

Size of Holdings and Productivity

Further Comment

Kalpana Bardhan

The most satisfactory explanation of the greater productivity of small farms seems to be that the cost of labour to family-based farms is lower than that to wage-based farms.

However, lest the inverse relation between gross output per acre and the size of holdings should be adduced as conclusive evidence in favour of small farms and against joint large-scale farming, it is argued here that there is nothing in the data collected by the Farm Management Studies to indicate that small farms are more efficient in the use of the different factors of production.

STUDIES in Economics of Farm Management covering selected districts of six States show that gross output per acre¹ tends to decline as the average size of holdings increases. This is found to be associated with greater per acre inputs of human labour, bullock labour, implements, etc. in the smaller size farms than in the larger ones. Professor A K Sen's explanation of the phenomenon of higher gross output per acre in smaller farms has started an interesting discussion.² It has now been accepted that there can be a number of alternative explanations of this phenomenon. Professor Sen thinks some of these explanations to be weaker than others—but none of them he discards completely—and concludes that the real question is that of determining their relative importance by means of an empirical study. Before theoreticians wash their hands of this matter, may we add a few points in assessment of the alternative explanations, although we feel that the discussion on the *a priori* level is fast approaching its point of diminishing returns?

One of the explanations is based on the hypothesis of 'dis-economies of large scale' arising from personal participation and supervision that only a small farm can allow, or the greater amount of loving care' shown by family members working on their own farm than by hired labourers on their employers' farms. This hypothesis leads one to expect that the productivity of labour is higher in smaller size-groups of farms which are more dependent on family labour. If this is true, and if one brings in the additional consideration that labour input per acre is not smaller in small-sized farms than in large-sized ones, only then will the hypothesis of diseconomies of large-scale'—or what Professor Sen calls the 'technique-based' explanation—constitute an explanation, though partial, of the inverse association between size of holdings and gross productivity of land. As a matter of fact, both gross productivity of labour (gross output divided by the total number of man-work-days and net productivity (indicating earn-

ing per man-work day after allowing for the cost of all items used in the production process except human labour) show, according to Farm Management data (wherever such data are available), a clear tendency to rise with increase in the size-level of holdings.³ Obviously, other factors are so overwhelmingly important that 'loving care' and all that do not count for much.

The economic basis of the 'capital-based' explanation (which is not considered in detail in the discussion) is the fact that capital-land ratio is higher in the smaller size-groups. One can question, as Professor Sen does, whether the value of capital investment per acre is really higher, in the generality of cases, in small farms than in large farms. In most of the districts studied, however, it is true that capital investment per acre declines with increase in the size of farms.⁴ This is simply explained by the fact that the farmers have to keep a minimum amount of draught cattle, farm equipments, etc. however small holdings may be. For some other regions, the tendency towards an inverse association between size of holding and capital investment per acre due to this factor may be found to be offset by the fact that large farmers have benefited from various schemes for providing credit, implements, seeds and even water to an extent far out of proportion to the shares of the medium and small farmers in these facilities.⁵

But even if capital (including bullock labour) per acre were always found to be higher in the small-size groups due to certain items of capital being lumpy in nature, one can still dispute the logic of the capital-based explanation. Lumpiness of capital investment (or economies of scale in respect of capital) points towards rising productivity of capital (due to better utilisation) with increase in the size of the farm. This is corroborated by the Farm Management data which show that return to capital investment tends to rise with increase in the size-level of holdings.⁶ That small farmers have greater amount of capital per

acre because of imperfect divisibility of some items of capital may not thus constitute any advantage for them over the large farmers. Since higher output per acre in smaller farms can be 'explained' in terms of larger amount of capital per acre only if productivity of capital is not significantly smaller in the smaller size-groups, the capital-based explanation does not seem to be at all satisfactory.

Another explanation, which Professor Sen regards as quite plausible, is that the smaller farms have higher output *because* they are more fertile. Using the essentially Malthusian argument of population expanding faster in fertile areas. Professor Sen thinks that "the correlation between size and fertility is not an odd result, but one that can be expected on good economic grounds". Apart from inherently better-quality land, small farmers sometimes have, especially in Punjab, a higher percentage of their cultivated area irrigated than the larger farms. If we accept the greater fertility of land in smaller farms and/or a higher proportion of their cultivated area being irrigated to be a general feature of most of the districts covered by the Farm Management Studies, this then leads us to expect that, given other things, an acre of land will be more efficient (or will have a greater net productivity) in small-sized farms than in large-sized ones. In this connection it is interesting to note that in Punjab at least, in the two surveyed districts while the smaller farms have a higher percentage of irrigated to total cultivated area, their 'yield per acre' (with reference to a single crop) is low relative to that in large farms.⁷ Similar data on 'yield per acre' (for any individual crop) classified according to size-levels of holdings do not seem to be available for other States. But the important case of Punjab does indicate that the effect of greater fertility, etc. may not be strong enough to outweigh other influences in the contrary direction (like those of economies of scale) and thus may not constitute an effective explanation.

The most satisfactory explanation seems to be in terms of the cost of labour to family-based farms being lower than that to wage-based farms. This hypothesis has been elaborately explained by Professor Sen and Shri Agarwala. We can only add that the effect of 'cheap' family labour is reinforced by the fact that small farmers often maximise total production out of their holdings and not net earnings or profits, in view of the tremendous pressure to grow enough to feed the family, pay the dues in kind and earn the cash required to meet financial commitments and procure some basic necessities not produced by themselves. The objective of maximising production coupled with the abundance of 'cheap' family labour and only marginal dependence on hired labour, leads to the use of more labour per acre which through intensive utilisation of each acre of land (using more labour in the production of each crop, raising a larger number of crops, leaving lesser amount of their land as current fallow) leads to larger gross output per acre.

An important policy conclusion follows. Lest the inverse relation between gross output per acre and size of holdings as observed by Farm Management Studies leads an incautious theoretician to consider it as a conclusive evidence in favour of small farming and against any kind of joint large-scale farming, it can be noted from our discussion above that, there is nothing in the Farm Management data which show decisively that small farms are more efficient; in the use of the different factors of production. As a matter of fact, productivity of both labour and capital and, in the case of Punjab, even 'yield per acre' for an individual crop are higher for the larger farms. The small farms take advantage of structural unemployment in the countryside, and even there the resultant higher intensity of cropping (e.g. leaving less fallow) may lead to a long-run deterioration of the soil.

Notes

¹ This is average output per farm (for all the crops raised during the year taken together) divided by the average number of acres per farm in each of the different size-groups. It indicates what can be called the 'gross' productivity of land and is obviously distinct from 'yield per acre' for any individual crop,

A K Sen, *The Economic Weekly*. Annual Numbers 1962 and 1964, and also May 2 1964; D Mazumdar,

Special Number, 1963; R Agarwala, April 11, 1964.

³ See Madras Report, pp 63-66; U P Report, p 41; N S Randhawa on the Punjab Report in the *Indian Journal of Agricultural Economics*, July-September, 1960; West Bengal Report, p 65; Madras Report, p 63.

⁴ See Punjab Report, p 32; Bombay Report, p 56, p 85; for West Bengal one can show this by obtaining the average value of implements per acre from Table 3.38 (p 39) if one divides the average value per farm by the mid-value of each size-class of farms, and by deriving the figures for bullock power per acre from figures of average cultivated area per pair of bullocks in Table 3.28 (p 30); in a similar way the same can be shown from Table 11-35 and Table 11-20 in Madras

Report; see also U P Report, Tables 2.9 and 2.12.

⁵ See the report of the Team for the Study of Community Projects and National Extension Service.

⁶ See UP Report, p 42; West Bengal Report, p 64; also Punjab Report, p 29 and p 11 (in this case return to capital investment is obtained, as N S Randhawa, *op cit*, has shown, from dividing farm investment (excluding land) income per acre by capital investment (excluding land per acre for each size-group),

⁷ Yields per acre of irrigated wheat and 'American' cotton (two main crops in the region of Punjab surveyed) are generally higher in the larger holdings than in the smaller ones. See Punjab Report, p 109, 163; and N S Randhawa, *op cit*.

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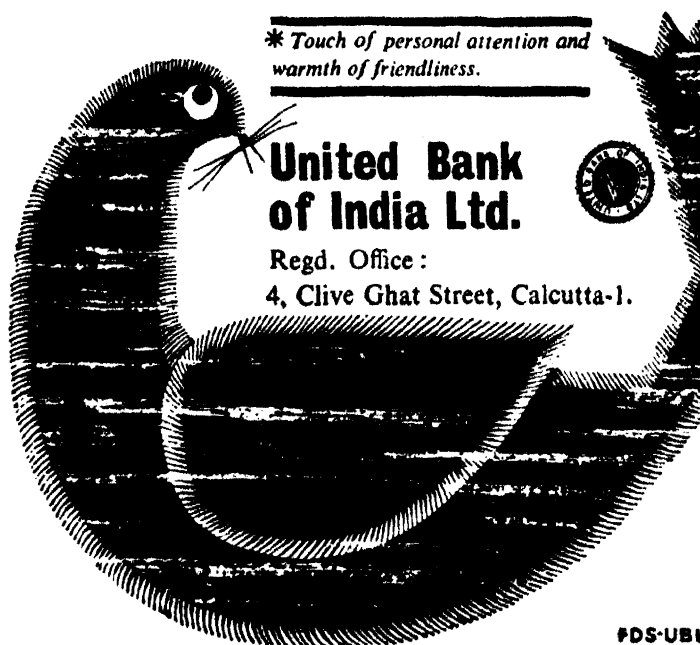
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