PART V

Selected Research for Improving Use and Productivity of Capital and Credit

- **Utility and Decision Processes**
- **Resource Productivity and Loan Limits**
- **Effects on Use of Production Factors**
- **Needed Research**

Chapter 24

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Decision Processes for Understanding Capital Use and Investment on Farms[1]

AFTER SOME REFLECTION on the problem of improving capital use, particularly on low-production and low-income farms of the South, the authors concluded that most conceptions of the demand for capital by individual farmers are inadequate. The conceptual developments in this chapter are intended to provide some logic of, and defense for, the following general propositions: (1) the explanation of capital rationing by an individual due solely to an aversion to risk arising from imperfect knowledge may be misleading;[2] (2) demand for capital by an individual farmer for investment in a production alternative is jointly determined by a number of dimensions of value; (3) potentially, capital rationing by individual farmers lessens as monetary relative to nonmonetary considerations increase in importance in individual valuations of production alternatives; and, (4) limited capital use by low-income farmers of the South is consistent with the presence of a complex of valuations other than monetary motives in individual appraisals of production alternatives.[3] Some elaboration of these propositions, together with their policy implications, will follow development of the concept of value-space as it applies in individual valuation of production alternatives and decision processes.[4]

Utility and Decision Processes

Catton made the concept of value-space central in a theory of value and of valuing.[5] The main idea he advanced is that objects of desire are

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[2] Capital rationing refers to the unwillingness of the individual to invest as much capital in a production alternative as monetarily profitable for him.

[3] An alternative hypothesis is that lending policies by credit institutions, or limited capital available to the farmers, is the cause of limited capital use by these farmers. Cf. W. E. Hendrix, "Availability of capital and production innovations on low-income farms," Jour. Farm Econ., Vol. 33, No. 1, Feb., 1951, pp. 66-74.

[4] The ideas presented in this chapter may be interpreted as the development of a general structure for explaining nonprofit maximization by individual farmers.

[5] William R. Catton, Jr., "A theory of value," Amer. Soc. Rev., Vol. 24, No. 3, June, 1959, pp. 310-14.

valued by individuals in relation to many dimensions. For example, time is a dimension in that, ceteris paribus, individuals place a higher value on an object or income the nearer it is to the present. Also, geographical distance is a dimension because an individual values an object differently as its distance from present location of the individual differs. Other dimensions of a value-space mentioned by Catton were social distance, permanence probability, and free selectability.

Some of the dimensions of value identified by Catton may be interpreted as means or costs in the acquisition of objects of desire. Objects of desire may be interpreted as the consequences of actions. The value of an object of desire, or the consequences of actions per se, also must be represented by a dimension of a value-space. Catton did not suggest a scale or common measure of value on the n-dimensions of the value-space. Traditionally, in economics, money has been the index or measuring rod for both means and consequences of actions. Since profit maximization was implied by this measure, economists have made increasing application of utility theory in their speculations about decision processes.

The utility theory of economics underlying modern conceptions of demand dates back to the beginning of neoclassical economics. Developments in modern welfare economics, beginning with the utility theory in Hicks' Value and Capital, expanded the theory of utility applicable in individual decision processes. However, attention to problems of utility or values in models to explain production decisions did not arise until the recognition that lack of perfect knowledge made relevant value or utility rather than money profits.[6]

From a review of models of choice in economics, we draw the conclusion that ends other than monetary income, such as security, are related functionally to uncertainty, and such ends become irrelevant in advent of perfect knowledge.[7] However, nonmonetary values independent of uncertainty have received considerable discussion as having influence on individual behavior.[8] If there are nonmonetary dimensions of value, independent of uncertainty, relevant in individual business decisions, one runs the risk of overemphasizing lack of knowledge when using the models of rational choice to explain these decisions.

Another limitation of the models of choice, when applying the utility theory from consumption economics, is the under-emphasis on means. The orientation of these models is on the consequences of actions. If this evaluation of models of decision processes is correct, most of

[6] Statements in this chapter regarding the limitations of use of profit maximization as the sole end in economic analyses of individual farms are meant to apply mainly to low-production farms. Profit maximization may be a reasonable assumption in case of analysis of resource-use problems for high-income farmers.

[7] Cf. Gerhard Tintner, "A contribution to the non-static theory of production"; Oscar Lange, *et al.*, Studies in Mathematical Economics and Econometrics, University of Chicago Press, Chicago, Ill., 1941, pp. 92-109; and Albert G. Hart, Anticipations, Uncertainty and Dynamic Planning, Augustus M. Kelley, Inc., New York, 1951.

[8] Cf. John M. Brewster and Howard L. Parsons, "Can prices allocate resources in American agriculture," Jour. Farm Econ., Vol. 28, No. 4, Nov., 1946, pp. 938-60.

these models need a reorientation, and we suggest that the concept of value-space, developed with the use of the theory of utility, may provide a way of emphasizing means and consequences in decision processes realistically.

Dimensions of Economic Value

Value-space is multidimensional; the five dimensions we use to illustrate the multidimensionality of value-space for a production alternative are monetary income, degree of knowledge, time, effort, and capital requirements. Later illustrations are based on the following general functional forms:

$$U = U(\pi, Z_i), \text{ or, } U = g(\pi) + h(Z_i) \tag{1}$$

$$\pi = PyY - \sum_{j}^{n} P_j X_j \text{ (net monetary income)} \tag{2}$$

$$Y = f(X_j, Z_1, Z_2, \cdots, Z_k) \tag{3}$$

where U is utility, π is expected monetary returns above monetary costs (net monetary income), Y is expected physical output, the X_j's are expected quantities of the priced factors of production, and Z_i's are nonpriced inputs, with k of these being functionally related to Y. In equation (1), the monetary and nonmonetary components of utility are separated. If $h(Z_i) = 0$ for all Z_i, then:

$$U = g(\pi) \tag{4}$$

which means the economic value-space can be represented with a utility function for money.

Money as a dimension of value-space is not new in decision models; also, as expressed earlier, degree of knowledge has received a central place in decision models. Although time, effort, and capital—as nonpriced factors—have received attention in economics, such attention has been small, or nil, in decision models.[9] These dimensions, with the assumption that monetary income is independent of other dimensions of the value-space, will be examined below.[10] Thus, the emphasis will be on the nonmonetary dimensions. The relations to be discussed may be expressed, functionally, as follows (with specific symbols for some of the Z_i's):

[9] For example, short-time horizons, leisure, asset position, desire for less uncertainty, etc., are discussed in the literature as possible explanations of inefficiency in resource use by individuals; however, conceptions of how these values, when considered simultaneously, fit in decision models do not exist.

[10] The assumption of independence of monetary income and the nonmonetary dimensions is made only for convenience. The actual situation may be expressed as follows: $U(\pi ; Z_i) = f(\pi, Z_j)$, where $j \leq n$. For example, receipt of income influences knowledge, or, one learns by experience.

$$h(T; E, C, K) = p(T, K) \tag{5}$$

$$h(E; T, C, K) = q(E, K) \tag{6}$$

$$h(C; E, T, K) = r(C, T, K) \tag{7}$$

$$h(K; T, E, C) = s(K) \tag{8}$$

where T = expected time of receipt of an expected π, E = expected effort required, C = expected capital required, and K = degree of belief, or knowledge, in receiving the expected π.[11] These functions may or may not properly account for interdependence of the dimensions. The major interaction we discuss is knowledge with all other dimensions.

The time dimension refers to a time preference in production or in the receipt of income, rather than in consumption, or in the expenditure of income. Although in economic literature these two kinds of time preferences are considered inseparable, time preference in production can be, and usually is, oriented toward the present regardless of the nature of time preference in consumption by an individual. This belief presupposes that future needs in consumption are uncertain. When considering the function p(T; K) (with K at a fixed level), utility is assumed to decrease with an increase in time at an increasing rate (Figure 24.1). However, if the time preference in consumption is oriented toward the present, as may well be the case for low-income farm families, then time preference in production must also be oriented toward the present. That is, time preference in production can be more oriented toward the present than time preference in consumption, but not

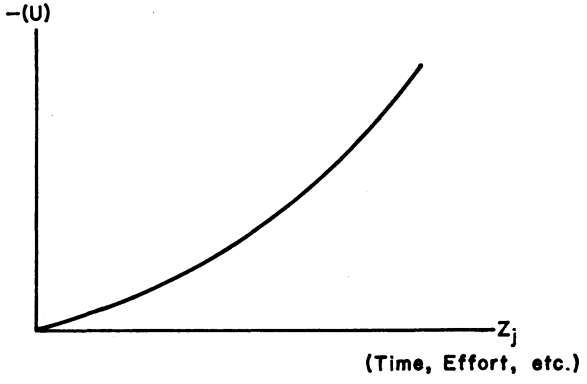

Fig. 24.1. Hypothesized relation of dimensions of value-space and utility.

[11] Note that the variables are in terms of expectations by the individual. Expected value is interpreted as the arithmetic mean of a subjective probability distribution. Since these expectations are not single-valued, the knowledge dimension (K) relates to degree of risk or uncertainty.

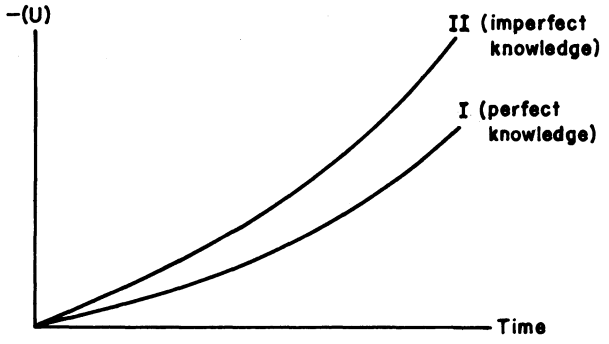

Fig. 24.2. Effect of levels of knowledge upon discounts for time.

less. A major reason for the postulated orientation of time preference in production toward the present is that the opportunities to decide how to allocate a given income for consumption over time (given uncertainty in future needs in consumption) become more restricted as the receipt of that income is more remote from the present. The functional relation of time and utility will shift with the changing level of knowledge. As the degree of knowledge decreases, the level of the function will shift as depicted in Figure 24.2 to represent additional discounting.

Effort—or its opposite, leisure—has received much notice as a contributing factor to the rural low-income problem of the South. The presupposition to such an argument is that southern farmers place higher values upon leisure than do their northern counterparts, and this unique value for leisure conflicts with monetary income-earning incentives. Regardless of the merit of this hypothesis, effort is a variable in valuing production alternatives for farmers of any income level. If there is increasing disutility associated with additional units of effort required for an alternative in action, as Figure 24.1 portrays, unrealistic results may be obtained from the accounting procedures used in farm management. When comparing alternatives with unequal requirements in effort, valuing family labor at no cost when underemployed or at a fixed wage rate gives greater advantage to the higher labor-using alternatives than placed upon such alternatives by farmers. That is, by the postulated increasing disutility for additional effort, a supply function for family labor that is sloping upward at an increasing rate is assumed. Also, as expressed by equation (6), the effort function is expected to change with change in the level of knowledge. This change in function may relate, in part, to preferences in productive activity referred to in the literature as enterprise preferences.

The cash costs associated with capital use are accounted for in the π of equation (1). However, there are nonpriced aspects of capital considered by individuals in valuation of production alternatives. Reduction in security associated with increased capital use is related to degree of knowledge. Also, there is discounting for additional capital use

in a production alternative for reduction in opportunity to invest in consumption until the capital is replenished by the realization of the consequences of action.[12] This discounting varies with the initial asset position, and it increases as time of realization of the consequences is more remote from the present. Such discounting on the capital dimension is distinguished from the discounting due to increase in time of receipt of income that is accounted for on the time dimension. A discount for worsening of the asset position, as viewed by the individual as capital investment increases from a given asset position, should be placed on the capital dimension. The additional discounting with less favorable initial asset position is a premise used in defense of the proposition that low-income farmers with unfavorable asset positions must discount the future much more than high-income farmers because of the additional pressure of current consumption on resources. This may be true. However, as indicated earlier, such a situation does not explain the preference for the present in the receipt of income.

The knowledge dimension, relating to desire for certainty, excludes interdependent effects of knowledge with other dimensions of the value-space. However, in the concepts used here, the various economic values, the discounting due to lack of knowledge, and the discounting due to attitudes independent of uncertainty are distinguished. With perfect knowledge there would be discounting with increases in time, effort, or capital. Under conditions of imperfect knowledge, any additional discounting on these dimensions, as well as on the knowledge dimension, would be attributable to lack of knowledge. If an individual is unaware of an alternative in production, such lack of knowledge accounts for the complete lack of interest in it.

Illustrations of Economic Value-Space

Equation (1) may be written more explicitly as:

$$U = g(\pi) - \Sigma\, b_i Z_i^n;\ i = 1, \cdots m;\ n > 1 \tag{9}$$

since the utility of the nonpriced factors is negative and this disutility was postulated as increasing at an increasing rate. In order to present an intuitive image of the value-space concept graphically, with economic dimensions, we assume the function:

$$U = \alpha - T^2 - E^2 - C^2 - K^2 \tag{10}$$

where α, T, E, C, and K are $g(\pi)$, time, effort, capital, and knowledge, respectively. To add to the simplicity of the illustrations, the interactions among the dimensions are ignored since this simplification does

[12] The cost in reference is a nonmonetary opportunity cost. Monetary opportunity costs for competing production alternatives are excluded as influential on the parameters of the value-space for particular alternatives in production.

not detract from the stated purposes. Utility is also assumed to be measurable, and $\alpha = 36$ is used in order to make the arithmetic simple. Value-space is defined as a space of potential interest in n-dimensions, or more explicitly, the possible values of T, E, C, and K of equation (10) in which $U > 0$.[13] When $U \leq 0$ for a production alternative, it is of "no interest" to the decision-maker, and when $U > 0$, the alternative has potential of being selected for action.

There is, of course, an infinite number of sets of values for the variables in equation (10) that can define the outer boundary of value-space. Since no more than a three-dimensional space can be illustrated graphically, with α one of these dimensions, a method was improvised to view the relations of the five dimensions, simultaneously, by use of the four quadrants of a plane.

An illustration by use of a single quadrant first will be presented. In equation (10), assume that no nonpriced capital is required, and knowledge for the alternative is perfect. Then we have the following function to examine:

$$U = 36 - T^2 - E^2 . \tag{11}$$

This function defines a utility surface. In Figure 24.3, equation (11) is plotted for $U = 0$. The possible values of effort and time consistent with $U = 0$ is a contour on the utility surface. Utility of 36, the

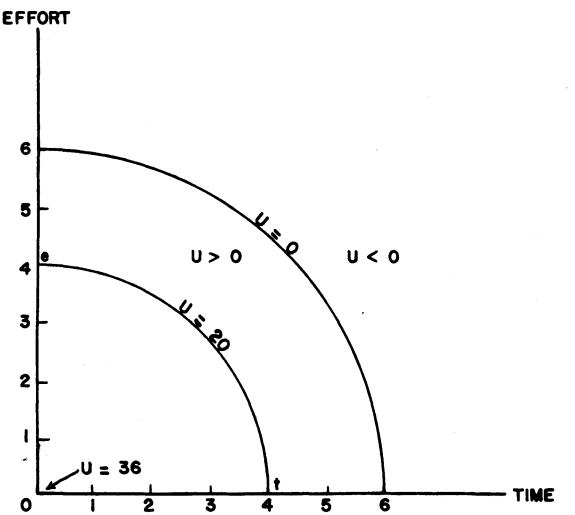

Fig. 24.3. Illustration of value-space for two dimensions.

[13] This definition of value-space may be consistent with the conception of an image as presented by Kenneth E. Boulding in The Image, University of Michigan Press, Ann Arbor, Mich., 1956.

maximum, is at the origin. Other contours or indifference curves, such as et in Figure 24.3, indicate substitution possibilities between effort and time for given levels of utility.

In order to expand this illustration, the other three quadrants of the plane were developed, each of which considers two of the four non-priced factors in production (Figure 24.4). The following functions are considered, in addition to equation (11):

(12) $U = 36 - E^2 - C^2$ (upper left quadrant)

(13) $U = 36 - C^2 - K^2$ (lower left quadrant)

(14) $U = 36 - K^2 - T^2$ (lower right quadrant)

The usual signs attached to the dimensions of the plane are ignored; that is, all are considered to be positive, with the exception of

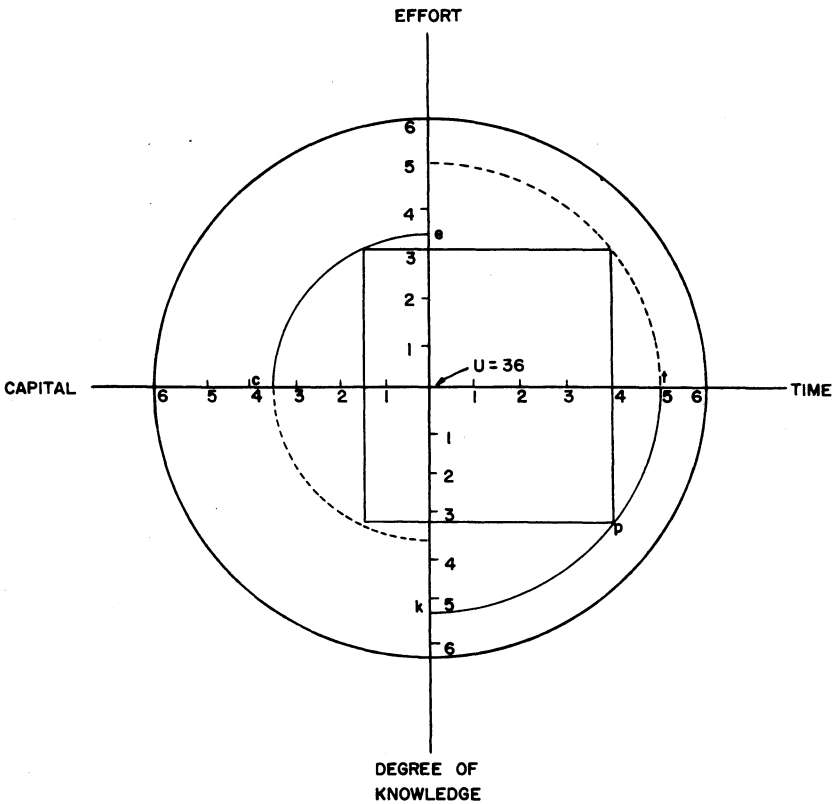

Fig. 24.4. Possible combinations of effort, time, knowledge, and capital for a value-space.

knowledge, which is assumed to be perfect at the origin (zero), and imperfections in knowledge are indicated by negative numbers. An increasing distance from the origin on any dimension reduces the net utility. The particular functions and scale selected for each dimension result in quarter circles for utility contours in each quadrant or, when joined, are circles in the plane.

If the values are fixed for two of the dimensions for a production alternative, the outer boundary of interest can be determined in terms of combinations of values for the other two dimensions. For example, in Figure 24.4 if degree of knowledge is at -3 and time of realization of consequences is at 4, the locus of these points, P, is on a utility contour tk for U = 11 when effort and capital are at zero. The 11 units of utility must be reduced to zero by effort and capital inputs in order to define the outer boundary of value-space. In this example, the contour ce defines the combinations of units of capital and effort which will just exhaust the 11 units of utility remaining after accounting for knowledge and time. If effort is fixed at three units, the maximum capital investment in the alternative is about one and one-half units. If more capital than this amount actually was required for the alternative, and requirements of other nonpriced inputs were as assumed, the individual would be unwilling to invest the required capital, and thus he could be described as rationing capital. In general, if a capital requirement for an alternative exceeds the outer limit of interest on the capital dimension, capital rationing by the individual is a possibility.[14] A possible set of values for the dimensions which will satisfy the condition U = 0 was defined above. An infinite number of such sets could be similarly defined.

Value-Space and Demand for Capital

The illustration of the value-space concept demonstrates that interest or noninterest in production alternatives by farmers, or the intensity thereof, is jointly determined by several dimensions of value. Values in respect to capital use are among these dimensions. The individual's demand for capital for a production alternative, expressed as a maximum amount he (potentially) is willing to invest, may be some determinate amount as illustrated in Figure 24.4. But before such a determination could be made, values for other dimensions of the space had to be assumed. Thus, we conclude that demand for capital by an individual for a production alternative is jointly determined by all the dimensions of value-space, and, therefore, the explanation of limited demand for capital for production alternatives by low-income farmers attributable to unique values in respect to capital use must be

[14] Also, external credit rationing, or restrictions on capital loaned to an individual, exists when the individual is unable to obtain from credit agencies the capital for a requirement within the boundary of potential interest.

misleading. Such attitudes about capital use contribute to the degree of willingness of an individual to invest capital in a production alternative; however, it is possible that such a nonpriced factor as family labor (effort) may be contributing more to limited demand for capital than attitudes about capital use. Alternatively, it is also possible that an apparent high degree of preference for leisure can be explained by the nonpriced factors other than effort.

A general function to express what determines willingness to invest capital in a production alternative, in terms of variables in our illustration, is as follows:

$$(15) \qquad Q_C = f(\alpha;\ Q_E,\ Q_T,\ Q_K;\ U'_E,\ U'_T,\ U'_K,\ U'_C)$$

where Q_C, Q_E, Q_T, and Q_K are quantities of capital, effort, time, and knowledge, respectively, and U_i's are the marginal utilities for these quantities. If we wished to make Q_C very large, or at any value consistent with α, we would decrease quantities of nonpriced factors and the parameters of disutility therefor. This substitution relation is basic to the value-space concept. Therefore, we conclude that (potentially) capital rationing by individual farmers lessens as monetary relative to nonmonetary considerations increase in importance in individual valuations of production alternatives (third proposition in introduction). The limited capital use by low-income farmers of the South is consistent with the hypothesized presence of a complex of valuations other than monetary motives (fourth proposition in introduction).

Value-Space and Decision Processes

Each alternative in production has a unique value-space, or space of potential interest, to an individual producer. Although we cannot say that all alternatives in action with potential interest to an individual do actually enter into his behavior, we conclude that any alternative in action outside the boundaries of interest ($U \leq 0$) will be excluded. Some alternatives within the bounds of potential interest will be excluded by other alternatives in action. The concept of value-space does not constitute, of course, an adequate theory of choice. However, it may form a major part of such a theory.

Two possible approaches in adding to the concept to develop a theory of choice would relate to two assumptions about motivation: (1) an individual is motivated, continuously, to achieve a maximum utility by his activity; and (2) an individual is motivated toward higher utility positions only in occasional periods when dissatisfaction with current achievement occurs. The latter assumption is associated with the level of aspiration and principle of bounded rationality concepts advanced by Herbert Simon.[15] The first of these two approaches to a theory of

[15] Herbert A. Simon, Models of Man, John Wiley & Sons, Inc., New York, 1947, pp. 196-206 and 241-60.

choice could be inconsistent with profit maximization motives as an assumption underlying much of economics, and the second approach is inconsistent with that assumption. Either could be consistent with the very wide gap between the resource use position of low-income farmers and the position in resource use consistent with maximum economic efficiency. For example, if low-income farmers are maximizing utility, their actions consistent with continued receipt of low income could be explained by some major nonmonetary considerations in the valuation of production alternatives. Such nonmonetary considerations could explain why low-income farmers limit the use of capital or lag in adopting technical innovations. If such alternatives are within the boundary of potential interest to an individual farmer, yet he fails to include them in his actions, then they are being excluded by greater interest in low-income-yielding actions.

The approach taken by Simon could be used to suggest that individual farmers are motivated by income goals or targets rather than by optima, and that these goals or targets fall considerably short of maximum utility or profit. Thus, a target just above current income levels would not produce the incentive necessary for making major changes in current activities. When motivation by an individual is sufficient to produce activity in search of higher incomes, a search for an appropriate alternative or alternatives for the purpose first gets under way, and the extent of such searching—or learning—depends upon his success in finding acceptable courses of action. If the searching is unsuccessful, the aspiration level, or target, must adjust to the potentialities of the environment to the individual. Whether or not this conception of behavior is realistic, the idea of using income targets in farm management analyses of low-income farms may have merit (cf. Coutu and Lindsey's discussion in Chapter 21). Such targets chosen for the analysis could provide sets of adjustment alternatives representing improvements in resource use, although not necessarily the maximum efficiency in resource use. The merit of this approach is that few low-income farmers could be expected to adjust immediately to maximum economic efficiency following publication of instructions on how this can be done; they more likely will accept research results representing less change in present resource use. This approach in analysis may be extended to provide a step-by-step process in farm resource use adjustments on low-income farms, as suggested by Woodworth and Fanning in Chapter 23.

Improving Capital Use and Investment Decisions

"... Political Economy does not of itself instruct how to make a nation rich; but whoever would be qualified to judge of the means of making a nation rich, must first be a political economist."[16]

[16] Essays on Some Unsettled Questions of Political Economy, London School of Economics and Political Science, Reprint of Scarce Works in Political Economy, No. 7, Essay V, 1948, p. 124.

The preceding analysis does not of itself provide us with sufficient means for prescribing how to improve capital use and investment decisions on individual farms; however, some statements of policy, or judgments, are expected even if they are based upon a scanty bit of logic and fact.

The main conclusion drawn from the above analysis is that monetary motives must increase relative to nonmonetary valuations if substantial increases in capital use are to be obtained on most farms in the South. Lack of knowledge is a major part of the complex of nonmonetary valuations. Much improvement in capital use, therefore, could be expected from an effective educational program designed to influence the knowledge image of production alternatives (cf. Chapters 22 and 23). Other than a relentless attack on the knowledge problem, a program emphasizing the changing of people's values is not proposed here.[17] Such a proposal would involve major ethical judgments unnecessary for our purposes.

An idea proposed to the agricultural workers of the rural development committees in Oklahoma may have merit as a long-run attack on the problems associated with inefficient capital use on southern farms. The proposal suggests that attention be focused on developing a limited group of commercial farmers in these low-income counties rather than attempting to improve resource use on all farms at the same rate. Many low-income counties in the South are very limited in agricultural leadership at the farm level. Such leadership, if developed, could add to the incentives of other farmers to advance, as well as to provide "information centers" on productive activities. Candidates for the increased attention would be those with less value impediments to increasing production efficiency, and this suggests the younger families.

A dilemma encountered in such a proposal is that the younger families in low-income areas have a meager quantity of assets in relation to that required for development into an efficient farm enterprise. Also, the more capable of these young people migrate to income-earning opportunities in other industries and in other locations. The rural low-income problem in the South could be alleviated if the capable young people of the low-income areas could be established in farming in those areas with the resources necessary for adequate incomes.

[17] Knowledge and values are functionally related, and therefore, changes in knowledge will be accompanied by changes in values. This approach to changing values of people does not imply the advocacy of a change to particular values.

Discussion

EDWARD M. NORMAN*

Back and Hurt make an economic approach to the very complex attitudes and resources of our southeastern agriculture. They develop the the factors involved in decision-making and place them as nearly as possible into a mathematical relationship. This formula can never be fixed, but it does provide a basic outline of the factors involved in choosing courses of action.

The propositions in the chapter are worthy of simplification. They are as follows: (1) a farmer does not necessarily ration capital due solely to the risks involved or his aversion to debt; (2) there are many factors involved in a farmer's use of capital; (3) monetary considerations have more influence than nonmonetary considerations in decisions to apply capital; and (4) limited capital use by low-income farmers is determined by a complex of valuations other than monetary considerations.

The authors present two choices for improving capital use. They are (1) mass education, or (2) concentration on a few. The proposal is well taken that a select group of commercial farmers be developed who properly apply capital to its best use. Motivation will do the rest. If one barn is painted in a community, they are all painted. The reaction to profit-making courses of action are the same. The subtle, less expensive approach to mass education utilizes the natural competitive instincts in mankind to keep up with others. Such a program would also influence those associated with agriculture—bankers, warehousemen, processors, and dealers whose help is vitally necessary in developing and maintaining a healthy agricultural economy. This proposal is certainly worth our serious consideration.

HAROLD G. WALKUP**

Considering first the concept of the entrepreneur, it appears that Back and Hurt have considered his manifestation of utility too narrowly. Greater insight would be gained if the farmer entrepreneur were allowed to be focal in the farm-family utility-seeking; but his utility considerations would be more or less conditioned by the interpretation he places on utility-seeking by other members of his family for whom he makes ultimate investment and consumption decisions. The entrepreneur is also influenced by the social environment within which, and in

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relation to which, he perceives himself. His investment and consumption decisions are influenced also by the impact of social environmental factors on his family. Presumably, the effect varies inversely as the social distance increases and directly with the social pressures they represent. This more incisive modification contains major implications for consumption and investment decisions and suggests new considerations in the capital and credit complex.

A social investment variable should be included explicitly as a part of the utility function. Social investment, or the lack of it, provides an important environmental factor in which entrepreneurial utility arises. In many areas, particularly in low-income farm areas, social investment provides the largest opportunity to create utility at the margin of investment and consumption. But, the Back-Hurt function makes social investment alternatives show up as a disutility factor, as costs (taxes) which reduce net monetary returns.

What recommendations have Back and Hurt made in light of their value-space concept? They have tried, more or less, to fit low-income entrepreneurs into the existing capital and credit structure. The following suggestions are made to complement and supplement their proposals.

Through education, by demonstration and otherwise, low-income farmers may be inculcated with the monetary motive through the use of factors of production (such as fertilizer, improved seed, and agricultural chemicals) having a high marginal productivity and being short-term capital outlays. The reward would thereby be achieved within the more limited time in which they are accustomed to consider values.

A second proposal relates to the improvement of capital formation in the human factor. Failure to explicitly recognize social investment and its contribution to utility and the creation of human capital is a serious omission. This is important when one considers the practice concerning human capital formation through tax-supported public schools. The existence of the public school system and the requirement for attendance up to a certain age or grade is a recognition of the shortcomings of entrepreneurial assessment of human potential and of the inadequate functioning of the allocative principles in this vital area. The allocative principles do not work well because credit practice entails utilizing chattels which are not legally possible nor socially desirable in the area of human capital formation. Consider for a moment this question: Can we not innovate sufficiently in the area of human capital formation so that loans for education beyond the high school level can be made on commercially and socially satisfactory terms? This is an agricultural credit problem because it is within the farm firm and the farm family environment that much new human capital is formed and is gradually emancipated to its own utility focus.