Estimation of Social Account for Rural Development in Upland Java

— An application of farming system approach —

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Introduction

In Indonesia, the secondary crops (*palawija* in Indonesian) are the major source of employment, income and nutrition for a large number of low income people especially in marginal upland areas. In view of the success of the intensification programs referred to as BIMAS and INMAS for rice in the past Five Year Plans (*Pelita*), which had resulted in national self-sufficiency in this staple food, *Pelita IV* (1984–1989) paid special attention to the secondary crops[2,7]. Under *Pelita V* which started in April 1989, wider aspects including agricultural policies, research programs and extension services continue to receive a high priority in the program implementation for the development of *palawija* agriculture in upland areas[1].

However, the socio-economic situation relating to the upland agriculture in remote areas of Indonesia is not clearly identified yet due mainly to elusive nature underlying village society[9]. How is the rural economy in upland areas structured? What a level of economic potential has the village agriculture at present? Appropriate answers to these questions necessary for the effective design of rural development programs are as yet in a thick veil under complicated cropping systems and limited information on informal transactions among villagers through various economic activities. It is therefore of great importance to analyze the existing structure of the rural economy in upland areas, to identify the present constraints in promoting *palawija* agriculture, and to estimate potential changes which could result in removal of those barriers. These are critical issues of upland farming not only in Indonesia but also in almost all the developing countries of Southeast Asia.

A case study was undertaken in West Java, Indonesia to analyze the present situation of an upland village economy, with an emphasis on the detailed investigation of farming systems of upland crops in general, and soybean in particular, on which the Indonesian Government places the greatest priority in its *palawija* development program[5]. This paper attempts to document the existing framework as well as its working mechanism of a peasant economy, focussing attention on interrelationship between the *palawija* agriculture and the village economy. The village (*desa*) of Cibuyutan was selected as a site for the integrated analysis during the period 1985 to 1987.

Methods and framework of the analyses

One of the difficulties in the economic analysis of the peasant society is the inseparability of each of the economic functions within a household. In addition, because of tradition, kinship, and need for cooperation for the sake of minimum security and sur-

vival, a high degree of interaction exists among the residents in the village society. Intricate mutual-help and patron-client relationships govern their economic activities differently according to the specific class structures and rural systems under which they live.

To analyze such complicated systems prevailing in traditional peasant society in West Java, the following five types of surveys were carried out: (1) a general survey on the socio-economic situation of the whole household in the village, (2) a baseline survey on a yearly basis of all households in a hamlet (*kampung*), (3) an asset survey (monthly) of the selected 18 soybean farmers, (4) a crop survey (weekly) by plots of the above sample farmers, and (5) a comprehensive record survey (daily) of household economy and farm activities for the sample farmers during a full one-year period, August 1985 to July 1986.

The average area per farm-household operated in the village is estimated at 0.5 ha (350 *bata*). For convenience of the analysis, a definition was made, under which the farmers cultivating 0.5 ha or more were classified as large farmers, and those less than the average size as small farmers. Ten large and 8 small farmers were proportionally selected for the daily record survey as the respective representatives of those two groups.

The system subjected to analysis in connection with the economic activities of the farm-households and the entire village consists of seven completely articulated accounts[4]: (1) upland crops production account, (2) non-upland crops production account, (3) non-agricultural production account, (4) income-expenditure account, (5) fixed capital formation account, (6) capital finance account, and (7) transaction account.

Based on the UN Accounting System[8], two types of accounts are considered: one is private accounts for the individual sample household, and the other is aggregate results of the social accounts for the village economy by deducting transactions within the village from the private accounts. In characterizing the peasant economy in a selected village, this study adopted an approach consisting of private accounts of individual households and social accounts of the whole village.

Village characteristics

The village where the surveys were carried out is on a hilly plateau in the district (*kabupaten*) of Garut, West Java. It is a typical upland village, where various crops including soybean are grown in terraces under rainfed conditions. Most villagers (approximately 4,900 as of 1985) are Sundanese and pious Moslems.

Farming is the main occupation of most villagers, and a majority of them also engage in other jobs such as petty trade, transportation, and construction work. The research site which is one of the 7 hamlets in the village consists of 149 households, comprising 121 farm households, 22 nonfarm and 6 landless ones. Landless villagers eke out their scanty livelihood with their income from casual nonfarm work either as tenants or agricultural laborers. Out of the total farm householders, 66% is of full-time and the rest is of part-time.

About a quarter of the households have no farm lands and another quarter own lands of less than 0.2 ha each. The average farm land for all the households is less than 0.4 ha each, while the average for the farm households is only about 0.5 ha each. Operational farm size is also very small, being 0.5 ha each on the average, and only 8% of the farmers cultivate over 1 ha. Farming is of a typical peasant mode based mainly on family labor with some aid by the hired or exchanged labor for time-pressing operations such as land preparation.

The wet season is usually from September to May. A majority of the farmers plant soybean with corn for the first crop (September–January), which is followed by soybean and tobacco for the second crop (January–June). Cassava is usually planted at the edge of fields. Under this intercropping system

(*tumpangsari*), the soybean yield is generally low, rarely exceeding a half ton per hectare. Given the small size of farm land, output per farm is usually very limited.

Household economy of the upland farmers

The analysis of the private accounts recorded by the sample farmers and the village assistants showed that the average output of upland crops in value per farm per year amounted to US$1,018 (US$1 equivalent to Rp 1,000), ranging from US$625 with the small farmers to US$1,331 with the large farmers. The output of the small farmers was approximately a half that of the large ones. The difference between the two groups of farmers reflects the diversity in scale of the area operated, indicating that the value of output is affected largely by the size of cultivated areas.

A notable fact is that the wages and the rent paid out in kind account for only approximately 6% of the total output. As compared with the figures in rice-based lowland villages[3], this percentage is considerably lower. Such a low ratio of in kind payments are attributed to the fact that since most of the farmers in the village are owner cultivators or owner-cum-tenants, the amount of rent is small, and that family labor is their main labor source in farming practices, for which their dependence on hired labor is limited[6].

In case where the crop harvests used as wages and rent paid in kind are excluded, 60% of the remaining crops are sold directly. In addition to these crops, the farmers hold the stock of tobacco, which is mostly stored for maturing and sold little by little over a long period of time. This tobacco stock is evaluated at over 20% of the total output in value. The remaining portion of approximately 20% is reserved for home consumption and seeds. It has long been a generally accepted view that the proportion of commercialized crops is low in upland Java. The result obtained at the village under this study is contrary to that view.

Approximately 30% of the agricultural output in terms of value is allocated to the payments of wages and rent either in kind or in cash, as well as to the purchases of input materials. Except for tobacco, the farmers are self-supporting in the seeds of their crops, total value of which is estimated at approximately 14% of the output. The remaining portion of 64% represents a disposable value.

The upland farmers take all the possible job opportunities to earn their living. The average farm income per household, being estimated at US$1,345, consists of 49% derived from upland crops, 29% from non-upland crops, 15% from sidelines and 7% from grant. The small farmers supplement their income from agricultural production by engaging in a variety of additional jobs. However, their total earnings, estimated at US$1,163 on average, are as yet lower by approximately 20% as compared with those of the large farmers amounting to US$1,490.

Out of their total expenditures, 58% goes to the food, clothes and other daily expenses, including self-supporting products in value. The stock of crop produce, including that for future sale, forms a considerably large portion, and that of tobacco leaves provides the upland farming village with a strong economic support since the farmers can sell them at any time in the year whenever a need arises. Soybean is the second most important cash crop after tobacco. These two crops play an indispensable role, especially in the late wet season, from agronomic as well as economic point of view.

Quantitative evidence on social account

1) Current production activities

The survey result shows that the total output in the entire village was estimated at US$1,275,800 during the period under survey (Table 1). Out of the total output, an amount of US$790,400, or approximately 62%, was generated from upland crops, being followed by 18% and 19% from non-upland crops (rice,

Table 1. Village output and income (US $) generated from current production activities in Cibuyutan, Garut, West Java, Indonesia, 1985—86

Item	Agricultural production			Non-agric. production (2)	Total production (1)+(2)
	Upland (1P)	Non-upland (1N)	Total (1)= (1P+1N)		
Output :					
Sale, payment in kind and earnings to outside village	139,455 (17.7)*	49,712 (20.7)	189,167 (18.4)	237,636 (96.7)	426,803 (33.5)
Consumption within village	411,203 (52.0)	122,883 (51.2)	534,086 (51.8)	8,000 (3.3)	542,088 (42.5)
Use for inputs	45,218 (5.7)	56,723 (23.6)	101,941 (9.9)	0	101,941 (8.0)
Inventory change	194,492 (24.6)	10,504 (4.5)	204,996 (19.9)	0	204,996 (16.0)
Total	790,368 (100.0)	239,822 (100.0)	1,030,190 (100.0)	245,638 (100.0)	1,275,828 (100.0)
Value added	663,108 (83.9)	217,481 (90.7)	880,589 (85.5)	194,795 (79.3)	1,075,384 (84.3)
Village factor income	662,284 (83.8)	216,136 (90.1)	878,420 (85.3)	194,795 (79.3)	1,073,215 (84.1)

* Percentages in parentheses.

Table 2. Relative factor shares of village output and income generated from current production activities in Cibuyutan, Garut, West Java, Indonesia, 1985—86

Shares		Labor (%)	Land (%)	Residual (%)	Inputs (%)
Output share					
(1P)	Upland crops production	33.2	42.6	8.1	16.1
(1N)	Non-upland crops production	33.0	4.7	52.8	9.5
(1)	Total agricultural production (1P)+(1N)	33.1	33.8	18.5	14.6
(2)	Non-agricultural production	21.6	0	58.0	20.4
(3)	Total production (1)+(2)	31.0	27.3	26.0	15.7
Income share					
(1P)	Upland crops production	39.6	50.7	9.7	—
(1N)	Non-upland crops production	36.7	4.7	58.6	—
(1)	Total agricultural production (1P)+(1N)	38.8	39.5	21.7	—
(2)	Non-agricultural production	27.6	0	72.4	—
(3)	Total production (1)+(2)	36.8	32.3	30.9	—

fruits, vegetables etc.) and side jobs, respectively. Output from agricultural sector shared approximately 80% of the total amount, indicating the vital importance of upland farming for the village economy.

Table 1 also shows that the values added by each enterprise were more than 80%. The village factor incomes were also of similar level to the values added. These data suggest that almost all the economic activities within the village be managed by village originated jobs. In case of upland crops farming in the village under study, except for the inputs purchased from outside, every material is provided within the village. This situation is also true with land rent, since a majority of the landlords reside inside the village. In regard to the output of upland crops, over

50% was sold to the middlemen who reside in the village, while approximately 18% was sold or paid in kind to the markets outside the village. Regarding the non-agricultural production, 96% of the output was generated from the sales or earnings outside the village.

Labor and land, being the two major factors contributing to agricultural production in the village, shared a similar magnitude of returns (Table 2). For upland crop production, the share of returns from land was higher than from labor, while labor and capital were both much higher in non-upland crop production. Capital values were calculated as residuals after deducting labor and capital from the total. The capital values were considerably high both for non-upland crops production with and without land. Share of land in the output from non-upland crop production was 5%, because only a few farmers cultivated lowland rice in the study site. The input costs were relatively small for non-upland crops, since fertilizers and other materials were only used in growing rice. The share of current inputs was generally small for agricultural production activities. The farmers in this study village did not generally use current inputs intensively for their agricultural production activities.

As long as agricultural enterprise is concerned, the output share was different among factors. However, a similar share could be seen among land, labor and capital, when the non-agricultural activities were also taken into consideration. This implies that the upland farmers keep balance of factor shares, while diversifying their daily activities as a whole. This behavior is also reflected in the income share of their outcome.

2) *Income and expenditure*

Total income of the village was estimated at US$1,315,700, excluding the house rent (Table 3). The total village factor income was approximately 90% of the total village income. More than 80% of the factor income was earned within the village. Factor income from labor within the village was around 30%. The income accruing to labor was nearly one-half of the factor income.

Table 3. Composition of village income (US $), Cibuyutan, Garut, West Java, Indonesia, 1985—86

Income	Amount	%
Total village income	1,315,686	100.0
Village factor income		
Factor income within village	1,073,216	81.6
(Labor income)	(395,154)	(30.0)
Factor income from outside	155,899	11.8
(Labor income)	(155,899)	(11.8)
Total factor income	1,229,115	93.4
(Total labor income)	(551,053)	(41.8)
Transfer income from outside	86,571	6.6

Table 4. Pattern of village expenditures (US $), Cibuyutan, Garut, West Java, Indonesia, 1985—86

Item	Amount	%
Per capita village income	270.1	—
Per capita disposable income (A)	267.6	—
Per capita consumption		
Produced within village	111.3	63.0
Purchased from outside	64.9	37.0
Total (B)	176.2	100.0
Per capita food consumption		
Produced within village	86.9	65.0
Purchased from outside	46.9	35.0
Total (C)	133.8	100.0
Average propensity to save (A-B/A)	34.2	
Engel coefficient (C/B)	75.9	

Average per capita income in the village was estimated at US$270 (Table 4). This is lower than the national per capita income, which is approximately US$500, reflecting the urban-rural income disparity. Approximately 76% of disposable income was used for consumption and 34% for saving. Food consumption shared more than 70% of the disposable income.

3) *Generation and distribution of the village income*

A pattern of production and distribution of the village income is numerically illustrated

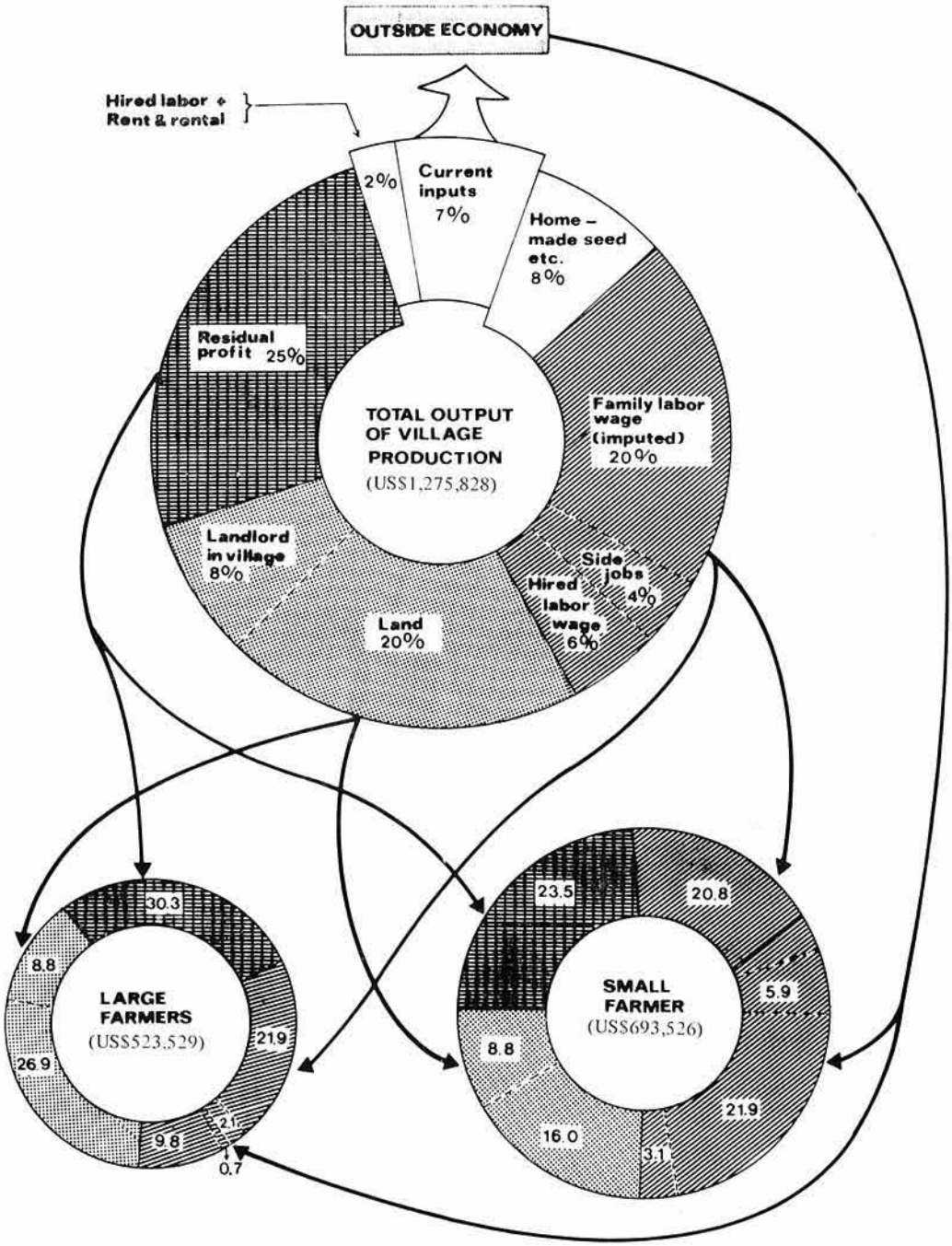

Fig. 1. Distribution of large and small farmers income in Cibuyutan, Garut, West Java, Indonesia, 1985–86

in Fig. 1. Outputs of the aggregated village production activities, comprising upland crops farming, non-upland crops farming and non-agricultural enterprises, are presented in the upper part. Incomes of the village households from production within as well as outside the village are shown in the lower part. Arrows represent the flows of income earnings corresponding to the contributions of various factors to production.

The total village output consisted of 8% for seed and feed in the production process, 7% for purchasing inputs from outside the village and only 2% for hired laborers and landlords who live outside the village. Earnings of the factors owned by the villagers amounted to 83% of the total village output. Thirty percent was the earnings from labor, which shared 6% for hired labor wage within the village. A majority of labor income in the village was accrued by the family labor.

The main source of the farm household income was owned properties. The profit of agriculture and non-agriculture production, as measured in the form of residual of output after deducting both the paid-out costs and the imputed family labor costs, was the source of farmers' household income.

Conclusions

This study attempted to show the whole complex of a village economy in upland areas of West Java, Indonesia, where soybean was grown as one of the main crops under complicated intercropping systems. Available resources were allocated with a great flexibility in terms of factor shares. However, as indicated by the small amount of the disposable village income per capita, the village economy of the study site was under depressed conditions, which fully reflected low and unstable productivity of upland crops in general, and *palawija* crops in particular. This situation corresponds to the common understanding that the existing differences of economic development between the well-irrigated lowland and the rainfed areas tend to gradually expand, thereby critical regional gaps in economic growth are being caused in developing countries[10]. In order to bridge the gaps between the depressed and the developed areas, it is of urgent necessity to improve the socio-economic environments, especially in the remote areas where rainfed agriculture is predominant.

The purpose of undertaking such in-depth surveys as reported in this study is to provide a conceptual basis for designing and implementing effective agricultural development programs in rural areas. If the relevant interest is limited only to the development and extension of a specified new technology, farm surveys containing farm outputs, production costs and returns might be sufficient in evaluating its effectiveness. However, through this type of farm surveys, it would be difficult to identify and evaluate adequately very basic issues, such as the acceptability of new technologies by the farmers and the possible implications of newly adopted technologies on rural welfare, including income distribution, employment and consumption of agricultural products at the village level. In fact, in the areas under this study, no useful information at the household as well as at the village level was available for the rural people to invest their resources for the improvement of *palawija*-based production and consumption patterns. It is recommended that comprehensive surveys and analyses be conducted in selected *palawija* producing centers. Such basic studies will greatly contribute in formulating effective agricultural development programs which should be specifically appropriate for the relevant rural conditions.

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