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## *Relationships Between Capital and Education*

**A**GRICULTURAL AND OTHER INDUSTRIES are developing and adopting innovations at a faster pace than ever before (cf. Chapters 1, 6, and 7). The process of adoption generally involves such steps as awareness, obtaining information, trial, and evaluation. In this process the farmer adopts a fraction of the total stock of innovations which can be expected to benefit him. Typically, he adopts only those innovations which reduce average, or per unit, costs.<sup>1</sup> These innovations may (1) increase output without proportionately increasing the quantity of each resource, such as in the case of hybrid corn; (2) substitute one resource for a scarce or expensive one, such as when machinery replaces labor; or (3) save one resource without materially changing use of other inputs or increasing yields; and (4) reduce risk and/or uncertainty. The aggregate effect of innovations has been to (1) reduce substantially the amount of labor needed in agriculture; (2) minimize the danger of land seriously limiting the production of sufficient food and fiber for our population for several decades; and (3) increase substantially capital requirements per farm. Data illustrating changes in capital requirements and use are presented in Chapters 1, 6, and 7.

While some innovations directly increase yield of agricultural products, the majority of other types are likely to increase total product supplies indirectly unless the resources saved are retired from agricultural production. Since a small increase in total supply causes a relatively large drop in price for most agricultural products, agricultural prices thus decline, giving society in general and consumers in particular the major benefit of an innovation.

Within agriculture the major income beneficiaries are those farmers who adopt the practice prior to general use and before the resulting increase in output and price decline. In this sense, nonadopters are likely to face lower farm incomes during the initial period of innovation adoption by other farmers. For example, the farmers in the Southeast who do not use any fertilizer would be able to obtain higher incomes if all farmers did not use fertilizer.

While the steady development and adoption of innovations benefit

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<sup>1</sup> Costs are defined broadly to include monetary and nonmonetary items.

society and make possible increases in economic growth, it also causes hardships for many farm families. Generally, those farmers with inadequate education, capital, or managerial abilities — or having a high aversion to risk or use of credit — are the ones who receive lower farm incomes. Discussions related to this point may be found in Chapters 4, 14, 21, and 22.

In addition to differential income effects on different groups of farms in the same area, different regions may also gain or lose from rapid technological progress. For example, the introduction of mechanization for cotton production has been more easily adopted by farmers in the Southwest than in the Southeast. Hence, farmers in the Southeast have been made comparatively, or even absolutely, worse off in income position. Perhaps the Southeast is also at a disadvantage because of the large number of farmers with inadequate resources and education to adopt readily new technologies in competition with other areas having fewer farmers with these handicaps.

#### ROLE OF EDUCATION IN DEVELOPING A DESIRABLE ENVIRONMENT FOR CAPITAL GROWTH

Numerous economists have indicated that physical quantities of land, labor, and capital are inadequate in explaining changes in agricultural output and development of agriculture. Schultz, referring to the decades of the 1930's, 1940's, and 1950's, indicated that increases in agricultural production have not been accompanied appreciably by increases in direct agricultural inputs.<sup>2</sup> Galbraith indicated that investment in capital is still a prime measure of progress, but it is an increasingly inadequate one.<sup>3</sup> Mackie stressed in Chapter 22 that progress depends more on quality rather than quantity of the capital equipment in use, and on the intelligence and skill of those who use it. Martin emphasized this point in Chapter 4.

If the failure to include quality of resources results in a limited insight and predictive ability concerning agricultural development, then it is appropriate to consider capital and credit problems within the broad framework of economic growth, as presented in Part I. If one considers quality of resources, including individuals, variables are introduced which are intangible and difficult or impossible to measure. One school of thought holds that since management cannot be defined, it is impossible to discuss this subject intelligently. The difficulty with this attitude is that it excludes from consideration many of the more important problems which confront us. Another school of thought holds that nothing can be done to guide or direct future adjustments in

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<sup>2</sup> T. W. Schultz, *Reflections on Agricultural Production, Output and Supply in Fertilizer Innovations and Resource Use*, E. L. Baum, *et al.* (eds.), Iowa State University Press, Ames, Iowa, 1957.

<sup>3</sup> John Kenneth Galbraith, *The Affluent Society*, Houghton Mifflin Company, Boston, Mass. 1958.

agriculture and that one should leave things alone. This fatalistic attitude implies that man has no control over his economic affairs, and should also be discarded.

Research and education over the years have been an important basis for economic and cultural development. It is the medium by which we attempt to develop and make full use of the intelligence and skills of individuals. Formal and informal education has had a great deal to do with changing basic attitudes concerning the degree to which we seek material advance, accept innovations, apply science to economic ends, and develop fundamental science. In short, it is one important force conditioning capital growth and development. Bohlen and Beal, Coutu and Lindsey, and Mackie have stressed this point in their discussions.

### Managerial Skill and Capital Growth

Generally capital is timid. It flows when production outcomes are relatively well known. Except when there is a chance of a large profit, such as in exploration for oil, it does not flow when risks are high or when the probability of different outcomes is unknown. Capital does not flow freely where individuals or industries have limited experience in handling borrowed funds, or where managerial ability is low.

Credit itself is not a limiting factor in the capital development of many farms in the Southeast. Banks and other credit agencies predominantly have the resources to extend credit where it is justified in terms of reasonable expectations of safety. In fact, the federal government has taken the lead with the establishment of public credit agencies to insure that credit facilities of different types are available. More detailed discussions of public credit agencies may be found in Chapters 11 and 17. While there are still problems in providing credit tailored to the needs of agriculture, the major difficulty is in improving managerial proficiency and in changing attitudes so that more farmers are in a position to use credit. This point is developed more fully by Diesslin, Engberg, and Hopkin (Chapters 13, 15, and 16).

The small-scale southeastern farmer of 1950 had few opportunities to develop managerial skills. He may have borrowed funds to pay for the farm. Yet, success was considered to be associated with repaying the loan as rapidly as possible, and not borrowing except in dire need. He was considered successful if he developed the technical skills required to raise row crops and pay off his mortgage.

Today, success is associated to a much greater extent with the appropriate handling of purchased inputs, a larger size of farm, and a larger stock of capital goods. Frequently this means continuous use of credit, not only for permanent improvements but for working capital as well. Frequently, it means a shift to unfamiliar livestock production systems if a satisfactory income is to be obtained. The ability of farm operators to respond to these rapidly changing economic conditions has been one of the major factors controlling agricultural development in the Southeast.

Mackie indicated that one of the factors influencing farmers' abilities to adjust to modern farming conditions is related to formal education deficiencies. It is likely that a large segment of the farmers with a fourth grade education or less have not developed powers of communication and analysis sufficient to serve them adequately under modern conditions. A study by McArthur and Saunders emphasizes the extent of educational deficiencies in the Coastal Plain Area of Georgia.<sup>4</sup> The results of their survey, conducted in 1957, indicated that about one-third of all farm operators had a fourth grade education or less (Table 23.1). For those farmers 55 years of age and over, 45 percent had a fourth grade education or less. The essential point is that we are still feeling the effects of educational decisions made by society and individuals thirty and forty years ago. In an economic setting where abilities of individuals are becoming more and more important in terms of capital and general economic development, we need to remind ourselves that educational decisions being made today by both society and individuals will affect the nation for several decades under conditions which will likely place greater economic necessity on increased individual development. A second point to consider is that many farmers have not had control over sufficient resources to develop skills in decision-making, risk-taking, and debt management necessary for successful farm operation under today's farming conditions.

#### CREDIT AND EDUCATION FOR LOW-INCOME FARMERS

The existence of a large group of farm families with incomes considered less than desirable is not unique to agriculture. There are low-income families in both urban and rural areas. The problem is

Table 23.1. Education of Farm Operators in the Coastal Plain Area of Georgia, 1957

Age	Years of formal education			Total
	0-4	5-8	9 or more	
	(percent of farms)			
Under 34	13.9	36.1	50.0	100.0
35 to 54	31.0	41.5	27.5	100.0
55 and over	45.4	36.4	18.2	100.0
All farmers	33.9	39.0	27.1	100.0
U. S. farm operators (1950)	17.6	51.5	30.9	100.0

Source: McArthur and Saunders, Ga. Mimeo N. S. 74; and Farms and Farm People, U. S. Depts. of Commerce and Agriculture.

<sup>4</sup>W. C. McArthur and Fred B. Saunders, Resources and Incomes of Rural Families in the Coastal Plain Area of Georgia, Ga. Agr. Exp. Sta. (in cooperation with USDA), Mimeograph Series N. S. 74, April, 1959.

important, regardless of whether it has a rural or urban setting, since (1) many of these individuals are contributing less to society than they might; (2) in many cases the children of these families are denied opportunities to develop skills, and are generally handicapped in competing with others who have greater opportunities for such development; (3) from a welfare standpoint, there is a general feeling that these people have been left stranded in our society; and (4) it is sometimes stated that this group could be a source of expanded markets for products. This subject is of direct concern to the Southeast since the majority of the low-income families of the nation are concentrated in the rural areas of the region.

Society has a welfare obligation to these people. Given limited resources for solving the low-income problem, however, there may be a conflict between welfare and economic growth objectives. The first consideration of society should be to insure that the children of these families have the opportunities to develop skills and intellect that would enable them to compete successfully for jobs and income in non-agricultural sectors. Such public activities as improved education, 4-H clubs, FFA, and vocational education are basic forces working toward minimizing the low-income problem in future generations.

Considerable progress has been made in determining the characteristics of the low-income problem. Experience and research suggest that the solution is complex (cf. Chapter 14). Since the causes differ from case to case, the solution varies by individuals or groups of families. For some, a single cause such as lack of capital, lack of education, social values, or health may be responsible. For many other families there is a complex set of causes. For example, a research study in northeast Texas<sup>5</sup> indicated that 77 percent of all farm families with incomes below \$1,000 had a family head who was 65 years of age or over, had a physical handicap, was female, or had completed less than five grades of school. Largely as a result of nonfarm employment opportunities, there were few able-bodied workers under 45 years of age with high school education engaged in full-time farming in the area. While variations exist among areas, the same general conclusions apply to much of the Southeast.

Traditional education programs designed to increase the physical efficiency of agriculture cannot be expected to solve the low-income problem. In terms of bringing about changes in farm structure and production techniques, much higher returns per educational dollar can generally be obtained by working with the operator of a large commercial farm. In fact, greater progress in solving the low-income problem has probably been made by programs which have not been specifically designed for agriculture. Progress in improving formal education, the development of better roads, and the wide availability of television and radio have all helped to reduce the isolation of low-income farm

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<sup>5</sup> John H. Southern and W. E. Hendrix, Incomes of Rural Families in Northeast Texas, Texas Agr. Exp. Sta. Bul. 940, 1959.

families from the general stream of economic and cultural activities. In spite of progress, much still has to be learned in terms of initiating successful action programs. Experience suggests that (1) the social cost of underdeveloped human resources is high, and (2) the problem does not disappear by ignoring it.

Some of the low-income problems in rural areas can be alleviated through adjustments in farm organizations. This possibility exists for the farm operators who have potential managerial ability, but need stimulation and/or managerial, educational, and credit assistance. This group includes operators who have been successful but are now receiving low incomes because they have failed to make adjustments in their farm operations as conditions have changed. It does not include that segment of low-income farmers who are severely handicapped by age, health, or deficiencies in education or ability. Also, it does not include those farm operators who after careful evaluation of the circumstances decide that they would be better off with nonfarm jobs.

One possibility for the group of low-income farm families who are likely to remain in agriculture is the provision for intensive management assistance.<sup>6</sup> It would appear that financial and managerial assistance for basic and long-term farm adjustments would provide limited returns for those with severe capital, managerial, and physical handicaps. One would expect some improvement in the situation by attempting to provide managerial and credit assistance for adjustments in the farm organization which are more of an intermediate or short-term nature. One example of this is the establishment of small manufacturing milk enterprises near a cheese plant in northwest Georgia. The plant furnished managerial assistance, and local banks have cooperated with credit. This development has made it possible for some low-income families with various degrees of handicaps to obtain credit, technical, and managerial assistance so as to gain somewhat in income status and in the development of skills. Hopkin developed a similar case for private banks to extend such assistance in Chapter 16.

The Farmers Home Administration provides experience in helping small commercial farmers. Managerial assistance provided along with credit has made it possible to extend credit where it otherwise would have involved excessive risk. It is doubtful, however, that the program could be extended successfully to farms with greater handicaps. In Chapter 14, Hendrix and Lanham pointed out that for many of the lower-income families currently served, living expenses are too near income levels to provide much leeway for retiring debt obligations.

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<sup>6</sup> A. B. Mackie and E. L. Baum, Problems and Suggested Programs for Low-Income Farmers, T 60-2 AE, TVA, Knoxville, Tenn., Oct., 1959.

### COORDINATION OF CREDIT AND EDUCATION FOR COMMERCIAL FARMERS

Increased agricultural efficiency and regional agricultural development may also be fostered through greater coordination between educational programs and credit institutions in agriculture. This possibility needs thorough examination.

The need for tying technical assistance to credit is less vital for commercial farmers than for low-income farmers. Also, the type of coordination needs to be different. However, bankers in rural areas have far-reaching opportunities to be educators as well as dispensers of credit. Many rural bankers serve a very important function as advisers to farmers, particularly for broad aspects of management such as farm enlargement or enterprise changes. Many commercial banks are hiring agricultural agents or farm management specialists. This development is discussed by Shepardson and Hopkin (Chapters 16 and 18). This is a promising method of extending credit in situations where limited management assistance is needed to insure safety of the funds. It can also be an important link for coordinating educational and credit assistance for intensive public educational programs such as Farm and Home Development and Rural Development.

Education has an important role in bringing about changes in attitudes and institutions which limit capital development. For example, greater educational efforts are needed to encourage desirable leasing arrangements and eliminate the social stigma attached to renters. The development of more flexible leasing arrangements would be one way for farm operators to obtain control over additional capital or management (cf. Chapter 9). The possibility of obtaining capital and management for someone willing to share the risks could contribute to the capital structure of southeastern agriculture and provide a stronger base for extending larger quantities of credit.

Educational programs for farmers have traditionally emphasized production know-how. Insufficient attention has been given to providing principles to improve decision-making abilities with respect to resource allocation and use. Given a long-term objective of enhancing southern agriculture, it is extremely doubtful if educational resources spent in promoting a particular action by farmers can be nearly as efficient as efforts to develop the managerial capacity of farmers.

### COMPLEMENTARITY BETWEEN EDUCATION AND CREDIT

Education and capital can be considered to be technical complements in agricultural production. Except within a narrow range, benefits cannot be obtained from one without increasing the other. In this sense, and if one thinks of an agriculture in the 1960's where substantially higher levels of capital are used per farm, then it follows that substantial improvements in managerial proficiency are also needed.

The adequacy of present educational programs and their coordination with credit programs and needs should be considered. Our propensity to adopt changes in institutions, programs, and laws is considerably lower than the propensity of farmers to adopt new biological or mechanical innovations. At any rate, changes in the organization, methods, and objectives of educational undertakings occur slowly.

In the 1960's it will be necessary to "lead out" with new approaches in applied research and adult education for farmers. There will be fewer but better trained farm operators. Research and education of higher quality will be needed.

## *Discussion*

### PAUL L. HOLM\*

Woodworth and Fanning suggest that credit, or the lack thereof, has not been a limiting factor in the development of the Southeast, but that the main difficulty has been the level of managerial proficiency and the attitude of farmers toward the use of credit. They note that the small-scale southeastern farmer of 1950 had few opportunities to develop managerial skills. He did not borrow money except in dire need.

I would add here that this was true of the small southeastern farmer not only in 1950 but also in 1960. One example is found in a study of farmers' attitudes toward credit which was conducted in a southeastern state in 1957. The results indicated that a small but significant proportion of farmers believe that borrowing money is an undesirable practice. A number of respondents said they believed that sometimes, at least, borrowers were looked down upon by their neighbors. To many farmers, the act of getting a mortgage was the same as losing the farm. In addition, many farmers believed that a farmer who could get along without borrowing was a better manager than the man who did borrow.

Another study pertinent to this area of financial management was conducted in South Carolina. The summary of the report on the study contained the following: "Inadequate education and training often restrict managerial capacity which is reflected in pessimism and conservatism toward technological change in agriculture. It also retards and restrains farmers from developing alternative uses for surplus agricultural resources, particularly labor. There is apparent need for broadening the base of training programs and expanding and improving the dissemination of information. The lack of adequate information and

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training in financial management appears to be especially acute.<sup>1</sup> In order to overcome these deficiencies, increased emphasis needs to be placed on the kind of education that develops the individual's power to communicate and analyze situations, as opposed to the emphasis on specific techniques designed to improve a single operation.

I doubt that anyone could disagree with the authors' statement that education is basic to progress toward a long-term solution of the low-income farm problem. However, more attention needs to be given to the subject matter and direction of such education. Perhaps the first objective of this kind of education is to acquaint the individuals involved with their level of economic activity relative to other segments of society and with the relevant alternatives available to them as individuals. The next objective, or perhaps a subheading of the first, is to insure that the individuals have the necessary powers of communication and tools of analysis to make an intelligent choice among the relevant and available courses of action. Successful accomplishment of the latter requires knowledge of the decision-making process and of the elements in the process that need to be emphasized in an educational program designed to facilitate the process.

I find it inconsistent in our own society for anyone but the individual involved to make the final choice of his course of action. If, however, society in some way forces a decision upon the individual, it must stand ready to assist him in carrying it through to completion. It is here that education finds a final objective. This objective is to equip the individual in such a way that he can successfully accomplish the ends he has chosen or that may have been chosen for him.

#### ROBERT A. DARR\*

Woodworth and Fanning's statement that education, both formal and practical, to improve decision-making abilities, risk evaluations, and credit management, is of great importance. I propose that college research workers, in cooperation with commercial banks, farm credit banks and associations, and other farm credit agencies develop actual cases which could be written up, studied by students and adult farmers, then discussed and used as a tool to improve decision-making abilities and techniques. The effectiveness of case method studies has been demonstrated by several schools of business administration, and it is my opinion that there is a wealth of information which could be developed on cases which were successful, as well as on cases which were not successful. Such cases should include resources, financial plans, marketing plans, profitability in relation to other alternatives, new enterprises, adjustments, enlargements, and the like. It is my opinion that people in credit institutions would be willing to assist in leading

<sup>1</sup> Calvin C. Taylor and Thomas A. Barch, Personal and Environmental Obstacles to Production Adjustments on South Carolina Piedmont Area Farms, S. C. Agr. Exp. Sta. Bul. 466, 1958, p. 33.

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discussions with students and adult farmers under the case-method procedure, in addition to helping research workers develop cases which might be effectively used.

Education plays a vital role in the following ways:

1. In equipping individuals reared on farms to reach a decision as to whether to farm or pursue alternate opportunities in their best interest and thereby make a greater contribution to society.

2. In evaluating opportunities to maximize profits through new enterprises, adjustments, enlargement, or more efficient farm operations.

3. In the desire to seek borrowed capital, use it wisely, and develop sound long-range, as well as short-range, financial plans and arrangements. Too few farmers have good financial plans to present to their farm credit association or bank when they are requesting financing of an expansion, new enterprise, or adjusted operation.

4. In seeking to continue the learning process which is necessary to meet constantly changing conditions on the farm and in the economy.

Lenders, as well as borrowers, will need to be smarter in the future. Another proposal I would like to make is to challenge the agricultural colleges to give some of their students more training of the kind necessary for graduates to have to advance rapidly as credit men and managers of lending organizations. We constantly experience the problem of finding men who have a good understanding of the concepts and techniques of credit, and men who can evaluate a farmer's ability to cope with all of the phases of modern farming. We have a training program and are employing outstanding men, but I am of the opinion that they should be better equipped to assume leadership in farm credit business, and it would certainly be a contribution to them and to agriculture.