a response in the form of labour contributions; (5) Increasing the motives of landowners and peasants in applying a system of sharecropping, from rational action, becomes rational, irrational and affective.

The motivation of the sharecroppers is because there are no other job opportunities in the village (60%), increases of the arable land area (20%) and increases the source of income for families (20%). This is in line with Fujimoto's (1996) opinion that land cooperation (sharecropping) is influenced by population pressure, limited land area, distribution of land tenure, and employment opportunities outside the limited agricultural sector. While the study (Hediana, D.2012) concluded that the motive of the land owner to carry out a sharecropping system is because it requires manpower to manage their fields, while the peasants implement a sharecropping system with individual land owners because they do not have to pay taxes.

The results of Stochastic Frontier production functions on Farmer Owner and Farmer of Sharecropping in West Java

Table 4 shows the owner farmers, and how all variables of production factors simultaneously (together) can predict the production achieved by farmers significantly. Furthermore, the result of the Stochastic Frontier production function analysis on the owner farmer shows that from nine independent variables, seven variables significantly influence rice production level, while only manure and NKP fertiliser are not significant . Variables that significantly affect rice production levels are: land area, seeds, Urea fertilizer, SP-36, pesticides and labour.

The results of the analysis for peasant farmers are not much different, which shows that of the nine independent variables, there are five variables that significantly affect the level of rice production, namely: land area, seed, urea fertiliser, KCl fertiliser and labour. What is interesting is the farmer owners there are 3 variables that signify a minus, namely seeds, fertiliser SP-36 and pesticides. This indicates that there is an excess of the use of the three means of production so that the demand is reduced while for the peasants of sharecropping, only SP-36 fertiliser is used to excess.

This indicates that there is a lack of capital amongst the peasants, so that the use of production facilities tends to be less than it should be, and needs to be improved. Furthermore, if the result of the sum of the regression coefficients showing the elatisitas of production obtained for the farmer owner is 1.2741, while for the farmer sharecropping it's 1.0496, this means both enter the business scale Increasing Return to Scale. This means that the proportion of additional factor production will result in additional proportionate production.

Table 4: Estimation of Parameter Stochastik Production Frontier (SPF) with Maximum Likelihood Estimation of Paddy Farmers

	Owner			**Sharecropper**		
	Coef.	**Std. Error**	**P >|*t*|**	**Coef.**	**Std. Error**	**P >|*t*|**
West Java						
_Constanta	2.045**	0.075	0.000	2.5493**	0.3453	0.000
Ln Total Areas (Ln X1)	1.043**	0.060	0.000	0.7122*	0.3911	0.077
Ln Seed(Ln X2)	-0.454**	0.047	0.000	0.1584*	0.0764	0.070
Ln Manure (Ln X3)	0.001	0.003	0.826	0.0463	0.0447	0.307
Ln Urea (Ln X4)	0.057**	0.009	0.000	0.0181*	0.0052	0.064
Ln SP-36 (Ln X5)	-0.019**	0.004	0.000	-0.0001	0.0243	0.995
Ln KCL (Ln X6)	0.009**	0.004	0.017	0.0230*	0.0126	0.077
Ln NPK (Ln X7)	0.001	0.005	0.920	0.0188	0.0214	0.385
Ln Pestiside (Ln X8)	-0.017*	0.010	0.086	0.0007	0.0209	0.974
Ln Labor (Ln X9)	0.653**	0.062	0.000	0.0722*	0.0697	0.091

* sig. at 0.10 level; ** sig. at 0.05 level

The Result of Economic Efficiency and Alokatif Analysis of Wetland Farming on Farmer Owners and Farmers of Sharecropping in West Java

Allocative and economical efficiency is obtained through analysis of the inputs of production using input prices applicable at the farm level. The production function used as the basis of analysis is the stochastic frontier production function. The stochastic frontier production function is decreased by minimising the input cost function with the production function on the Cobb Douglas function equation so as to obtain the function of the dual frontier cost (isocost frontier) as follows: it is assumed the inefficiency of farming will increase with the increase of production costs. Based on the result of decreasing of the dual cost function, the value of allocative and economic efficiency in this research can be calculated.

Efficiency is one indicator of farming success carried out by farmers. The theoretically shown three terms of efficiency are: technical efficiency, price efficiency and allocative efficiency. A production factor use is said to be technically efficient when the production factor used produces maximum production. Allocative efficiency (price efficiency) is achieved if the value of the marginal product equals the price of the factor of production. While the economic efficiency occurs if the farm business achieves technical efficiency and also achieves price efficiency. (Pyndick, Robert S & Daniel L.R. 2005). The distribution of farmers' allocative and economic efficiency values is presented in Table 5.

Table 5: Frequency Distribution of Allocative Efficiency (AE) and Economics Efficiency (EE) of Rice Production On Land Owned and Sharecropping in West Java

Efisiensy Level (%)	Owner				Sharecropper			
	Allocative Efficiency		Economics Efficiency		Allocative Efficiency		Economics Efficiency	
	Number of Farmers	%	Number of Farmers	%	Number of Farmers	%	Number of Farmers	%
West of Java								
<=40	2	0.84	4	1.69	13	35.14	13	35.14
40,01-50	8	3.38	11	4.64	11	29.73	11	29.73
50,01-60	19	8.02	43	18.14	4	10.81	4	10.81
60,01-70	51	21.52	66	27.85	2	5.41	2	5.41
70,01-80	68	28.69	60	25.32	2	5.41	2	5.41
80,01-90	41	17.30	35	14.77	1	2.70	1	2.70
90,01-100	48	20.25	18	7.59	4	10.81	4	10.81
Total	237	100.00	237	100.00	37	100.00	37	100.00
Maximum (%)	99.96		95.26		97.21		97.20	
Minimum (%)	37.55		36.01		28.04		28.04	
Average (%)	75.81		69.65		52.34		52.34	

The averages of allocative efficiency (EA) in the owner and sharecroppers are: 75,81%, and 52,34% respectively. This suggests that there are still opportunities to improve allocative efficiency by reducing costs that are not actually required. Farmers own the allocative efficiency range between 37-99%, while the peasants are between 52-97%. If comparative, then the allocative efficiency of the owner of farmers is better than the peasant's sharecropping. This is due to lack of motivated farmers to increase production, because the excess effort will be divided into two with the owner (Marshallian theory).

Economic efficiency (EE) is a multiplication of technical efficiency (ET) with allocative efficiency (EA). The result of economical efficiency analysis is in line with the allocative efficiency, that is the owner farmer is higher the economic efficiency value compared to the peasants (69.65% with 52.34%). In the owner farmers, obtained EE values ranged from 36.01 to 95.26%. This means that, if farmers are able to achieve maximum economic efficiency, it can save production costs by = 1-69,65 / 95.26 = 26.8%. With the same calculation, the farmers sharecropping can save production costs of 46.2%, if the maximum efficiency level is achieved. Thus, if comparative, the possibility of production cost savings is even greater for the peasants, or in other words, the owner farmer is at a higher level of economic efficiency than the peasants.

Comparative analysis of R/C on Farmer Owner and Farmer of Sharecropping in West Java

The other indicator commonly used to assess farming performance is R / C, i.e. the ratio between revenue and expenses incurred. The highest of R / C indicates the farming more profitable and feasible.The result of the analysis in Table 6 shows that the average R / C ratio of farmer's farming in one planting season is 2.49, slightly higher than the R / C value of the 2.31 farmers. It is different for the status of the owner and the sharecropping where the R / C value indicates the rice farming in West Java is feasible with its R / C value>1.

Table 6: Frequency of Distribution R/C Ratio Paddy Farming in West Java Base on the Areas

R/C Ratio	Owner		Sharecropper	
	(person)	%	(person)	%
<= 1,00	0	0.00	0	0.00
1,01 - 1,50	0	0.00	0	0.00
1,51 - 2,00	39	16.46	17	45.95
2,01 - 2,50	88	37.13	6	16.22
2,51 - 3,00	72	30.38	10	27.03
3,01 - 3,50	35	14.77	4	10.81
3,51 - 4,00	3	1.27	0	0.00
> 4,00	0	0.00	0	0.00
Total	237	100.00	37	100.00
Maximum R/C Ratio	3.67		3.26	

R/C Ratio	Owner		Sharecropper	
	(person)	%	(person)	%
Minimum R/C Ratio	1.55		1.71	
Average R/C Ratio	2.49		2.31	

Gini Ratio of Income Farming of Owner Farmers Without Sharecropping Compared With Sharecroppers

The Gini ratio is used to estimate the level of income distribution is the. Gini ratio has advantages; the technique of calculation is relatively easy and not tied to the distribution of income being observed. In addition, the Gini ratio can be used as a comparative tool in observing the trending nature of community income distribution.

In addition, the Gini ratio can be used as a comparative tool in observing the trending nature of community income distribution. The calculation of the income distribution can be graphically depicted with the Lorentz Curve (Figure 3). Both Lorenz and Gini ratio curves are based on the cumulative percentage of the number of family members or individuals with a cumulative percentage of income (Todaro and Smith, 2004; Aremu & Ediagbonya 2018). The Gini (G) value is at 0 to 1 intervals.

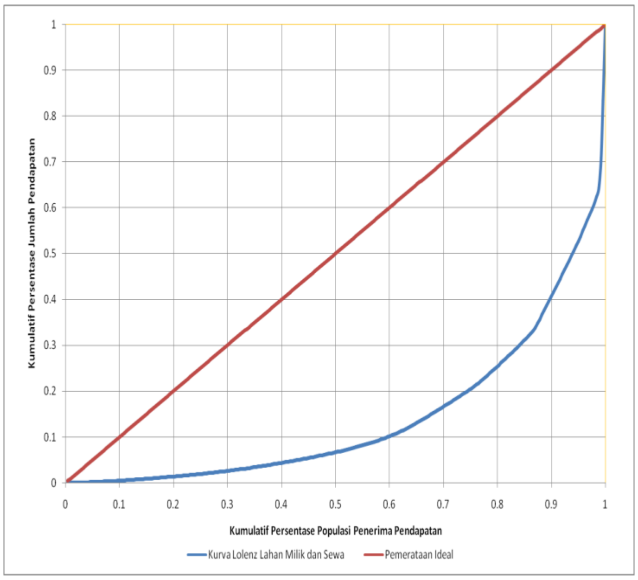
If the Gini ratio = 0, it means perfect equity (everyone gets a share of the same income). If the Gini ratio = 1, it means perfect inequality in revenue sharing. In other words, one person (one income group) in a State / region enjoys all the income of the country / region.

The analysis in Table 7 shows that the Gini ratio of income on the owner farmers in the presence of a concession is 0.7185, slightly smaller than that of unrecorded 0.7195. This also means that income imbalances can be improved by a system of conversation. The conversation is one way for farm workers to gain access to land. Similarly, for smallholders, it is a way to increase the extent of land exploitation in order to achieve economies of scale. Further illustrated in the Lorenz Curve (Fig. 3), it is shown that distribution of income becomes more evenly distributed in the presence of a system of conversation.

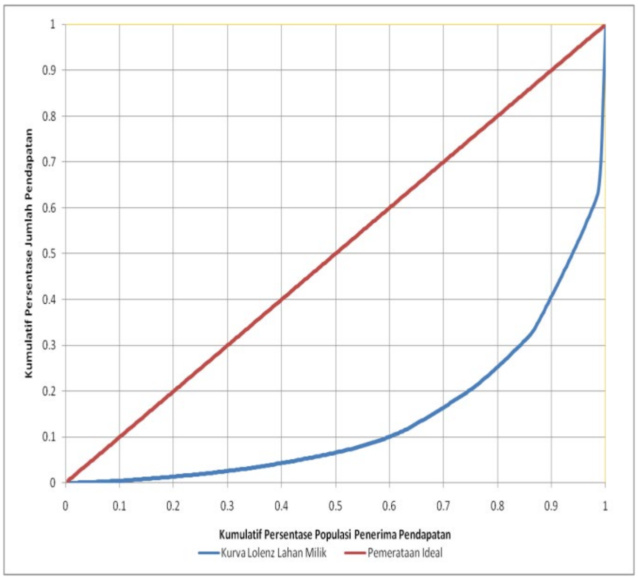
Table 7: Frequency of Distribution Income Farming Per Hectare Per Musim Rice Farmers in West java and Gini Ratio of Areas (Milik vs Milik dan Sakap)

Income (Rp/season)	Owner		Owner and Sharecropper	
	Number of farmers (person)	%	Number of farmers (person)	%
West Java				
<= Rp 2.500.000	65	27,43	65	27,31
Rp 2.500.001 - 5.000.000	55	23,21	55	23,11
Rp 5.000.001 - 7.500.000	17	7,17	17	7,14
Rp 7.500.001 - 10.000.000	9	3,80	9	3,78
Rp 10.000.001 - 12.500.000	6	2,53	6	2,52
Rp 12.500.001 - 15.000.000	23	9,70	24	10,08
Rp 15.000.001 - 17.500.000	6	2,53	6	2,52
> Rp 17.500.000	56	23,63	56	23,53
Total	237	100,00	238	100,00
Maximum (Rp/Hektar/Season)	755.091.167		755.091.167	
Minimum (Rp/Hektar/Season)	406.779		406.779	
Average (Rp/Hektar/Season)	19.116.035		19.098.377	
Gini Ratio	0,7198		0,7185	

Figure 3. Kurva Lorentz : Owner (A); Owner and Sharecropper (B)



(A)



(B)

Conclusions and Recommendations

Conclusion

The results shows the capability system still exists in West Java, particularly in Central and South West Java. Variations in the system are very diverse. There is a sharing of results between the owner and the "maro" (1:1), "mertelu" (2:1) and sealed (3: 1). The more the number of sharecroppers in one of the areas, then the share received by the owner will be highest. Conversely, if the more land area whiles the power of small sharecropper then the owner is getting smaller.

The efficiency analysis results show that the farmers are not much different from the peasants, shown by the economic efficiency of 69.65% and 52.34%. Similarly with R / C, obtained R / C owner of 2.49, and R / C of sharecropper 2.31. It means the system is profitable for both the owner and the sharecroppers. The inclusion system provides additional income for small farmers, whereas for landowners, it is a solution to maintain the land and additional income for the owner. It means that the conversation benefits both parties. This is given that the farmer income inequality system slightly improved with the Gini ratio from 0.7198 to 0.7185.

Recommendations

The restructuring of agricultural institutions becomes especially important when linked to productivity, efficiency and added value. A fundamental effort that needs to be carried out is to create economics of scale, by bringing together inefficient small farmers /smallholders.

The recommended institutional forms cooperative farming, collective farming or corporate community can be selected according to the conditions and social capital owned.

It is necessary to develop rural economic policies that are not only related to on-farm and off-farm, but also reflect the need to develop non-agricultural business units that can absorb labour in the form of local people with limited education and skills, particularly for small-scale farmers who have a very large dependence on income from non-agricultural activities.

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