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SIZE OF FARMS AND LAND-LABOUR RATIOS IN THE SMALLHOLDING SECTOR IN WEST MALAYSIA

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SINOPSIS

Makalah ini mengkaji saiz tani dan nisbah tanah-buruh untuk berbagai jenis tani dalam sektor ladang-kecil di Malaysia Barat. Adalah didapati bahawa saiz tani umumnya kecil, dan nisbah tanah-buruh umumnya rendah. Kertas ini seterusnya menyelidiki tentang perhubungan antara kedua-dua faktor di atas dan mendapati bahawa pada umumnya nisbah tanah-buruh adalah memainkan peranan yang penting dalam menentukan saiz tani.

SYNOPSIS

This paper examines the size of farms and the land-labour ratios for various types of farms in the smallholding sector in West Malaysia. It has been found that the size of farms is generally small, and the land-labour ratio generally low. It then examines the relationship between the two and finds that generally the land-labour ratio plays a significant role in determining the size of farms.

This paper sets out to examine the size of farms and the land-labour ratios in the smallholding sector in West Malaysia. In its final section, the paper also briefly attempts to gauge the influence of the land-labour ratios in determining the size of farms in the sector. The analysis is exclusively based on the data as contained in the 1960 Census of Agriculture. Though the Census is by now relatively old, it is nevertheless as yet the only source which provides comprehensive data for all types of farms for the whole peninsula broken down by state.

I. SIZE OF FARMS

The size distribution and the mean areas for the different types of smallholdings as in 1960 are set out in Table I. It may be observed from the final column of the Table that of the total number of farms, only 1.2 percent have been bigger than 25 acres, while 67.3 percent have in fact been smaller than 5 acres. The average size of all farms has been 4.7 acres.

The incomplete sampling coverage of the urban farms in the Census, from which the Table has been compiled, might possibly have given rise

TABLE I

TYPE OF FARMS BY SIZE GROUP, 1960 (IN PERCENT)

Size Group (ac)	Type of Farms							
	Wet Rice	Vegetable Gardens	Other Temporary Crops	Rubber	Coconut	Fruit/ Kampong	Mixed	All Farms
Below 1	9.9	48.5	20.3	1.9	12.6	40.8	2.4	10.2
1 and less than 2	23.2	32.2	30.1	7.9	19.0	31.0	12.4	17.7
2 ,, ,, ,, 3	21.3	13.4	27.3	14.1	20.6	15.4	15.0	17.3
3 ,, ,, ,, 4	14.3	4.4	10.9	12.2	9.6	4.5	15.8	12.8
4 ,, ,, ,, 5	9.7	0.5	4.0	10.3	8.9	3.3	11.2	9.3
5 ,, ,, ,, 10	18.6	1.0	5.7	30.0	18.5	4.2	30.5	22.4
10 ,, ,, ,, 25	3.0	0.0	1.4	19.6	9.5	0.8	11.8	9.1
25 and Over	0.0	0.0	0.3	4.0	1.3	0.0	0.9	1.2
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Mean Area (ac)	2.5	1.0	1.5	5.2	3.2	1.2	n.a	4.7

Sources: Ministry of Agriculture and Cooperatives, *1960 Census of Agriculture*, Report No. 3, Table 34; and Report No. 8, Table 560.

to some degree of understatement in the average size figures in the Table should the urban farms be comparatively larger than the rural farms.[1] Nevertheless, owing to the much smaller total number of the urban farms, the effect is very unlikely to be substantial; moreover, it should not be overlooked that the Census sampling coverage has also excluded farms of less than one-quarter of an acre/relong.

The average size figures in the Table evidently vary between the different types of farms. The smallest farms appear to be those of vegetable gardens. Of this type of farms 80.7 percent have been less than 2.0 acres in area, while their average size has been only 1.0 acre. Rubber farms have been the largest, with 53.6 percent of their total number being larger than 5 acres, and their average size 5.2 acres. Other types of farms have ranged in size between these two extremes.

II. LAND-LABOUR RATIOS

The figures relating to the size of the different types of farms examined above do not convey any information regarding the relationship between the availability of land and the labour situation on these farms. Such a relationship is expressed by the land-labour ratios, which are now presented in Table II for the various types of farms. For the purpose of comparative analysis, the ratios have also been computed for the estates in the case of some relevant crops. All the ratios presented in the Table have been computed from the data reported in the 1960 Census of Agriculture. Both male and female workers have been considered, without any different weighting for either sex. In all cases, the land areas considered have been the cultivated areas.

The final column of the Table shows the ratios with respect to the different types of estates. The denominators of these ratios have included all classes of employees: the managerial, executive, and supervisory staff; the tappers, harvesters, and pluckers; the field workers, weeders, and sprayers; the factory workers; and other daily-rated employees.[2] It may

1 The average size figures have not been separately given in the Census reports for the rural and the urban farms. We have, however, calculated the respective average size figures for all farms in the rural and the urban sectors from the size frequency distribution of all farms in both sectots as given in the Census reports, through the use of mid-values (for the farms in the size group of "25 and over" acres, the lower limit of 25 acres has been applied). The calculation has revealed the average size of 4.7 acres for the rural farms—a similar figure to the average size for all farms in both sectors shown in the Table—and a slightly higher figure of 5.2 acres for the urban farms.

2 The primary objective here is to facilitate as much comparability as possible with the ratios derived for the smallholding workers, in whose case all these functions are normally performed by the same persons. It should also be pointed out that, in contrast to the time reference of one year for recording smallholding employment, estate employment has been recorded in the Census with reference to 31st July 1960 only. See Ministry of Agriculture and Cooperatives, *1960 Census of Agriculture*, Report No. 16, p. viii.

TABLE II

LAND-LABOUR RATIOS ON SMALLHOLDINGS AND ESTATES, 1960
(IN ACRES PER UNIT OF LABOUR SHOWN)

Type of Farms/Estates	Smallholdings			Estates
	Per Farm Household	Per Farming Household Member[a]	Per Person-Year[b]	Per Employee
Wet Rice	3.2	1.5	2.0	–
Vegetable Gardens	1.0	0.5	0.5	–
Other Temporary Crops	2.2	1.0	1.5	–
Rubber	7.7	3.7	3.5	6.7
Coconut	4.4	2.0	3.0	10.6
Fruit/Kampong	1.5	1.0	1.5	–
Mixed	5.4	2.2	2.7	7.2
Oil Palm	–	–	–	7.9
Tea	–	–	–	2.0
Pineapple	–	–	–	6.7
Total	4.7	2.2	2.5	6.7

a Only those economically-active members who have worked either full-time or part-time on the farms are considered.

b Including farm household members and hired workers. A full-time household member is considered as one person-year, and a part-time member as one-half of a person-year. Hired workers are imputed on the basis of 200 person-days work per person-year, or $400 wages per person-year. See the discussion in the text.

Sources: Computed from Ministry of Agriculture and Cooperatives, *1960 Census of Agriculture*, Report No. 11, Tables 887, 926 and 982; Report No. 12, Table 1,045; and Report No. 16, Tables 1,321 and 1,382.

be seen that the average land area per employee for all types of estates has been 6.9 acres. With the exception of tea estates, the ratios for all types of estates have been higher than 6.7 acres, with the highest being 10.6 acres for coconut estates.

The remainder of the Table presents different kinds of ratios for the various types of farms. The second column shows the average available land areas per farm household. The areas have varied from 1.0 acre for vegetable gardens to 7.7 acres for rubber farms. These measures, however, purport only to give an idea of the available land per farm household, and disregard the number of members constituting the households.

The average available land areas per farming household member are given in the third column of the Table. The farming household members are defined here to include the farmers, who are the heads of households; and all the economically-active household members reported as having worked on the farms, irrespective of whether their farm employment has been on a full-time or part-time basis. Thus, if all the household members who could and would work on the farms had done so during the year, these ratios may be interpreted as showing the average available land areas as per available farming member of the households. The Table shows

that the ratios have ranged from 0.5 acres for vegetable gardens to 3·7 acres for rubber; with the average ratio for all types of farms being 2.2 acres.

A more appropriate kind of ratios than the above two for the purpose of gauging the availability of land and the level of its utilisation in relation to labour in the smallholding sector is one which expresses the average available land area as per unit of labour actually worked. The ratios of this kind for the different types of farms are shown in the fourth column of the Table. The ratios take into account not only the fact that some household members have worked only as part-time workers on their farms, but also that hired workers have been employed on some of the farms. The denominators of these ratios have thus been the total labour actually worked in person-years for each type of farms.

Some minor difficulties have arisen in the computation of these refined ratios because of the fact that the data are not available in sufficient detail. Though the number of part-time household members is given or may be derived for each type of farms, no information is however available on the exact amount of their labour expended on the farms. The solution adopted here is to regard the labour of a full-time household member as constituting one person-year, and that of a part-time member as one-half of a person-year. The hired workers who have been reported as regularly employed are treated like the full-time household members. As for the remaining hired workers, whose labour has been recorded in either the number of man-days worked or wages earned, the amount of their labour has been respectively imputed by taking 200 man-days or $400 as constituting one person-year.[3]

The resultant ratios may be seen to vary from 0.5 acres for vegetable gardens to 3.5 acres for rubber, with the average of 2.5 acres for all types of farms. It is quite likely, however, that these ratios understate to some extent the actual areas. The full-time household members have been defined as those who have not reported working outside their farms, but it is clear that this does not necessarily guarantee that they have worked on their farms throughout the year. The imputation of one-half of a person-year in respect of part-time household members may be considered as generous with regard to those family workers who have not actually managed the farms. There is thus the likelihood that our denominators have been higher than what they should have been.

Some indication of the presence of the shortage of available land in the smallholding sector may be observed by comparing the ratios as per farming household member with the corresponding ratios as per person-year actually worked, presented in the third and the fourth columns of

3 The figure of approximately 200 men-days per year has been found to be the average number of days worked on rubber smallholdings. The rate of $2.00 per day is regarded as the opportunity cost of smallholding workers.

the Table respectively. It appears that with the exception of the ratio for the rubber farms, all other ratios of the average available land per farming household member are smaller than the ratios of land actually worked per person-year. The latter ratios are by no means the extent of the areas capable of being worked by a person-year; indeed such units may be larger. Yet the difference between these two sets of ratios is apparent. Only in the case of rubber farms does the ratio of the available land per farming household member appear to be slightly larger than the corresponding ratio of land worked per person-year. This finding is consistent with the fact, often observed, that rubber farms have employed the largest proportion of hired workers as compared with other types of farms.[4]

Finally, a comparison may also be made between the ratios of the available land area as per farming household member and the ratios given in the final column of the area worked by an employee on estates. It is true that the land area capable of being worked by a smallholder should be less than that of an estate worker on the same type of farm, and proper allowances must be given for such factors as the fact that the smallholders have to perform some household jobs, like house repairs, which the estate workers do not. Allowances must also certainly be given for the differences in the organisation and the level of technology between the two systems of production. Yet even after all these allowances are considered, the differences remain glaring. The average available land area of 2.2 acres per farming household member on all types of smallholdings is slightly less than even one-third of the average area worked by an employee on the estates. This is also true in the case of all individual crops found on both smallholdings and estates with the exception of rubber, in which case the former ratio exceeds one-half of the latter. A somewhat similar conclusion will also be arrived at from comparing the ratios of the land area as per employee on the estates and of the area actually worked by a person-year on smallholdings.

III. THE RELATIONSHIP BETWEEN SIZE OF FARMS AND LAND-LABOUR RATIOS

It might be fruitful to examine the relationship between the sizes of farms and the land-labour ratios for the various types of farms. The data for the size of farms are thus extracted and those for land-labour ratios computed for all types of farms by state. These are presented in Table III. A simple linear relationship of the type

$$Y = a + bX + u$$

4 See, for example, Abdul Halim Ismail, "Peasant Agriculture Labour Force in Malaysia: a Preliminary Study", *Development Forum*, No. 1, Vol. 3, December, 1971, especially Table IV.

TABLE III

SIZES OF FARMS AND LAND-LABOUR RATIOS BY TYPE OF FARMS AND STATE

State	Wet Rice		Vegetable Gardens		Other Temporary Crops		Rubber		Coconut		Fruit/Kampong	
	Y	X	Y	X	Y	X	Y	X	Y	X	Y	X
Johore	1.7	1.6	0.8	0.7	1.1	1.1	6.3	3.7	4.7	3.4	1.4	2.2
Kedah	3.5	2.1	1.0	0.8	2.2	2.1	5.8	3.5	1.7	2.3	1.2	1.6
Kelantan	2.1	2.0	0.6	0.6	0.8	1.3	3.9	3.1	1.5	2.3	0.9	1.1
Malacca	1.5	1.4	1.2	2.0	0.8	0.7	4.5	3.7	1.8	3.0	0.9	0.9
N. Sembilan	1.2	0.9	0.8	0.8	1.7	1.6	4.6	3.6	2.1	2.0	1.0	1.1
Pahang	1.7	1.3	0.9	0.6	1.3	1.9	6.3	4.0	2.1	2.7	1.3	1.5
Penang	2.4	1.3	0.8	0.4	1.4	0.7	7.8	3.0	2.6	2.5	1.3	1.2
Perak	2.2	1.9	1.0	0.6	1.9	1.2	4.8	2.8	4.1	3.2	1.1	1.5
Perlis	3.7	2.1	–	–	1.2	1.6	3.4	3.3	–	–	0.9	2.3
Selangor	3.3	1.7	1.1	0.9	0.9	1.0	5.0	3.1	3.4	2.4	1.2	1.3
Trengganu	2.1	1.7	0.7	0.1	1.7	1.5	5.4	4.3	1.7	2.0	1.4	1.7

Y = size of farms in acres. X = land-labour ratio in acres per person-year.

Source: Compiled from Ministry of Agriculture and Co-operatives, *1960 Census of Agriculture*, Report No. 8, Table 560; and Report No. 11, Tables 887, 926, and 982.

where Y = size of farms, X = land-labour ratio, a is the constant, and u is the error term, is fitted to the data.

The results are presented in Table IV. It may be seen that the regression coefficients are significant at the 1-percent level for wet rice farms, vegetable gardens and coconut farms, and at the 5-percent level for other temporary crops. The coefficients of determination, r^2, for the equations for the first three types of farms are over 50 percent. It thus appears that the land-labour ratios prevailing within each of these types of farms have played a fairly significant role in determining the size of farms for each category of the farms. Hence generally the less is the pressure on land—i.e. the higher is the land-labour ratio—for any of the above types of farms, the bigger is the size of farms.

This finding, if it holds true, has an implication on the agrarian policy relating to the size of farms. An 'optimum' or 'economic' size of farms calls for a specific size under a specific set of circumstances. The attainment of such a size is dependent upon many factors, not the least important of which is the prevalence of a conducive land-labour ratio. Should the ratio be relatively unduly low the farms might most probably be subdivided beyond the limit of their being 'optimum' or 'economic'.

TABLE IV

RELATIONSHIP BETWEEN SIZES OF FARMS AND LAND-LABOUR RATIOS

Type of Farms	Equation	r^2
Wet Rice	$-0.32+ 1.60\times$ * (0.45)	0.53
Vegetable Gardens	$0.68+ 0.27\times$ * (0.08)	0.54
Other Temporary Crops	$0.58+ 0.58\times$ ** (0.25)	0.32
Rubber	$4.10+ 0.34\times$ (0.82)	0.01
Coconut	$-1.68+ 1.65\times$ * (0.51)	0.51
Fruit/Kampong	$0.94+ 0.14\times$ (0.13)	0.10

*Significant at the 1-percent level.
**Significant at the 5-percent level.
Source: Computed from the data in Table III.