Appendix A

Appendix A

CENSUS-SURVEY QUESTIONNAIRE

A.1 Introduction

Selected contents of the questionnaire used for the census survey related to the analysis, are presented here. The complete questionnaire is available from the author on request.

A.2 Questionnaire

1 Identification of Respondent

Region	:	Stratum	:
Village	:	Date	:
Sub-village	:	Data-collector	:
Respondent	:	Date of editing	:

2 Enumeration of Household Members

Name	Position	Sex	Age	Education	Ability to read	Ability to use language (to speak)

3 Land Parcels Worked[a]

Items	Total owned land	Size of operated land			
		Owned	Shared	Rented	Total
a. Ricefield					
Season I					
Season II					
Season III					
b. Non-ricefield					
Dry-field					
Garden					
Yard					

[a]Specify crops grown on the respective pieces of land.

4 Animals Owned

Kind of animal	No. of head	Age	Value

5 Implements Owned

Kind of implement	No.	Value

6 Agricultural Practices Employed

The use of	Yes/No	How long
Hullers		
Tractors		
Water pumps		
Sprayers		
Spacing recommendation		
Modern weeding equipment		
Chemical fertilizers		
Pesticides		
Modern varieties		

7 Transpot Used for Seeking Information

Kind of transport	Yes/No	No.	Value
Bicycle			
Tricycle			
Wagon or cart			
Motor cycle			
Four-wheeled vehicles			

8 Sources of General Information

Items	Yes/No	No.	Value
Radio			
T.V.			

9 Knowledge of Agricultural Institutions

Name	Yes/No	Member/Not	Participate/Not
Village Unit Coop.			
Agricultural Coop.			
Farmers' Discussion Group			
Farmers' Water Use Organization			

10 Knowledge About Agricultural Extension Workers

a. Do you know the local agricultural extension workers and their office?

b. How many times did they visit you in the last year?

c. Do you know any 'contact farmers' (trained farmers for helping extension workers to provide agricultural extension) in your village?

d. How may times did they visit you in the last year?

11 From Whom or Where Do You Usually Get Information About The New Agricultural (Rice) Technology?

a. Neighbours

b. Family members or relatives

c. Officers from Bank or agricultural coop.

d. Agricultural extension workers

e. 'Contact farmers' (trained farmers)

f. Village leaders

g. Others (specify)

12 From Whom Do You Usually Get Information on Coping Your Difficulties in Farming

a. Neighbours

b. Family members or relatives

c. Officers from Bank or agricultural cooperative

d. Agricultural extension workers

e. 'Contact farmers' (trained farmers)

f. Village leaders

g. Others (specify)

13 From Whom Do You Usually Get Financial Support For Your Farming?

a. Government Bank
b. Private credit
c. Village Unit Cooperative
d. Agricultural Cooperative
e. Local traders
f. Relatives
g. Neighbours
h. Village leaders
i. Others (specify)

Appendix B

SAMPLE-SURVEY QUESTIONNAIRE

B.1 Introduction

Selected contents of the questionnaire used for the sample survey related to the analysis, are provided in this appendix. The sample survey which was carried out by the Rural Dynamics Study, Agro-Economic Survey, in East Java in 1978 was termed a 'semi-intensive survey'. Each data collector visited the respondent several times depending on the type of data required. The questionnaire contained 83 pages and consisted of:

(a) identification, consumption and expenditure of the household-respondent (8 pages);
(b) riceland farming (sawah) (21 pages);
(c) dryland farming (tegal) (29 pages);
(d) the activities of the respondent in farming (10 pages);
(e) the activities of the respondent in the non-agricultural sector (7 pages); and
(f) the activities of the respondent in relation to agricultural institutions (8 pages).

To save space, only selected contents of the questionnaire related to the analysis, are presented here. The complete questionnaire is available from the author on request.

B.2 Questionnaire

1 Identification of Respondent

Region	:	Stratum	:
Village	:	Date	:
Sub-village	:	Data-collector	:
Respondent	:	Date of editing	:

2 Enumeration of Household Members

Name	Position in household	Sex	Age	Education

3 Land Parcels Worked: Total Land

Items	Total owned land	Size of operated land			
		Owned	Shared	Rented	Total
a. Ricefield					
Season I					
Season II					
Season III					
b. Non-ricefield					
Dry-field					
Garden					
Yard					

4 Land Parcels Worked: Ricefield (Sawah)

Parcels	Tenure status 1=owned 2=shared 3=rented	Size in season I	II	III	Irrigation	Crops

5 Rice Farming Practices

Rice farming in season I

Nos. of parcels :

Size :

Seed varieties [a] :

Participation in the Bimas [b] :

Tenure status [c] :

[a] Local, modern or mixed varieties.

[b] Does not participate, participates or partly participates in the Bimas (intensification program).

[c] Owner-operator, share-tenant or rent-tenant.

5.1 Inputs Used

Items	Seed	Fertilizer			Pesticides	Total
		N	P	Green manure		
a. Self owned (kg)						
b. Purchased (kg)						
c. From Bimas (kg)						
Total (a+b+c)						
d. Price/unit (Rp/kg)						
e. Value of inputs (Rp)						

5.2 Labour Used[a]

Family labour	Preparation			Seeding			etc	Total
	MD[b]	HW/day	Total	MD	HW/day	Total		
1.								
2.								
3.								
4.								
5.								
6.								
7.								
8.								
9.								
Male								
Female								
Bullock								
Hired labour								
Male								
Female								
Bullock								
Labour-wage								
Male								
Female								
Bullock								
Total labour-costs								
Male								
Female								
Bullock								

[a]Labour used in ricefarming activities and which includes: preparation, seeding, hoeing, planting, weeding, fertilizing, other kinds of nursing, harvesting, and delivering.

[b]MD is the man day and HW is the hours worked.

5.4 Production

Items		Quantity or value
a. 1 Net production	(kg)	
2 Price/kg	(Rp)	
3 Net value of product	(Rp)	
b. Expenses for harvesting		
1 For tenant	(kg)	
2 For hired labour	(kg)	
Total (1+2)	(kg)	
c. Other expenses		
1 Irrigation costs	(Rp)	
2 Rent for land	(Rp)	
3 Tax	(Rp)	
4 Other expenses	(Rp)	
Total (1+2+3+4)	(Rp)	
d. Gross product	(kg)	
e. Net income	(Rp)	

Is there any decrease in production from crop damage? (yes/no)
If so, how many per cent decrease?

6 Other Crop Practices

The questions used for rice-farming practices, which were presented above, were also used for other crops, rice-farming in different seasons and annual crops. Therefore, to avoid repetition, they are not presented again.

7 Farming in the Garden and Yard

7.1 Farm income

List of trees owned	Garden		Yard		Total value
	No.of trees	NVP [a]	No.of trees	NVP	
a. Fruit (specify)					
b. Non-fruit (specify)					
c. Total (a+b)					

[a]NVP is the net value of production (gross value of production minus harvesting costs)

Notes: The calculation of input costs is similar to that for the questions presented in section 5.1.

Net farm income from farming in the garden and yard was calculated by subtracting input costs from farm income.

8. Livestock Production

8.1 Poultry

a. Family labour used for poultry production

Family members	Mandays	Work hours/day	Total
Total: male			
female			

b. Income from poultry production

Items	Owned		Shared[a]		Rented	
	No.	Value	No.	Value	No.	Value
1. Closing stock						
2. Slaughtered						
Sale						
Egg-production						
Other						
Total						
3. Opening stock						
4. New stock						
Feeding costs						
Labour costs						
Total						
5. Livestock income (2-4)						

[a]Shared value only.

The questions listed in 8.1 were used for other livestock production.

Appendix C

CHECKING THE CONSISTENCY OF THE DATA

C.1 Introduction

There were two types of data used in this study, census and sample survey data. The data were stored on computer tapes when they were brought to Australia in February 1981. Census data were in order but sample survey data had not been edited at that time. Therefore, the copies of the questionnaires were also brought to Australia for checking of consistency.

An attempt has been made to check the consistency of the data using a FORTRAN programme. Various FORTRAN programmes, basically similar to the following programme, were used. The flow chart of the programme is provided in Figure C.1.

Table C.1

A Fortran Programme Used for Checking the Consistency of the Data

```
      PROGRAM 'CHECKING THE CONSISTENCY OF THE DATA'
      REAL*8 INFL,OUTF
      INTEGER DATA (16),IND(140)
10    TYPE 11
11    FORMAT('0 ENTER NUMBER OF CARDS TO BE COPIED'/' >'$)
      ACCEPT *,NCARD
      TYPE 12
12    FORMAT ('0 ENTER CARD INDEXES TO BE COPIED'/' >'$)
      ACCEPT *,(IND(I),I=1,NCARD)
      TYPE 13
13    FORMAT ('0 ENTER INPUT FILENAME'/' >'$)
      ACCEPT 14,INFL
14    FORMAT (A10)
      TYPE 15
15    FORMAT ('0 ENTER OUTPUT FILENAME'/' >'$)
      ACCEPT 14,OUTF
      OPEN (UNIT=21,FILE=INFL)
      OPEN (UNIT=22,FILE=OUTF)
20    READ (21,21,END=50) (DATA(I),I=1,16)
21    FORMAT (16A5)
      DECODE (8,22,DATA) N1,N2,N3
      ICRD = N1*100+N2*10+N3
22    FORMAT (5X,3I1)
      DO 25 I=1,NCARD
      IF (ICARD.EQ.IND(I)) GO TO 30
25    CONTINUE
      GO TO 20
30    WRITE (22,21) (DATA(I),I=1,16)
      GO TO 20
50    TYPE 51
51    FORMAT ('0      ANOTHER RUN? (Y/N)'/' >'$)
      ACCEPT 52,ISTP
52    FORMAT (A1)
      IF (ISTP.EQ.'Y') GO TO 10
      STOP
      END
```

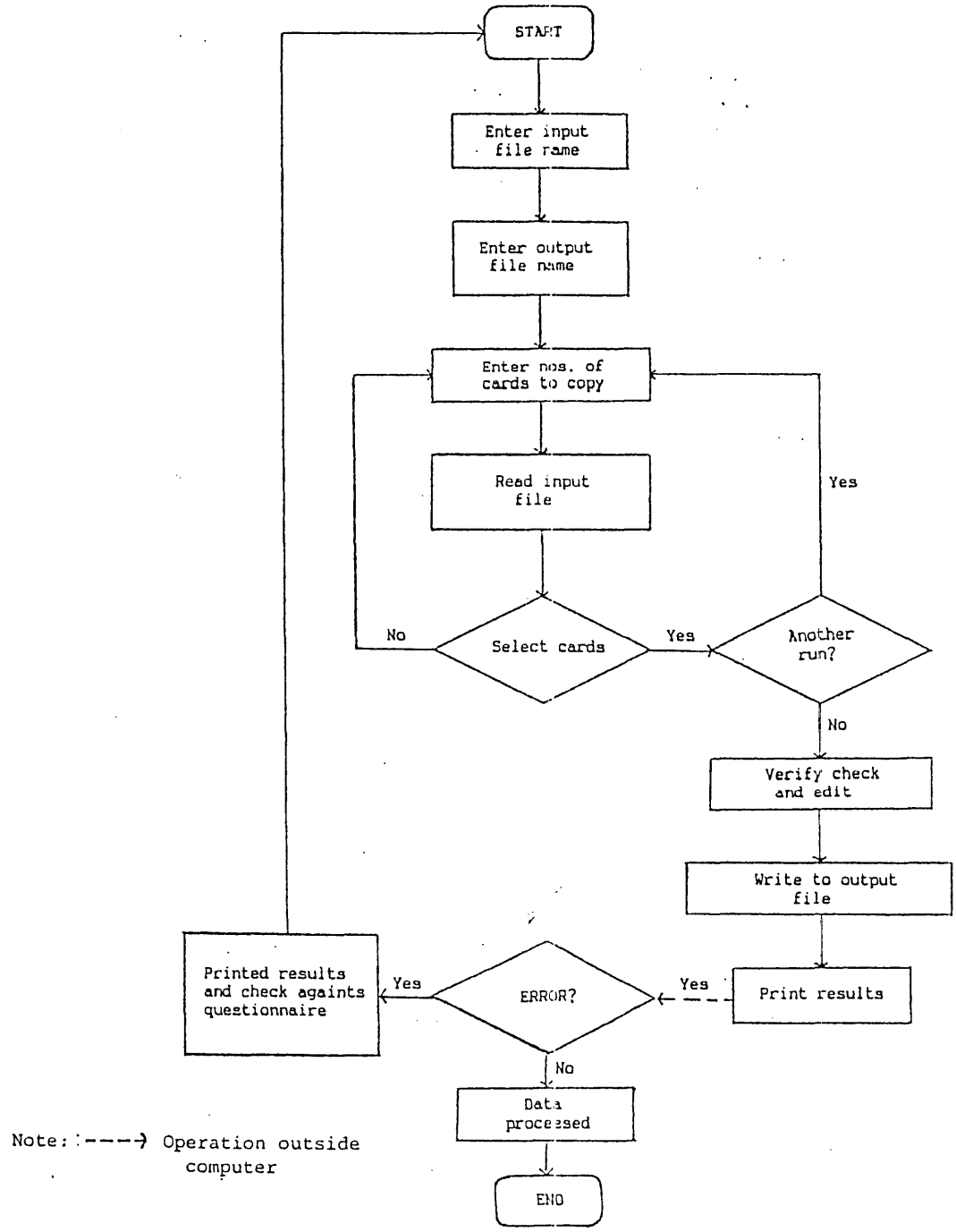

Figure C.1 Schematic flowchart of selecting and checking data in each card from the data of the Rural Dynamic Study, East Java, by FORTRAN Programming.

Appendix D

A NOTE ON THE DEFINITION OF 'SMALL' AND 'LARGE' FARMS

D.1 Introduction

A definition of 'small' and 'large' farms is presented in this appendix. In the first section a definition of 'small' and 'large' farms was defined based on the concept of the minimum food requirement. The validation of this definition was tested using non-linear regression analysis which is presented in the second section.

D.2 Definition of 'Small' and 'Large' Farms

The definition of 'small' and 'large' farms used in this study was calculated on the basis of the farm size related to a minimum food requirement. According to Sayogyo (1979), the minimum food requirement in Java is equivalent to 240 kg milled-rice per capita per year. The following is an example of the technique used to define 'small' and 'large'.

The minimum food requirement per capita per year	=	240 kg milled-rice
Average of population per household in the study area	=	5.27 persons
The minimum food requirement per household per year	=	240x5.27=1265 kg milled-rice
Average of rice production per hectare for 11 years, as shown in Table 1.5	=	1875 kg milled-rice

The amount of 1265 kg milled-rice can be produced by using 0.675 (1265/1875) hectare of irrigated land. This figure (0.675 hectare) was used to group farmers into 'small' (< 0.675 hectare) and 'large' (≥ 0.675 hectare).

D.3 Validation of the Definition of 'Small' and 'Large' Farms

Doran (1983) has argued that an 'arbitrary' cut-off point between small and large farms is no longer necesary. Therefore, in order to remove the 'arbitrary' nature of the division between large and small farms the technique proposed by Doran (1983) was used to show whether or not the small-large classification used in this study is valid. The following is a summary of his technique.

Suppose the hypothesized linear model is as follows:

$$Y_i = \alpha_0 + \sum_{j=1}^{m} \alpha_j X_{ji} + v_i, \qquad (D.1)$$

where Y_i is the dependent variable for farm i, α_0 is the intercept, X_{ij} (j=1,2, ... ,m) a set of independent variables for farm i, α_j (j=0,1,2, ... ,m) parameters to be estimated and u_i is the disturbance term for farm i.

When dummy variables for large and small farms are introduced to the model (D=1 for large farms and D=0 for small farms), equation (D.1) becomes:

$$Y_i = \alpha_0 + \beta_0 D_i + \sum_{j=1}^{m} (\alpha_j + \beta_j D_i) X_{ji} + U_i. \qquad (D.2)$$

According to Goldfeld and Quandt (1972, pp.262-4), the dummy variable (D_i in equation (D.2)) can be replaced by a function Φ_i where Φ_i is the cumulative normal distribution. Thus, $\Phi(\mu,\sigma)$ can be written as follows:

$$\Phi_i(\mu,\sigma) = \Phi((z_i - \mu)/\sigma), \qquad (D.3)$$

where μ is the 'cut-off' point Z_0 which is estimated from the data.

The relationship between Φ_i and Z then can be drawn, as shown in Figure D.1 The Z denotes farm area and Z_0 is the arbitrary cut-off point between large and small farms. From Figure D.1, it can be termed a 'small farm' if $Z < Z_1$ and 'large farm' if $Z > Z_2$ while farms which are located in $Z_1 < Z < Z_2$ are termed a 'intermediated farms'.

By substituting equation (D.3) into equation (D.2), the modified model is:

$$(D.4) \qquad Y_i = \alpha_0 + \beta_0\Phi_i(\mu,\sigma) + \sum_{j=1}^{m} (\alpha_j + \beta_i\Phi_j(\mu,\sigma))X_{ji} + v_i$$

Equation (D.4) is non-linear and it can be estimated by non-linear regression techniques.

It should be noted that equation (D.4) can be simplified by replacing the cummulative normal distribution with the logistic function given by:

$$(D.5) \qquad \Phi_i(\mu,\sigma) = [1 + \exp(\Pi(\mu - z_i)/(\sigma\sqrt{3}))]^{-1}$$

Thus, if the logistic function is used the cut-off points Z_1 and Z_2 would be given by:

$$(9) \qquad Z_1 = \mu - 2.02 \text{ , and } z_2 = \mu + 2.02 \text{ .}$$

The regression package SHAZAM was used to perform the required non-linear regression. Using the above technique, the estimates of the parameters are presented in Appendix Table D.1 while the estimates of μ and σ were:

$$\hat{\mu} = 0.758^{**} \quad ; \quad \sigma = 0.114$$
$$(0.304) \qquad\qquad (0.206)$$

where the figures in parentheses are respective standard errors and ** means that the t-statistic was significant at the 5 per cent level (using a two-tailed t-test). That the value of σ is not

significantly different from zero which indicates that a simple dummy variable approach would have been appropriate with these data. Using this approach, the cut-off point between 'small' and 'large' farms is 0.758 hectare. The new cut-off point of 0.758 hectare is not substantially different from that the previous one calculation from minimum subsistance requirements of 0.675 hectare. A difference of 0.083 of a hectare was not considered large enough to make it worthwhile changing what has been adopted as a 'convention' for the definition of small and large farms, particularly in the Rural Dynamics Study in East Java.

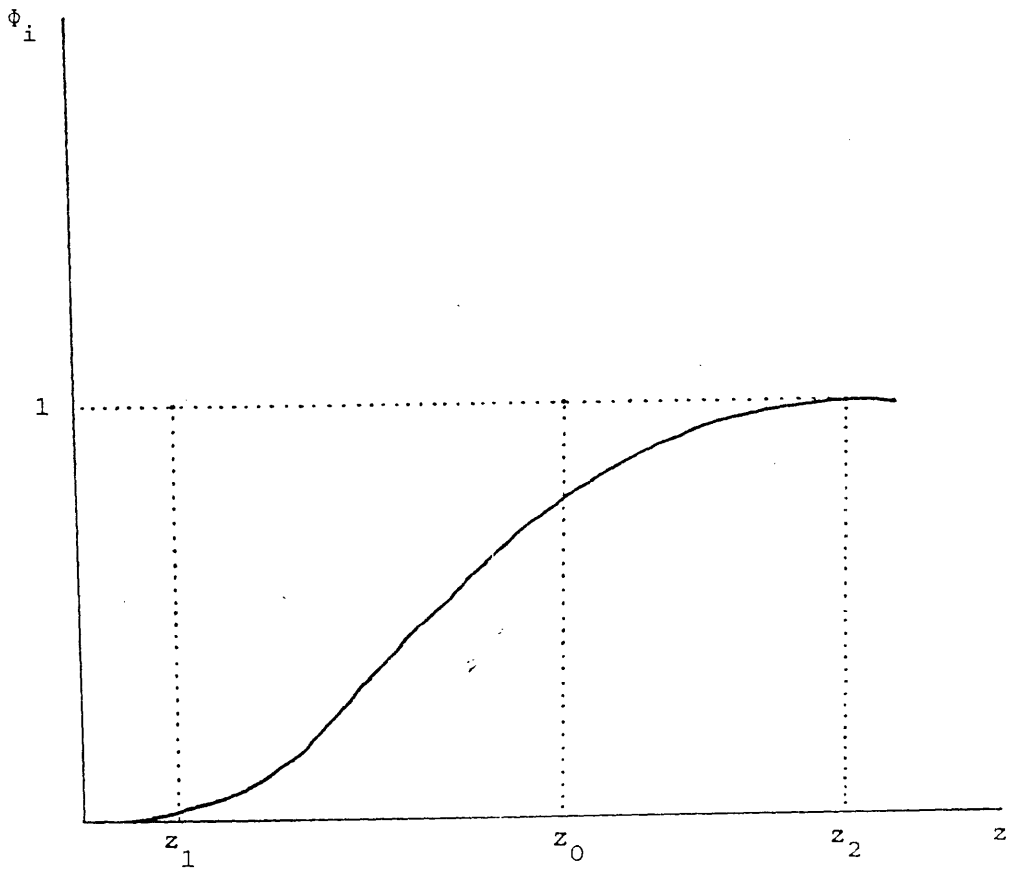

Figure D.1 Relationship between cumulative normal distribution function (Φ_i) and farm area (z).

Table D.1

Non-linear Estimates Used for Measuring the Cut-off Point Between 'Large' and 'Small' Farms of Sample Irrigated Ricefarms, East Java, 1978[a]

Parameters		Coefficients	Standard errors	T-Ratio
α_0	constant	0.740	0.684	1.08
β_0	constant	0.190	1.255	0.15
μ	constant	0.758	0.304	2.50** [b]
σ	constant	0.114	0.206	0.55
α_1	constant	1.228	0.326	3.79***
β_1	constant	-2.818	1.018	-2.78***
ϕ	constant	-0.043	0.295	-0.15
α_2	LFA	1.667	0.176	9.49***
β_2	LFA	-0.812	0.342	-2.86***
α_3	LPS	0.661	0.270	2.43**
β_3	LPS	-0.144	0.799	-0.18
α_4	LPF	1.969	0.860	2.29**
β_4	LPF	-3.857	1.408	-2.74***
α_5	LPL	-0.129	0.266	-0.49
β_5	LPL	0.070	0.565	0.13

[a] Estimation based on equation (7) in Chapter 7. LFA, LPS, LPF and LPL are logarithms of farm area (hectare), price of seed (rupiah/kg), price of fertilizer (rupiah/kg) and price of labour (rupiah/man hour), respectively.

[b] ** and *** mean that the t-statistics, using a two-tailed t-test, were significant at the 5 and 1 per cent levels, respectively.

Appendix E

THE DEFINITION OF VARIABLES

E.1 Introduction

The purpose of this appendix is to provide the definition of the variable inputs and outputs used for this study.

E.2 The Definition of Variables

E.2.1 Capital

Capital can be classified into two items, service flow and capital stock. By using the Cobb-Douglas production functions fitted for Greek micro economic farm data, Yotopoulos (1967) has argued that employing of the service flow from capital inputs yielded significantly better results than employing a measure of the capital stock. This method is often used when the data on the capital stock is not available. In this study a complete data set was not available on the actual utilization of each capital item, except for draught animals and associated equipment and handtools used by farm workers. There were no tractors or other similar items of agricultural mechanization in the study area. Evaluating trees as capital is very difficult and it may even be impossible to convert their value into monetary terms. Variation in the age of trees growing in the yard may lead to miscalculation of their value. The contribution of these trees to farm income is relatively small and they are associated with the value of land, therefore they are not taken into account in this analysis. The measurement of capital service flows from data on capital stocks in this study has many problems. Three assumptions were needed to minimize these problems.

(a) Any accumulation of capital investment due to improvements to land is not taken into account in the valuation of capital (for example; soil conservation, soil fertility, drainage, and other improvements).

(b) Sharing agricultural equipment among farmers is rare and no account has been taken of the allocation of the purchase cost of equipment to several users if a capital item, such as a plough, is shared among them.

(c) If each capital item is used in the production of several crops, it is assumed to have the same value. This assumes that capital items are 'joint inputs' and equally available for use in all crops.

Due to the restricted availability of data, capital was calculated as the sum of fixed capital (value of animals and agricultural equipment) plus depreciation and opportunity cost. Depreciation and opportunity cost were calculated by the straight line method by multiplying the stock by 18 per cent, which was the lending rate of the Village Unit Bank in 1978.

E.2.2 Current Expenses

Working capital or current expenses were calculated as the value of seed, fertilizers, manures and pesticides. Other costs were draught animal power, expenditure on irrigation, the upkeep of crops during the crop-maturing phase and land tax. All these expenses were valued in monetary terms. The cost of self-grown seed used on the farm is charged at harvest prices and farm-yard manure at average village rates. Chemical fertilizers and pesticides were valued at the actual purchase price. Any irrigation cost was charged at a flat rate per hectare for each crop. The farmers' organizations or the community usually determine how much money should be charged for a particular place and crop. Land tax paid was from farm-records which were available for each farm. The cost of hired draught animal power was also measured in monetary terms. This measurement included payments for the person who worked the draught animals plus the value of non-monetary payments normally offered. In the case of farmers owning draught animals, the cost of the draught animals was assessed in the same way as if they were hired. Thus the animal power input was given in the survey in work-hours or days and its price was that current for draught animal hire. This technique is a modified version of that offered by

Adulavidhaya et al. (1979) and Kumar et al. (1981).

E.2.3 Farm Size

A small farm was considered to be a farm whose area was less than 0.675 hectare while a large farm as considered as being to or greater than 0.675 hectare. Details of the definition of farm size can be seen in Appendix D.

E.2.4 Gross Margin

The gross margin is the gross value of output minus current expenses. The definition of current expenses is presented in Section 2.2 of this appendix.

E.2.5 Gross Value of Output

Gross value of output is the value of all crops produced using the farm-gate price measured in rupiah. The differences between output qualities for the different farms were standarized. For example, rice in rough rice terms and maize in dry kernel terms.

E.2.6 Labour

Human labour (hereafter termed labour) was measured in work-hours instead of mandays. A standardized eight hour manday was used to represent a work-day equivalent to that of an adult male. Total farm labour consisted of family labour, casual hired labour and permanent hired labour. Family labourers who were engaged in farm operations were included as permanent labour. If there was no permanent hired labour, wages were assessed at the rate which would be paid to permanent hired workers.

Casual labourers, particularly in peak-load periods, were generally paid either in cash or in kind. In this study both the wage rate for day labourers and the value of any non-monetary payments normally offered (such as breakfast, lunch or cigarettes) were valued in monetary terms. If the wage rate was paid in kind (for example, labour after the harvesting period) it was valued in monetary terms and the harvest prices were used to convert these payments into a cash equivalent. The

cost of permanent hired laour, as with casual labourers, was measured by adding, in monetary terms, all payments made in cash or in kind. The weights for different classes of labour were standardized on the basis of differences in the wages paid, that is, 1.2, 1.0 and 0.8 for bullocks (including operators), males and females. Thus, labour is stated in terms of the equivalent of adult male mandays. This technique is used in order to simplify calculation and to make it easy to compare the performance of each farm activity.

E.2.7 Land

Land is the most important limiting factor in Javanese agriculture. Land was measured in terms of farm area of operated land, stated in hectares. The value of land was not considered because there are many problems involved in valuation. For example, it is difficult to get appropriate data regarding land values (asking farmers for the value of land may generate inappropriate data, particularly if there is a suspicion of an extra land tax). Land area was standardized to an irrigated-rice land equivalent by weighting the non-irrigated land by the yield ratio of non-irrigated land to an irrigated land and then stated in hectares. This technique minimizes the problem of different land qualities and cropping intensities and is a modified version of the concept offered by Lau et al. (1979) and Singarimbun and Penny (1976).

E.2.8 Tenancy Status

Farm tenancy status can be considered in two broad categories of sharecroppers (share tenancy) and non-sharecroppers which comprise owner operators and fixed-rent tenants. This classification is used in order to create a dummy variable for farm tenancy status. Share tenancy was defined as a system of agricultural production in which the owner leases out his land to a tenant or tenants. The tenant cultivates the land and gives a fixed proportion of the total output to the landowner. The fixed-rent tenant was assumed to receive the entire reward from his entrepreneurship and decision making (as usually holds for owner-operators). They were not very common in the study area. In this study, share-tenancy existed mainly in the case of rice farming activities, with a very small number on other farm types using

share-tenancy. Thus, the detailed analysis concerned with this matter was carried out for rice farms only.

E.2.9 Adjusted Yield

Yield adjusted for crop damage was calculated by using the following formula: $Y = X + Z$,

where: Y = adjusted yield (qt/ha);

X = actual yield (qt/ha); ard

Z = losses of yield due to crop damage (qt/ha)

Appendix F

INDIVIDUAL FARM EFFICIENCY ESTIMATES

F.1 Introduction

In this appendix the individual farm efficiency estimates for the sample farms are provided. In the first table, Table F.1, a list of the individual farm efficiency measures and their rank for the wet season is provided and in the second table, Table F.2, similar measures for the dry season are provided.

Table F.1

Individual Adjusted Net Profit, Maximum Adjusted Net Profit, and Technical, Price, and Economic Efficiency Ratings for Sample Irrigated Ricefarms, East Java, Wet Season 1978[a]

Serial number	Farm number	Adjusted net profit (Rp'000)	Maximum adjusted net profit (Rp'000)	Technical efficiency ratings (%)	Price efficiency ratings[b]	Economic efficiency ratings (%)	Rank[c]
1	34	306.144	306.144	100	1.00	100.00	1
2	112	494.614	494.614	100	1.00	100.00	1
3	106	255.155	255.614	100	1.00	100.00	1
4	117	43.613	43.613	100	1.00	100.00	1
5	122	125.293	126.407	89	1.11	99.12	2
6	41	413.840	460.160	96	0.94	89.93	3
7	4	372.870	429.355	98	0.89	86.84	4
8	13	698.236	820.545	97	0.88	85.09	5
9	29	279.933	346.022	96	0.84	80.90	6
10	115	347.184	457.991	95	0.80	75.81	7
11	125	186.231	250.695	94	0.79	74.29	8
12	107	407.105	549.922	92	0.81	74.03	9
13	142	218.102	297.538	93	0.79	73.30	10
14	11	400.300	564.494	93	0.76	70.91	11
15	37	137.690	197.790	96	0.73	69.61	12
16	140	345.416	497.480	93	0.75	69.43	13
17	141	169.555	250.057	92	0.74	67.81	14
18	110	242.600	383.840	11	5.75	63.20	15
19	134	221.875	351.671	91	0.69	63.09	16
20	114	282.806	450.755	91	0.69	62.74	17
21	40	448.568	725.504	56	1.10	61.83	18
22	26	182.216	299.736	89	0.68	60.79	19
23	130	258.383	425.479	89	0.68	60.73	20
24	46	295.076	493.695	91	0.66	59.77	21
25	132	166.260	283.236	87	0.68	58.70	22
26	67	280.880	486.096	82	0.71	57.78	13
27	103	196.580	344.470	88	0.65	57.07	14
28	43	269.198	474.286	90	0.63	56.76	15
29	123	201.019	358.858	90	0.62	56.02	16
30	96	437.000	787.642	84	0.66	55.48	17

Table F.1 continued

Serial number	Farm number	Adjusted net profit (Rp'000)	Maximum adjusted net profit (Rp'000)	Technical efficiency ratings (%)	Price efficiency ratings	Economic efficiency ratings (%)	Rank
31	100	270.650	486.170	81	0.69	55.47	18
32	31	248.675	457.148	90	0.60	54.40	19
33	35	309.568	571.282	87	0.62	54.19	20
34	3	339.632	627.012	86	0.63	54.17	21
35	12	301.024	560.056	86	0.63	53.75	22
36	20	211.091	398.831	88	0.60	52.93	23
37	93	225.560	428.774	87	0.61	52.61	24
38	42	210.036	403.106	89	0.59	52.10	25
39	21	217.125	424.082	86	0.60	51.20	26
40	135	357.902	699.756	85	0.60	51.15	27
41	132	211.481	414.329	75	0.68	51.04	28
42	109	147.166	290.291	84	0.60	50.70	29
43	108	228.634	460.948	88	0.56	49.60	30
44	124	190.333	399.600	75	0.64	47.63	31
45	2	236.603	498.643	83	0.57	47.45	32
46	116	140.125	296.725	81	0.58	47.22	33
47	7	179.492	383.212	88	0.53	46.84	34
48	38	164.129	356.451	92	0.50	46.05	35
49	36	211.781	474.672	88	0.51	44.62	36
50	18	157.754	362.168	81	0.54	43.56	37
51	45	189.427	449.196	81	0.54	43.56	38
52	113	180.054	428.036	27	1.56	42.07	39
53	7	241.640	588.196	86	0.48	41.08	40
54	30	131.540	323.690	82	0.50	40.64	41
55	139	161.646	410.863	76	0.51	39.34	42
56	24	227.246	578.188	73	0.54	39.30	43
57	102	154.240	392.556	77	0.51	39.29	44
58	32	178.438	474.527	84	0.45	37.60	45
59	27	104.742	299.678	88	0.40	34.95	46
60	94	160.900	468.152	69	0.50	34.37	47
61	105	165.933	485.393	71	0.48	34.19	48
62	126	156.673	473.653	71	0.47	33.08	49
63	87	148.000	469.900	50	0.63	31.50	50
64	121	128.391	410.794	82	0.38	31.26	51
65	65	145.060	494.324	71	0.41	29.35	52
66	137	70.100	248.033	76	0.37	28.26	53
67	99	60.700	216.625	72	0.39	28.02	54
68	25	7.700	28.273	88	0.31	27.35	55
69	17	98.517	373.038	82	0.32	26.41	56
70	19	291.090	1144.691	78	0.33	25.43	57

Table F.1 continued

Serial number	Farm number	Adjusted net profit (Rp'000)	Maximum adjusted net profit (Rp'000)	Technical efficiency ratings (%)	Price efficiency ratings	Economic efficiency ratings (%)	Rank
71	138	76.425	301.975	54	0.47	25.31	58
72	8	90.948	363.750	86	0.29	25.00	59
73	14	114.995	490.505	81	0.29	23.44	60
74	128	112.649	485.533	71	0.33	23.20	61
75	118	105.000	457.100	49	0.47	22.97	62
76	98	77.026	340.960	62	0.36	22.59	63
77	101	137.760	657.461	62	0.34	20.95	64
78	136	60.533	300.724	59	0.34	20.13	65
79	143	73.342	391.000	58	0.32	18.76	66
80	16	97.577	537.342	66	0.28	18.16	67
81	49	77.980	439.492	54	0.33	17.74	68
82	95	105.866	603.900	47	0.37	17.53	69
83	97	80.176	470.956	56	0.30	17.02	70
84	44	117.694	702.711	62	0.27	16.75	71
85	58	75.500	451.180	32	0.52	16.73	72
86	104	66.220	397.872	61	0.27	16.64	73
87	89	95.061	631.807	58	0.26	15.05	74
88	120	102.774	690.601	61	0.24	14.88	75
89	51	70.340	477.164	55	0.27	14.74	76
90	68	80.964	560.574	46	0.31	14.44	77
91	10	50.887	360.223	80	0.18	14.13	78
92	15	46.454	333.034	75	0.19	13.95	79
93	53	49.850	361.430	60	0.23	13.79	80
94	63	59.760	434.040	27	0.51	13.77	81
95	92	69.274	510.194	51	0.27	13.58	82
96	1	26.992	202.478	65	0.21	13.33	83
97	69	80.380	605.920	48	0.28	13.27	84
98	6	37.550	291.730	82	0.16	12.87	85
99	54	47.960	374.840	53	0.24	12.80	86
100	88	72.564	572.334	46	0.28	12.68	87
101	48	46.080	367.900	53	0.24	12.53	88
102	81	69.600	558.675	18	0.69	12.46	89
103	77	73.604	615.104	44	0.27	11.97	90
104	78	65.284	551.644	45	0.26	11.83	91
105	33	43.207	372.901	72	0.16	11.59	92
106	83	57.944	520.454	39	0.29	11.13	93
107	56	74.320	668.816	27	0.41	11.11	94
108	73	47.442	427.322	64	0.17	11.10	95
109	86	45.600	424.800	48	0.22	10.73	96
110	50	58.320	563.904	36	0.29	10.34	97

Table F.1 continued

Serial number	Farm number	Adjusted net profit (Rp'000)	Maximum adjusted net profit (Rp'000)	Technical efficiency ratings (%)	Price efficiency ratings	Economic efficiency ratings (%)	Rank
111	91	59.080	577.960	23	0.44	10.22	98
112	39	22.080	215.005	79	0.13	10.22	98
113	131	23.061	226.928	40	0.25	10.16	99
114	62	46.204	477.154	36	0.27	9.68	100
115	90	56.700	590.775	18	0.53	9.60	101
116	76	79.275	865.950	34	0.27	9.16	102
117	70	55.440	646.224	20	0.43	8.58	103
118	85	49.240	599.920	23	0.36	8.21	104
119	52	38.080	465.276	31	0.26	8.18	105
120	71	43.280	536.976	9	0.90	8.06	106
121	75	33.908	421.977	5	1.61	8.04	107
122	61	24.696	322.980	17	0.45	7.65	108
123	60	59.032	772.760	43	0.18	7.64	109
124	84	47.760	631.980	21	0.36	7.56	110
125	55	30.400	411.240	31	0.24	7.39	111
126	80	46.320	633.600	19	0.39	7.31	112
127	82	47.000	656.660	20	0.36	7.16	113
128	79	25.128	444.228	24	0.24	5.66	114
129	64	32.720	647.696	10	0.51	5.05	115
130	47	17.000	508.205	20	0.17	3.35	116
131	66	18.000	633.488	25	0.11	2.84	117
132	129	8.562	364.093	12	0.20	2.35	118
133	111	3.381	311.518	50	0.02	1.09	119
134	28	3.185	309.885	66	0.02	1.03	120
135	23	7.936	934.160	55	0.02	0.85	121
136	59	5.440	916.416	7	0.09	0.59	122
137	72	3.588	946.916	21	0.02	0.38	123
138	74	2.040	569.000	38	0.01	0.36	124
139	57	1.768	587.688	6	0.05	0.30	125
140	9	0.723	555.467	38	0.01	0.13	126

[a]Profit adjusted to take account of crop damage through insect attack.

[b]When the TER is less than the EER then the PER will have a value greater than 1.0.

[c]Farms were ranked using the economic efficiency ratings.

Table F.2

Individual Adjusted Net Profit, Maximum Adjusted Net Profit, and Technical, Price, and Economic Efficiency Ratings for Sample Irrigated Ricefarms, East Java, Dry Season 1978[a]

Serial number	Farm number	Adjusted net profit (Rp'000)	Maximum adjusted net profit (Rp'000)	Technical efficiency ratings (%)	Price efficiency ratings[b]	Economic efficiency ratings (%)	Rank[c]
1	2	234.269	234.269	100	1.00	100.00	1
2	34	376.244	376.244	100	1.00	100.00	1
3	127	193.244	193.244	100	1.00	100.00	1
4	60	863.416	863.416	100	1.00	100.00	1
5	112	367.964	374.456	99	0.99	98.27	2
6	114	317.500	323.875	99	0.99	98.03	3
7	7	271.411	284.179	99	0.97	94.51	4
8	11	344.857	369.542	99	0.94	93.32	5
9	5	330.912	362.538	98	0.93	91.28	6
10	140	313.996	360.076	97	0.90	87.20	7
11	32	315.866	376.570	95	0.88	83.88	8
12	38	343.929	410.692	98	0.86	83.74	9
31	31	280.081	335.881	97	0.86	83.39	10
14	93	420.280	507.655	96	0.86	82.79	11
15	122	285.561	348.627	96	0.85	81.91	12
16	3	412.963	545.563	94	0.81	75.70	13
17	144	199.087	265.873	90	0.83	74.88	14
18	107	334.776	450.094	93	0.80	74.38	15
19	117	303.619	413.821	95	0.77	73.37	16
20	141	219.175	303.425	92	0.79	72.23	17
21	43	257.136	357.136	94	0.77	72.10	18
22	46	278.600	389.480	92	0.78	71.53	19
23	102	197.140	284.973	90	0.77	69.18	20
24	133	248.296	372.148	84	0.79	66.72	21
25	22	282.420	434.520	91	0.71	65.00	22
26	131	125.267	201.711	89	0.70	62.11	23
27	30	235.428	379.908	88	0.70	61.97	24
28	40	187.885	309.635	84	0.72	60.68	25
29	110	300.500	508.400	71	0.83	59.11	26
30	120	353.420	629.461	88	0.64	56.15	27

Table F.2 continued

Serial number	Farm number	Adjusted net profit (Rp'000)	Maximum adjusted net profit (Ro'000)	Technical efficiency ratings (%)	Price efficiency ratings	Economic efficiency ratings (%)	Rank
31	103	168.380	300.160	87	0.65	56.10	28
32	8	222.644	410.364	89	0.61	54.26	29
33	12	266.840	492.520	89	0.63	54.18	30
34	36	160.936	301.036	91	0.59	53.46	31
35	137	115.433	223.730	86	0.60	51.60	32
36	98	131.660	261.993	80	0.63	50.25	33
37	4	91.713	198.332	90	0.51	46.24	34
38	45	161.186	353.998	89	0.51	45.53	35
39	136	120.711	265.544	80	0.57	45.46	36
40	19	214.807	480.443	85	0.53	44.71	37
41	41	140.321	325.477	84	0.51	43.11	38
42	104	147.132	348.764	79	0.53	42.19	40
43	46	156.615	376.169	86	0.48	41.63	39
44	96	215.000	533.600	76	0.53	40.29	41
45	124	157.000	389.666	70	0.58	40.29	41
46	145	138.040	343.180	85	0.47	40.22	42
47	20	67.187	167.187	90	0.45	40.19	43
48	101	205.086	518.793	75	0.53	39.53	44
49	6	112.932	289.452	90	0.43	39.02	45
50	24	191.014	491.014	75	0.52	38.90	46
51	143	158.342	427.628	72	0.51	37.03	47
52	116	86.500	234.125	75	0.49	36.95	48
53	97	150.568	421.568	73	0.49	35.72	49
54	139	120.973	351.443	81	0.43	34.42	50
55	121	126.077	394.924	82	0.39	31.92	51
56	17	95.815	301.600	87	0.37	31.77	52
57	28	140.621	442.694	79	0.40	31.77	53
58	37	80.720	255.156	87	0.36	31.64	54
59	106	112.088	357.422	61	0.51	31.36	55
60	118	155.700	502.150	52	0.60	31.01	56
61	105	135.433	449.033	68	0.44	30.16	57
62	33	90.210	341.120	73	0.36	26.45	58
63	15	60.412	231.462	82	0.32	26.10	59
64	113	92.911	385.303	71	0.34	24.11	60
65	18	81.660	342.460	67	0.36	23.85	61
66	44	121.138	510.138	65	0.37	23.75	62
67	81	114.800	509.300	33	0.68	22.54	63
68	29	91.055	453.055	76	0.26	20.10	64
69	10	52.174	271.848	82	0.23	19.19	65
70	99	35.850	200.300	67	0.27	17.90	66

Table F.2 continued

Serial number	Farm number	Adjusted net profit (Rp'000)	Maximum adjusted net profit (Rp'000)	Technical efficiency ratings (%)	Price efficiency ratings	Economic efficiency ratings (%)	Rank
71	53	60.920	348.240	59	0.30	17.49	67
72	41	66.384	405.264	48	0.34	16.38	68
73	49	66.400	424.000	47	0.33	15.66	69
74	56	67.920	430.160	33	0.48	15.79	70
75	69	62.480	417.680	17	0.88	14.96	71
76	51	60.880	480.880	47	0.27	12.66	72
77	84	79.008	625.632	28	0.45	12.63	73
78	58	62.760	497.280	16	0.79	12.62	74
79	83	57.257	472.114	28	0.43	12.13	75
80	68	52.144	504.544	36	0.29	10.34	76
81	100	45.650	446.150	49	0.21	10.23	77
82	128	19.616	192.983	81	0.13	10.17	78
83	82	56.080	559.480	18	0.56	10.12	79
84	63	50.960	512.160	26	0.38	9.95	80
85	89	51.900	536.900	27	0.36	9.67	81
86	87	56.016	576.016	20	0.49	9.67	81
87	64	32.856	347.496	19	0.50	9.46	82
88	70	26.160	300.560	22	0.40	8.70	83
89	35	28.300	327.500	17	0.51	8.64	84
90	54	31.440	426.120	25	0.30	7.38	85
91	78	40.400	617.760	23	0.28	6.54	86
92	47	24.800	480.750	21	0.25	5.16	87
93	23	20.256	437.856	62	0.08	4.63	88
94	146	22.700	517.100	1	4.39	4.39	89
96	73	19.300	453.700	37	0.12	4.25	90
96	126	16.680	364.280	23	0.20	4.25	90
97	26	10.192	277.272	66	0.06	3.68	91
98	59	23.200	718.880	10	0.32	3.23	92
99	72	14.560	534.880	29	0.09	2.72	93

[a] Profit adjusted to take account of crop damage through insect attack.

[b] When the TER is less than the EER then the PER will a value greater than 1.0.

[c] Farms were ranked using the economic efficiency ratings.

Appendix G

FACTORS RELATED TO TECHNICAL EFFICIENCY

G.1 Introduction

In this appendix the results from the factor analysis are presented. The discussion of the results can be found in Chapter 6.

Table G.1

Factors Related to Technical Efficiency for Sample Irrigated Ricefarms, East Java, 1978: Varimax Rotated Factor Matrix

Variables	Factor									
	F1	F2	F3	F4	F5	F6	F7	F8	F9	R^2
1. Spacing recommendation	0.691	-0.120	0.018	0.083	-0.052	-0.021	0.028	0.014	0.014	0.55
2. Landak (modern weeding equipment)	0.710	-0.153	-0.036	0.034	-0.029	-0.079	0.087	-0.004	-0.134	0.54
3. Pesticides	0.766	0.217	-0.007	0.088	0.041	0.009	-0.081	-0.037	0.096	0.75
4. Chemical fertilizers	0.847	0.062	-0.049	0.097	0.111	-0.024	-0.047	0.025	0.092	0.77
5. Modern varieties	0.686	0.070	0.030	0.115	-0.032	0.053	-0.042	-0.033	0.039	0.53
6. Ability to read (old farmers)[a]	-0.063	0.633	0.041	-0.097	-0.430	0.107	-0.051	0.117	-0.038	0.63
7. Level of education	0.136	0.878	0.018	-0.050	-0.060	0.185	-0.006	-0.123	0.035	0.71
8. Ability to use language[a]	0.016	0.738	0.126	0.068	0.181	0.081	-0.050	0.065	-0.036	0.65
9. Radio	-0.092	0.272	0.541	0.033	0.233	-0.011	0.167	0.087	0.007	0.60
10 Bicycle	-0.059	0.146	0.863	0.057	-0.056	0.163	0.092	-0.021	0.077	0.62
11 Knowledge of BUUD[b]	0.179	0.048	0.251	0.823	0.006	-0.058	0.139	-0.162	-0.318	0.55
12 Knowledge of contact farmers	0.130	-0.105	0.343	0.617	0.007	-0.089	0.005	0.109	0.341	0.55
13 Technical efficiency	0.036	0.084	0.519	0.375	-0.036	0.035	0.088	0.045	0.004	0.48
14 Knowledge of local agr. cooperative	0.061	-0.027	0.600	0.244	0.057	-0.109	-0.081	0.192	-0.013	0.51
15 Member of intensification programme	-0.126	0.087	-0.065	0.364	-0.002	0.107	0.051	-0.017	-0.187	0.34
16 Ability to read (young farmers)	-0.063	0.210	-0.046	-0.008	-0.430	0.107	0.051	0.117	-0.038	0.63
17 Use of sprayers	0.161	-0.061	0.248	-0.049	0.267	-0.095	0.205	-0.033	-0.173	0.29
18 Knowledge of local agr. office	0.061	0.217	-0.017	-0.164	0.012	0.855	0.159	-0.045	0.170	0.41
19 Contact with agr. extension workers	-0.039	0.060	-0.031	0.045	-0.067	0.435	-0.009	-0.009	-0.023	0.25
20 Owning wagon or cart	-0.023	0.088	0.070	-0.022	0.021	0.231	-0.025	0.013	0.004	0.18
21 Value of agricultural equipment	-0.024	0.236	0.139	-0.075	-0.060	0.185	-0.006	-0.123	0.035	0.29
22 Owning motorcycle	-0.080	0.219	0.136	0.147	-0.141	-0.056	0.629	0.348	0.209	0.49
23 Television	0.001	-0.043	0.008	0.015	0.059	0.067	0.435	-0.009	-0.023	0.24
24 Owning 4 wheel vehicles	-0.010	-0.126	0.096	-0.135	-0.035	0.034	0.063	0.689	-0.010	0.33
25 Member of P3A[c]	-0.022	-0.009	0.040	0.041	-0.050	-0.016	0.048	-0.009	0.456	0.28
Per cent of variance	24.6	21.2	16.4	10.5	7.6	6.4	4.8	4.4	4.1	
Cummulative per cent	24.6	45.8	62.2	72.7	80.3	86.7	91.5	95.9	100.0	

[a] Indonesian and local languages.

[b] BUUD stands for Badan Usaha Unit Desa or Village Unit Cooperative.

[c] P3A stands for Persatuan Petani Pemakai Air or Farmers' Water Use Organization.

Appendix H

DATA USED FOR THE REGRESSION ANALYSIS

H.1 Introduction

The data used for the regression analysis are presented in this appendix. The data used for the production function analysis are provided in Tables H.1 and H.2 and for the profit function analysis are in Tables H.3 and H.4.

Table H.1.

Derived Data for the Sample Irrigated Ricefarms, East Java, Wet Season 1978

Serial number	Adjusted production[a] (qt)	Farm size (ha)	Labour (mandays)	Current expenses (Rp'000)	Region[b]	Tenancy[c]
1	12.80	1.000	41	9.475	1	1
2	16.50	0.275	44	8.925	1	1
3	23.53	0.275	61	17.500	1	1
4	98.00	1.650	226	104.950	1	1
5	24.44	0.500	119	7.500	1	2
6	38.00	0.625	61	34.650	1	1
7	49.99	1.000	127	31.700	1	2
8	58.00	1.100	159	33.100	1	1
9	29.25	0.675	74	29.650	1	1
10	30.00	0.350	49	17.850	1	1
11	17.60	0.250	41	9.840	1	1
12	33.34	0.275	59	18.650	1	1
13	37.00	0.800	120	35.210	1	1
14	17.50	0.500	39	23.800	1	2
15	22.00	0.425	59	13.870	1	2
16	16.30	0.375	36	8.700	1	1
17	41.00	0.550	128	27.550	1	1
18	62.00	1.250	118	40.600	1	2
19	32.00	0.700	60	16.300	1	2
20	15.00	0.275	11	15.100	1	2
21	138.00	1.925	205	69.675	1	1
22	15.00	0.250	12	12.725	1	1
23	102.50	3.000	301	37.800	1	1
24	20.00	1.100	131	29.750	1	1
25	33.66	0.450	39	14.580	1	1
26	20.00	0.500	30	16.480	1	1
27	65.00	1.100	149	30.300	1	1
28	28.89	0.500	65	29.800	1	1
29	12.20	0.275	54	10.150	1	1
30	46.04	0.525	52	14.450	1	1

Table H.1 continued

Serial number	Adjusted production (qt)	Farm size (ha)	Labour (mandays)	Current expenses (Rp'000)	Region	Tenancy
31	19.20	0.250	40	13.100	1	1
32	42.60	0.550	109	34.775	1	1
33	37.00	0.550	54	9.840	1	2
34	134.00	2.200	397	50.500	1	2
35	22.22	0.250	68	12.300	1	1
36	73.19	1.425	168	40.700	1	1
37	80.00	1.500	166	41.460	1	1
38	7.55	0.180	60	8.485	1	1
39	135.00	3.000	340	100.500	1	1
40	80.00	1.000	172	39.200	1	1
41	5.00	0.250	39	2.250	3	1
42	2.50	0.125	28	2.036	3	1
43	5.83	0.250	53	3.500	3	1
44	2.14	0.125	31	1.160	3	1
45	9.00	0.500	64	6.625	3	1
46	1.92	0.125	18	1.930	3	1
47	1.18	0.250	20	1.900	3	1
48	4.00	0.250	54	4.890	3	1
49	1.48	0.125	16	1.300	3	1
50	2.76	0.250	46	0.900	3	1
51	1.92	0.250	16	0.600	3	1
52	12.00	0.500	36	6.670	3	1
53	1.98	0.125	46	2.280	3	1
54	9.60	0.250	18	2.410	3	1
55	3.94	0.250	30	3.200	3	1
56	4.29	0.250	40	3.200	3	1
57	2.04	0.250	43	14.600	3	1
58	12.60	0.750	88	5.200	3	1
59	2.91	0.200	20	1.890	3	1
60	3.84	0.250	40	3.200	3	1
61	1.65	0.125	20	2.000	3	1
62	1.69	0.125	23	1.210	3	1
63	4.06	0.250	36	2.900	3	1
64	7.29	0.325	52	5.990	3	1
65	5.47	0.375	48	3.200	3	1
66	45.98	1.000	108	21.250	2	1
67	8.75	0.250	29	5.750	2	1
68	7.04	0.300	18	8.200	2	1
69	16.00	1.000	43	9.400	2	1
70	8.33	0.300	31	9.950	2	1

Table H.1 continued

Serial number	Adjusted production (qt)	Farm size (ha)	Labour (mandays)	Current expenses (Rp'000)	Region	Tenancy
71	25.00	0.500	38	12.500	2	1
72	10.00	0.603	33	15.550	2	1
73	29.76	0.425	52	10.500	2	1
74	44.94	0.700	206	13.300	2	1
75	22.73	0.750	34	8.800	2	1
76	10.00	1.500	105	25.500	2	1
77	30.83	0.285	50	8.570	2	1
78	25.00	0.623	70	12.000	2	1
79	50.29	0.800	106	21.000	2	1
80	119.40	1.900	131	67.000	2	1
81	14.29	0.400	20	8.000	2	1
82	150.00	3.075	329	55.650	2	1
83	43.86	0.500	30	26.750	2	1
84	10.00	0.346	66	19.050	2	1
85	73.53	2.200	239	60.500	2	1
86	180.00	3.000	319	110.000	2	1
87	102.94	2.000	318	41.500	2	1
88	42.86	0.765	76	18.550	2	1
89	60.00	1.410	65	16.274	2	1
90	15.00	0.416	55	21.300	2	1
91	39.00	0.860	69	13.400	2	1
92	3.50	0.490	17	3.300	2	1
93	75.00	1.600	159	19.720	2	1
94	37.36	0.720	149	12.500	2	1
95	7.00	0.400	26	4.500	2	1
96	10.00	0.300	20	4.500	2	1
97	12.50	0.300	50	4.550	2	1
98	69.77	1.000	108	38.700	2	1
99	43.75	0.900	62	14.750	2	1
100	37.25	0.780	46	11.050	2	1
101	7.00	0.350	33	7.700	2	1
102	19.00	0.250	40	15.750	1	2
103	10.91	0.350	56	10.500	1	2
104	5.56	0.125	49	12.820	1	1
105	5.50	0.069	17	4.500	1	1
106	9.56	0.200	19	4.785	1	1
107	10.00	0.125	13	4.100	1	1
108	1.62	0.100	24	1.475	3	1
109	4.97	0.250	51	1.955	3	1
110	5.00	0.250	44	2.540	3	1

Table H.1 continued

Serial number	Adjusted production (qt)	Farm size (ha)	Labour (mandays)	Current expenses (Rp'000)	Region	Tenancy
111	2.14	0.125	21	1.795	3	1
112	1.81	0.100	14	1.375	3	1
113	1.20	0.125	35	3.220	3	1
114	1.26	0.125	17	1.840	3	1
115	1.60	0.125	10	3.530	3	1
116	1.20	0.125	14	0.980	3	1
117	3.00	0.250	43	1.200	3	2
118	1.08	0.087	12	0.650	3	1
119	3.84	0.250	30	3.200	3	1
120	1.68	0.125	18	0.600	3	2
121	1.56	0.125	18	2.000	3	1
122	1.44	0.100	12	1.170	3	1
123	3.12	0.250	23	3.200	3	1
124	1.66	0.125	24	1.350	3	1
125	3.84	0.250	33	1.200	3	1
126	2.84	0.126	8	1.400	3	1
127	1.48	0.100	19	0.840	3	1
128	1.71	0.125	17	1.400	3	1
129	4.00	0.150	88	1.750	2	1
130	16.00	0.200	51	8.800	2	1
131	6.25	0.250	52	4.750	2	1
132	10.00	0.200	28	2.750	2	1
133	12.50	0.300	24	11.000	2	1
134	10.00	0.300	44	4.300	2	1
135	10.00	0.225	14	1.490	2	1
136	2.50	0.050	11	0.770	2	1
137	3.00	0.100	13	1.950	2	1
138	7.00	0.150	24	1.850	2	1
139	10.00	0.300	26	8.420	2	1
140	1.33	0.160	16	2.450	2	1
141	25.00	0.500	43	10.695	2	1
142	6.00	0.135	14	2.150	2	1
143	4.00	0.200	16	1.750	2	1

[a]Production adjusted for crop damage.

[b]1, 2 and 3 are Gemarang, Sukosari and Petung, respectively.

[c]1 and 2 are the owners and sharecroppers, respectively.

Table H.2

Derived Data for the Sample Irrigated Ricefarms, East Java, Dry Season 1978

Serial number	Adjusted production[a] (qt)	Farm size (ha)	Labour (mandays)	Current expenses (Rp'000)	Region[b]	Tenancy[c]
1	15.13	0.275	13	17.925	1	1
2	26.67	0.275	76	13.250	1	1
3	40.00	1.650	226	14.950	1	1
4	28.88	0.500	81	89.750	1	2
5	34.88	0.625	38	27.867	1	1
6	27.78	0.500	79	39.625	1	2
7	25.00	0.675	83	77.405	1	1
8	27.00	0.350	42	31.850	1	1
9	14.80	0.250	48	18.160	1	1
10	17.50	0.500	39	49.600	1	2
11	44.00	0.975	145	135.840	1	2
12	7.60	0.250	34	8.510	1	1
13	30.00	0.550	127	27.450	1	1
14	13.00	0.250	32	45.075	1	2
15	35.00	0.950	58	90.365	1	2
16	25.33	0.400	65	22.360	1	1
17	5.00	0.125	29	13.650	1	1
18	5.50	0.069	30	8.130	1	1
19	64.00	1.000	97	45.000	1	1
20	7.00	0.250	26	24.691	1	1
21	22.00	0.550	99	28.750	1	1
22	17.84	0.450	112	13.200	1	1
23	22.00	0.500	103	8.200	1	1
24	66.67	1.100	121	56.100	1	1
25	10.00	0.135	17	8.650	1	1
26	9.90	0.275	42	17.025	1	1
27	22.22	0.250	40	19.715	1	1
28	1.67	0.250	35	24.400	1	1
29	31.40	0.550	77	60.260	1	1
30	25.00	0.550	67	78.490	1	2

Table H.2 continued

Serial number	Adjusted production (qt)	Farm size (ha)	Labour (mandays)	Current expenses (Rp'000)	Region	Tenancy
31	154.00	1.925	439	173.075	1	2
32	18.00	0.250	46	17.800	1	1
33	9.40	0.200	19	4.785	1	1
34	3.00	0.125	15	3.500	1	1
35	46.53	1.425	168	16.050	1	1
36	78.00	1.500	161	41.460	1	1
37	6.44	0.180	39	7.035	1	1
38	105.00	3.000	296	97.500	1	1
39	50.00	1.300	172	39.200	1	1
40	1.60	0.100	23	0.920	3	1
41	4.00	0.250	36	0.720	3	1
42	4.30	0.250	52	0.900	3	1
43	7.98	0.500	55	3.125	3	1
44	1.80	0.125	24	3.300	3	1
45	1.92	0.125	9	1.480	3	1
46	1.36	0.100	9	1.800	3	1
47	1.26	0.125	27	1.480	3	1
48	1.44	0.125	43	1.500	3	1
49	1.92	0.250	15	1.600	3	1
50	1.50	0.125	13	1.240	3	1
51	2.80	0.250	30	2.150	3	1
52	1.38	0.125	8	1.500	3	1
53	1.60	0.125	10	2.480	3	1
54	2.28	0.250	35	1.600	3	1
55	2.85	0.250	30	9.600	3	2
56	1.78	0.125	29	1.900	3	1
57	1.92	0.100	11	1.400	3	1
58	1.50	0.125	18	1.600	3	1
59	1.98	0.175	18	1.400	3	1
60	1.92	0.125	22	1.600	3	1
61	1.60	0.125	19	1.600	3	1
62	1.95	0.150	20	2.700	3	1
63	59.52	1.000	118	21.500	2	1
64	10.00	0.200	51	3.850	2	1
65	10.00	0.250	52	4.750	2	1
66	10.00	0.300	18	7.600	2	1
67	12.00	1.000	31	10.000	2	1
68	4.05	0.200	28	12.050	2	1
69	10.94	0.300	43	8.180	2	1
70	15.00	0.300	24	11.375	2	1

Table H.2 continued

Serial number	Adjusted production (qt)	Farm size (ha)	Labour (mandays)	Current expenses (Rp'000)	Region	Tenancy
71	20.00	0.500	38	14.100	2	1
72	15.63	0.603	34	13.070	2	1
73	8.77	0.300	44	6.070	2	1
74	5.00	0.225	17	2.680	2	1
75	25.00	0.425	52	11.275	2	1
76	3.13	0.050	10	1.740	2	1
77	17.50	1.300	105	78.600	2	1
78	25.00	0.285	50	10.870	2	1
79	15.00	0.623	70	15.500	2	1
80	60.00	0.800	106	19.400	2	1
81	10.00	0.400	20	9.000	2	1
82	150.04	3.075	329	66.150	2	1
83	3.00	0.100	13	2.050	2	1
84	49.72	0.875	240	16.680	2	1
85	60.00	2.200	239	49.700	2	1
86	54.05	0.900	107	15.950	2	1
87	6.00	0.150	24	2.100	2	1
88	2.00	0.300	25	7.960	2	1
89	57.50	1.310	47	15.050	2	1
90	32.50	0.416	55	8.550	2	1
91	1.00	0.100	14	8.770	2	1
92	5.00	0.490	17	4.000	2	1
93	6.94	0.135	14	2.625	2	1
94	40.00	0.720	149	10.100	2	1
95	10.00	0.252	12	2.250	2	1
96	12.96	0.450	26	6.100	2	1
97	12.00	0.300	20	18.650	2	1
98	14.04	0.300	50	8.425	2	1
99	62.50	1.000	108	28.900	2	1
100	21.00	0.400	37	12.500	2	1
101	10.00	0.350	33	8.950	2	1

[a]Production adjusted for crop damage.

[b]1, 2 and 3 are Gemarang, Sukosari and Petung, respectively.

[c]1 and 2 are the owners and sharecroppers, respectively.

Table H.3

Data Used for Profit Function Analysis Derived from the Sample Irrigated Ricefarms, East Java, Wet Season 1978

Serial number	Price of Output (Rp/kg)	Seed (Rp/kg)	Fertilizer (Rp/kg)	Labour (Rp/hour)	Profit (Rp'000)
1	45	125	70	71	26
2	55	75	70	18	75
3	55	150	70	37	94
4	80	80	70	23	617
5	50	100	70	61	65
6	50	61	70	23	133
7	60	100	65	46	210
8	60	100	70	19	7
9	55	80	70	46	106
10	60	80	70	19	155
11	60	70	70	28	85
12	70	150	70	45	190
13	60	80	70	19	164
14	50	100	70	29	46
15	55	70	70	40	100
16	50	100	70	38	59
17	61	76	72	42	180
18	50	80	70	28	249
19	60	100	70	47	142
20	58	75	70	21	27
21	50	150	70	24	58
22	55	150	70	28	317
23	45	150	70	54	51
24	50	130	70	30	141
25	50	60	70	42	73
26	60	100	70	33	313
27	53	150	70	24	106
28	45	150	70	67	23
29	53	75	70	52	209
30	61	75	70	37	91

Table H.3 continued

Serial number	Price of Output (Rp/kg)	Seed (Rp/kg)	Fertilizer (Rp/kg)	Labour (Rp/hour)	Profit (Rp'000)
31	50	80	70	45	161
32	50	50	70	25	155
33	55	80	65	44	520
34	55	65	70	22	111
35	50	65	70	24	298
36	60	80	70	23	402
37	55	75	70	25	23
38	58	150	70	27	557
39	60	80	70	27	382
40	60	60	70	25	19
41	60	60	70	25	8
42	55	60	70	25	17
43	55	60	70	25	10
44	50	55	70	25	23
45	80	80	80	30	11
46	100	80	70	43	6
47	80	100	70	17	19
48	44	100	70	17	3
49	75	90	70	17	9
50	100	100	70	30	8
51	80	100	70	60	74
52	80	80	80	30	12
53	80	80	80	30	64
54	75	100	70	33	21
55	75	100	70	30	23
56	80	80	80	17	10
57	75	100	70	33	67
58	75	125	70	30	9
59	75	100	70	33	20
60	75	100	70	30	7
61	75	100	70	30	6
62	75	100	70	33	21
63	75	100	70	30	41
64	75	100	70	33	31
65	55	150	70	15	225
66	55	150	70	15	39
67	50	100	70	28	23
68	50	60	70	47	58
69	68	150	70	17	42
70	50	100	70	35	98

Table H.3 continued

Serial number	Price of				Profit
	Output (Rp/kg)	Seed (Rp/kg)	Fertilizer (Rp/kg)	Labour (Rp/hour)	(Rp'000)
71	60	150	70	13	38
72	65	90	72	23	172
73	50	70	70	36	161
74	55	60	70	20	111
75	50	50	70	38	5
76	65	100	70	24	182
77	57	100	70	24	109
78	55	150	67	22	223
79	66	150	70	43	667
80	50	40	70	50	56
81	60	90	70	59	171
82	60	150	70	20	33
83	54	150	70	22	269
84	35	150	70	20	422
85	55	75	70	37	155
86	50	100	67	17	262
87	50	175	70	21	44
88	65	100	70	40	222
89	50	50	70	30	12
90	55	60	70	33	344
91	75	150	65	30	260
92	55	40	70	30	29
93	50	100	70	30	35
94	50	45	70	16	48
95	60	80	68	32	340
96	40	150	70	30	147
97	50	50	70	30	165
98	50	50	68	30	22
99	70	150	70	33	101
100	60	80	70	48	34
101	65	102	70	48	18
102	50	100	70	30	20
103	50	100	87	61	31
104	60	100	70	30	54
105	55	60	70	30	6
106	50	65	70	25	11
107	50	55	70	30	20
108	50	55	70	30	7
109	80	67	58	30	12
110	80	80	70	50	7

Table H.3 continued

Serial number	Price of				Profit
	Output (Rp/kg)	Seed (Rp/kg)	Fertilizer (Rp/kg)	Labour (rp/hour)	(Rp'000)
111	80	100	70	30	7
112	80	34	80	30	6
113	80	80	80	30	4
114	95	100	70	30	20
115	60	100	70	30	3
116	75	100	70	33	17
117	75	100	70	33	6
118	75	100	70	30	7
119	75	100	70	30	7
120	75	100	70	33	15
121	75	100	70	30	6
122	75	100	70	30	21
123	75	100	70	33	18
124	75	100	70	30	9
125	75	100	70	30	8
126	50	70	70	30	16
127	65	150	70	20	87
128	50	125	70	27	18
129	60	125	75	32	54
130	50	150	70	28	45
131	60	55	75	20	49
132	60	70	70	30	54
133	55	100	70	30	11
134	50	70	50	30	11
135	50	100	42	28	28
136	60	60	70	21	46
137	50	100	70	30	2
138	40	110	70	30	84
139	55	50	70	30	29
140	50	70	42	35	16
141	60	100	70	30	55
142	65	150	70	31	61
143	50	72	70	48	862

Table H.4

Data Used for Profit Function Analysis Derived from the Sample Irrigated Ricefarms, East Java, Dry Season 1978

Serial number	Price of				Profit
	Output (Rp/kg)	Seed (Rp/kg)	Fertilizer (Rp/kg)	Labour (Rp/hour)	(Rp'000)
1	58	75	75	63	74
2	55	100	70	30	115
3	80	80	70	23	153
4	60	80	70	29	123
5	60	60	70	12	182
6	65	100	70	34	138
7	55	80	70	33	76
8	60	80	70	25	136
9	65	70	70	25	77
10	55	80	70	31	54
11	60	70	70	30	219
12	50	80	70	25	21
13	60	75	72	33	119
14	50	80	70	44	108
15	60	60	70	24	113
16	63	150	70	27	329
17	55	150	70	47	15
18	60	150	60	29	75
19	60	50	70	65	52
20	60	65	70	22	115
21	60	100	70	35	337
22	55	150	70	21	44
23	50	150	70	22	31
24	60	53	70	67	105
25	55	75	70	30	25
26	55	80	70	25	124
27	60	60	70	41	112
28	70	75	70	47	881
29	55	100	70	20	79
30	52	65	70	24	196

Table H.4 continued

Serial number	Price of				Profit
	Output (Rp/kg)	Seed (Rp/kg)	Fertilizer (Rp/kg)	Labour (Rp/hour)	(Rp'000)
31	60	80	70	24	385
32	60	75	70	35	22
33	65	100	71	30	479
34	60	80	70	27	202
35	60	60	70	25	16
36	60	60	70	25	15
37	55	55	70	25	30
38	80	80	70	30	8
39	80	100	70	17	106
40	100	80	70	50	11
41	75	100	70	33	12
42	75	100	70	30	6
43	80	80	70	50	14
44	75	100	70	30	14
45	70	150	70	30	7
46	75	100	70	30	4
47	75	100	70	30	6
48	75	150	70	15	392
49	50	50	70	28	39
50	55	60	70	47	43
51	68	150	70	17	62
52	55	125	70	35	82
53	68	150	70	11	88
54	65	90	70	23	141
55	50	80	70	24	107
56	60	100	70	24	53
57	50	100	67	22	250
58	50	40	70	50	35
59	70	90	70	59	963
60	68	80	70	19	308
61	68	150	70	22	297
62	55	100	35	22	253
63	50	60	70	54	253
64	50	70	70	21	9
65	24	60	70	30	90
66	55	60	70	30	60
67	53	100	70	30	48
68	57	80	70	16	64
69	60	80	70	32	308
70	50	150	77	30	86

Table H.4 continued

Serial number	Price of				Profit
	Output (Rp/kg)	Seed (Rp/kg)	Fertilizer (Rp/kg)	Labour (Rp/hour)	(Rp'000)
71	65	50	68	30	52
72	65	100	70	58	54
73	60	102	70	48	3
74	50	60	70	30	19
75	50	65	70	17	36
76	60	100	70	54	9
77	55	60	70	30	6
78	55	55	70	30	6
79	71	80	70	30	4
80	80	80	70	50	6
81	57	80	70	30	4
82	50	100	70	30	3
83	75	100	70	30	10
84	75	100	70	30	10
85	78	100	70	30	10
86	75	100	70	33	6
87	60	75	70	20	48
88	50	125	70	36	35
89	60	100	44	32	-3
90	50	125	70	28	58
91	60	100	75	20	41
92	60	70	70	30	26
93	55	100	70	30	16
94	65	100	42	30	15
95	50	100	42	28	23
96	60	80	70	22	4
97	80	60	64	40	3
98	55	75	70	30	34
99	55	50	56	40	51
100	50	150	70	38	110
101	75	60	75	30	111

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