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NATURE AND ROLE OF RISK AND UNCERTAINTY IN AGRICULTURE*

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This paper modestly attempts to examine the relevance of the twin concepts mentioned in the title to agriculture especially to the agricultural practices in India.

One has to come down through the whole gamut of classical economists from Courcelle Seneuil to Hawley in order to faintly trace the twin concepts under consideration. By definition, a static state postulated absence of five collective changes of (i) growth of population, (ii) augmentation of capital, (iii) betterment of technique of production, (iv) change in business organization and (v) multiplication of consumer demand. Absence of these changes led to the situation where there was no need for decision-making and the resultant risk-taking because under these conditions there was no possibility of change and Professor J.B. Clark has rightly pointed out "No man can carry risk who has nothing to loose."¹ Clark added the concept of dynamic change and reduced the impact of all changes through inventions by assuming perfect knowledge of future by all the members of a community on which their business decisions were based. However, this may not be necessarily so because the five generic shifts need not be absent and violent, unpredictable fluctuations may lead to total or partial ignorance of future. Hawley grasped these drawbacks while talking of "irksome" nature of risks undertaken by entrepreneurs in taking decisions. Professor Knight put these twin terms in their proper and meaningful perspective. It was his contention that "change as such cannot upset the competitive adjustment if the law of change is known and an unpredictable change will similarly be ineffective if the chance of its occurrence can be measured in any way."² Professor Knight distinguished between these twin terms by attributing amenability to calculated measurement to the former while the latter being intractable could be measured by statistical tools of enquiry.

Now to understand the full import of these twin terms used in our context one has to remember that they were coined to describe the element of profit accruing in an industrial business enterprise. They were gaining currency during the period of rapid industrialization in Europe and America. The immediate pre-industrialization era was more or less akin to the "static state" assumed by the classical economists but the changes in the techniques of production brought forward a class of people who knew at the time of decision-making that future and past conditions will not be the same for their enterprise. Moreover, individually also they

* The views expressed in this article are independent of the author's position in the Bureau of Economics & Statistics, Government of Maharashtra.

1. *Quarterly Journal of Economics*, Vol VII, pp. 40-54.

2. Frank H. Knight: *Risk, Uncertainty and Profit*, Houghton Mifflin Company, New York, 1957, Chapter II, p. 47.

were ignorant of the decisions made by other members of their own class. Even with partial success in covering the unpredictability of future by fixed costs, they had to face the reality of the market which was always in a fluid state.

Thus these concepts were used in the definite context of those activities where a commodity was produced wholly for the disposal in the market and not when it was meant purely for home consumption. It is nothing but misusing the concepts, therefore, when they are applied for the latter activity and all the more so if the production function is fixed-cost heavy made up mostly by family labour and the like. Then again these twin terms were primarily adopted in the economic literature to describe the divergence of "actual" from "natural" or "static" prices of an industrial product. This means these twin terms were used in the background of activities conducted in the industrial sphere and agriculture is hardly ever mentioned in the debates on these twin terms.

One has to be, therefore, unusually wary in using these terms in agricultural context. This may, perhaps, be realized if one remembers the fact that Professor Schultz and others do not discuss agricultural problems without, at the outset, contrasting them with those of industry's in their treatises on agricultural economics and have applied very warily the terms and concepts used in explaining industrial phenomenon in the agricultural field and that also if agricultural activities are conducted as a business proposition. This becomes obvious when Professor Heady very painfully explains the perpetual existence of inefficient and small-scale "marginal" farmers by using such terms as farming is, after all, "a way of life" and "\$" returns constitute only one "consumption good". Thus, as soon as agriculture is treated as a way of life and not as a business proposition, then to say that these twin terms enter into a farmer's calculus is nothing but misusing the terms. In these circumstances if at all these terms are to be used they are to be used if they flow from "randomness of nature". But then, isn't such accounting also "a way of life" ?

The above reasoning sharply restricts the use of the terms to commercial farms only for useful and fruitful application because it is on such commercial farms only that risk and uncertainty arising out of sudden shifts in consumer preference, etc., should enter into the decision-making of the farmers. If this is accepted then turning to India and especially to Maharashtra the use of the terms has to be limited to commercial farms or to those decisions which are based on market prices. Thus, assuming the generally accepted proportion (25 per cent) of the total agricultural production that is marketable by the Indian farmer, one has to limit and, if possible, look at these terms from different angle than the one set out by Knight if they are to be fruitfully used in the context of Indian agriculture. This is so because the terms have to go through a change of form as the degree and the content of the risk and uncertainty assumption are confined, if at all, to that relatively insignificant part of the activity which is directed to business in agriculture.

Thus, we first take up that part of the produce which is geared towards home consumption in farming in Maharashtra. According to the Census of Agricultural Holdings (1952-53) and the Season and Crop Reports (1956-57 to 1960-61) published by the Government of Maharashtra two things are made clear. In the

first place, the average agricultural holding is small and uneconomic, and secondly, 18 out of 26 districts have more than 70 per cent of their cultivated area under foodgrains and this percentage has not changed from 1956-57 to 1960-61. Data for earlier years are not given as they are not strictly comparable. This non-shifting of area from non-cash to cash crops means that there was no change in the farmer's decision and it has to be so if the non-shifting of cropping pattern is coupled with the uneconomic holdings that the decision-makers possess. Empirical evidence of this can be had from the fact that though the prices of jowar were higher in 1961-62 as compared with 1960-61, the area under jowar fell down by 9 per cent in 1961-62 as compared with 1960-61 or for that matter, barja area did not go up in these years when bajra prices were higher than that of jowar.

After securing the grains for his consumption needs, a farmer has to decide which cash crop he will grow to meet his cash outlays. Given the technical feasibility in the choice, by the very nature of things, risk and uncertainty factors will be restricted to relatively small portion of his activity. And as is well said that men will readily risk a small amount in the hope of winning a large amount when the adverse probability against winning is much in excess of the ratio of two amounts, so if the farmer is hazard-prone he will take his cue from the so-called progressive farmers ; otherwise he will go by habit which, after all, is security and change uncertainty. Author's personal observation in the wake of the National Sample Survey inspection work has shown that those farmers who are in a position to plant crops with a view to market a part of it to defray cash costs tend to divide their fields in the proportion of 6 annas : 6 annas ; 4 annas where the first 12 annas go to 2 cereals and pulses while the remaining four annas go for cash crops. This portion of four annas is comparatively a small amount when compared with 12 annas which assures him a steady supply over one year period of the needed grains. Thus when large part assures him against a total loss, the part played by the twin terms in his calculus is sharply restricted. When a portion, therefore, is planted for the market the decisions are founded on the rock of routine while risk and uncertainty in the accepted meaning of the terms are hardly catered for.

Now coming to the farmers who are in farming as a business proposition it has to be remembered that markets in a planned economy differ from the un-planned economy. Planned economy, theoretically at least, by foreseeing all changes converts risk and uncertainty into fixed costs more easily than is possible in an unplanned economy. Between these two lies the mixed economy where progressive planned diversion of bulk of resources to give the masses a higher standard of living will, by definition, assure a stable market for agricultural produce. However, in a mixed economy such market creation leads to inflating the cost-structure of those agricultural commodities which compete with the products of other sectors for whose creation scarce raw materials are diverted through direct physical controls, taxation and pricing policies. Moreover, governmental measures instituted for achieving political objectives also affect a commercial farmer's calculus. The taxation and fiscal policies and the Maharashtra Land Ceiling Act (1961) have led to the shrinkage of the acreage under sugarcane in Maharashtra and also to flight of capital from sugarcane investment from Maharashtra to the neighbouring States.³ Thus in such economies what is given with one hand is

3. *The Times of India* dated 27-9-63 (Bombay Edition) and *Sakal* dated 19-2-63 (Poona).

liable to be withdrawn with the other and in such situations the future becomes uncertain from an individual farmer's point of view. In absence of any system which covers the chance of loss due to governmental action, the farmer will gradually shift his acreage to those crops which, according to him, will not be affected by governmental actions. The farmers, surely, are not expected to be struthonians !

Conservatives being what the farmers all over the world are, their attitude towards innovations and improvements are largely guided by visible gains which these changes are supposed to give. As for example, as soon as the farmers got the opportunity of farming their government aquired lands which had stored the waters of the bursted Panshet Dam near Poona, they planted vegetable crops instead of the previously grown cereals for selling the vegetables in the nearby Poona market now linked up with a good road. This shows that given the infra-structure the farmers do take the benefit of innovation and the like provided of course the farmers have seen the benefits for themselves as happened in this particular case by their observation of the practices followed by the farmers in the canal-belt situated in the Poona-Khadakwasla (South) area. The same can be said about the technological changes that can be fruitfully applied within the frame-work of farming in Maharashtra. Beneficially visible effects coupled with the availability and nearness of a market help to crack the conservative layers of the farmer's attitude. But then the old chestnut that there is a gap between the cup and the lip comes very handy in explaining the slow off-take of new methods and ideas by the farmers. The part risk and uncertainty play in keeping the lip away from the cup is again to be confined only to those farmers who are in farming occupation as a business proposition. Here again application of innovation to farms have to be seen from the broader aspect of State's action in a mixed economy. The sum and substance of the risk-bearing aspect on the part of those farmers who produce exclusively for a market in a mixed economy is that since the governmental policies and decisions which have direct bearing on the farmers cannot be meaningfully measured, the risk and uncertainty cannot be turned into a part of the fixed costs because the future actions of the government is matter of subjective judgement and hence cropping pattern will shift towards purely non-interference fields.

To sum up the above argument :

- (a) The term "risk" and "uncertainty" have to be warily used while applying them to the agricultural situation and especially to Indian farming.
- (b) These terms, if they must be applied, should be applied to that part of the farmers' activities which have a direct bearing on the market.
- (c) "Marketable surplus" being a small proportion of the total produce, the element of risk and uncertainty entering into a farmer's calculus is sharply reduced and such subjective valuations as "demonstration effect" exert themselves in the decision-making.
- (d) Those farmers who are in business with their entire produce going to the market will mostly consider governmental action and policies while deciding upon the cropping pattern and will subjectively evaluate the future course of such actions.
- (e) And therefore, no measurable distinction could be drawn between risk and uncertainty, a distinction that would be operationally useful.