

SECURITY OF OCCUPANCY THROUGH PART OWNERSHIP

by

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INTRODUCTION

Problem

Studies of farm organization and operation have shown that beginning farmers often are unable to obtain capital for buying and operating an efficient family-size farm.¹ In getting established in farming, the beginning operator has several alternative methods of gaining control over the necessary farm land. If he is unable to receive enough land through inheritance or other assistance, he may decide to rent a farm until he acquires additional capital. Or, a combination of renting and owning the real estate may be possible.

Frequently, the farm operator is tempted to purchase a small farm unit in an effort to have more freedom of operation and security of farm occupancy than is possible if he decided to remain a tenant. The attempt to become an owner-operator at an early stage in his farming career often means that a farmer must sacrifice his vitally needed operating capital for the purchase of real estate.

The beginning operator has an additional problem in deciding upon the proper method of gaining control of farm real estate. Since at least some of his productive resources first will be increasing and then decreasing over his life span he may need to provide for adjustments

¹For example, see Lester L. Arnold, Problems of Capital Accumulation in Getting Started Farming, Bul. 638, Purdue Agr. Exp. Sta. (Lafayette, 1957).

over time in the quantities of available resources.¹ For example, there may be changes in the family labor supply over the period of the family life cycle. Many operators desire partial retirement or else are forced to gradually curtail their physical activity. In fact, research work has shown that elderly farmers, because of their declining physical condition, often must operate their farms below economic capacity.²

The importance of both the inability of beginning operators to obtain sufficient capital and of elderly farmers to maintain economical farm businesses has increased in recent years for at least two reasons. First, there has been a pronounced upward trend in capital requirements. Moreover, new technology and the further development of our industrial economy suggest even greater capital requirements as long as capital in the United States remains relatively cheaper than labor.³ Second, with the extension of life expectancy of our population, largely made possible by remarkable progress in science and medicine, the number of elderly farmers is increasing. Furthermore, much of the strenuous manual labor on farms has been replaced

¹For an analysis of size and efficiency of farm units and age of operators, see Earl O. Heady, et al., Interdependence Between the Farm Business and the Farm Household with Implications on Economic Efficiency, Res. Bul. 398, Iowa Agr. Exp. Sta. (Ames, 1953).

²Erven J. Long and Kenneth H. Parsons, How Family Labor Affects Wisconsin Farming, Res. Bul. 167, Wisconsin Agr. Exp. Sta. (Madison, 1950).

³For a discussion of changes and the influence of industrial development in the Southeast, see Quentin W. Lindsey, Farm Tenure: The Framework for Long-Run Adjustments in Southeastern Agriculture Tech. Bul. No. 110, North Carolina Agr. Exp. Sta. (Raleigh, 1954), especially pp. 4; 18-19.

by versatile labor-saving devices. This condition means less physical hardship, and the increased probability of a longer period of partial retirement for more farm operators.

Since agricultural programs are supported with federal revenues, proper resource allocation is receiving increased attention from the American public which expresses its reaction to farm programs through the Congress. To the extent that individual owners and users of land do not realize maximum returns from their efforts (as measured by monetary and non-monetary returns) resources are not being utilized to the best advantage. Similarly, when society receives less product or a combination of products (including outputs and a given level of conservation of productive resources) different from the desired combination, returns are not being maximized.

The above conditions provide the background for the following three-fold problem: (1) the existence of a large number of farms that are too small to permit efficient resource use, (2) the lack of a reasonable security of farm occupancy among tenant operators, and (3) the intensification of the first phase of the problem because of several reasons. First, the rapid increase in capital-labor substitution and in the overall size of farms has made it necessary for the efficient operator to have available increasingly larger quantities of capital. Second, the extension of the life expectancy of man and a proportionate increase in the number of elderly operators have increased the need for a more effective means of gradual retirement for farm operators. Therefore the need is for a type of farm tenure that will permit an operator to adjust efficiently his farm

business to changes in the quantity of resources required and in the quantity of available resources over the period of the family life cycle.

Alternative Solutions That Research Has Provided

The renting of farms, especially by young farmers, until they have accumulated sufficient capital to purchase a farm of an economic size, has been suggested as a solution to capital shortages of beginning farmers. This practice would allow the utilization of their limited capital in the financing of machinery, livestock, and operating expenses. Farm tenancy also provides an active rental market for the lands of retiring farmers.

In some instances, the formation of a partnership (generally a father-son agreement) has proved to be an acceptable means of maintaining an efficient farm unit. The younger partner is able to work gradually into the farm business, gaining valuable experience as well as beginning his career on a more adequately capitalized basis. Likewise, such an agreement permits the elderly partner to retire gradually and to utilize his experience and managerial know-how which in most cases declines less rapidly than physical ability.

Low-equity financing such as that offered by the Farmers Home Administration on a limited basis is still another proposal for helping capable young operators to acquire efficient farm units.¹

¹For a discussion of low-equity financing see Earl L. Butz, "Post-war Agricultural Credit Problems and Suggested Adjustments," Journal of Farm Economics, XXVII (1945). Among requirements which the author suggests for the successful operation of low-equity financing are mortgage insurance and studies of capital accumulation and use.

Some authorities feel that younger operators should be good credit risks, if they have sufficient capital to combine with youthful energy and sound management practices. All of these proposals have a place in facilitating efficient farming operations; however, there are some important shortcomings in such proposals as they presently function in fulfilling the goals of farm operators and farm families.

Inadequacies of Alternative Solutions

Since most farm leases create year-to-year tenancies, tenant farmers have little security of occupancy. In an effort to evade the continuous risk of having to move to another farm, many farmers purchase farms before they have command over sufficient capital to finance an efficient business. They seek greater security of occupancy at the expense of efficiency of operation; in doing so, they intensify the problem of small, inefficient farms in agricultural production. Therefore, the purchase of a small farm often is an unacceptable solution for beginning farmers with limited capital resources.

The father-son partnership, while an adequate solution in some families, in others is not possible for at least two reasons. First, the farm may be too small to support two families. Second, there may be no member of the family entering farming at the time the father has reached the age when he is required to curtail his physical activities. It is evident that from an examination of farm size and a recognition of family life cycles, a considerable number of American farms and farm families fall in either or both of these two categories.

Neither is low-equity financing presently available on a large scale to beginning operators. As long as governmental farm credit agencies do not increase their activities, and prospective lenders can locate what they consider more favorable investments with higher returns than they could realize from insured, low-equity farm loans, there is not likely to be a substantial improvement in total credit availability for low-equity operators.

Objectives

The purpose of this study is to show whether some operators could benefit from planning their farming careers as part owners.¹ Consequently, the overall objective is to determine the effectiveness of part ownership as an improved alternative solution to the problem of attaining greater efficiency of operation and security of occupancy in those cases where proposed solutions are inadequate.

More specifically the objectives are as follows: (1) to show the relation between limited capital resources of farmers and their desire for security of occupancy to the operation of farms too small to permit efficient resource use; (2) to show the relation of age and tenure of farm operator to the size of farm business; and (3) to determine whether part ownership, as a type of farm tenure is an alternative solution to these problems.

¹Part owners, as used in this study, are operators who farm land which they own, plus land which they rent from others. (This definition may, for some years, deviate slightly from the Census definition of part owners for data used in this analysis).

Scope and Limitations of the Study

Part ownership is not expected to be a remedy or answer to all tenure problems. Other solutions have provided valuable contributions in situations where they are applicable. However, it is anticipated that the analysis may show that part ownership as a type of tenure will facilitate a fuller realization of the goals of farm people in those cases where existing tenure arrangements have proven deficient.

The use of data has been made to determine the extent of changes in the followings: (1) size of farms, (2) capital requirements and structure, (3) substitution of capital for labor, and (4) tenure and age of operator. An attempt also has been made to establish the amount of resources needed to obtain specified levels of income. The relation of age and tenure to size of farm operation is an important part of this analysis. An examination has been made of the characteristics of part owners in relation to the farms they operate, the length of occupancy, and the type of lease contracts. Finally, an analysis of improved leasing practices as a means of overcoming objections to part ownership is a significant part of the study and has implications for tenant operations as well.¹ While much of the data give only a broad view of changes in the farm economy and of the relation of the family life cycle to an economically efficient farm unit, they do provide conclusive evidence that such changes and relationships exist.

¹Unless otherwise noted, a tenant is defined throughout this study as an operator who farms only rented land.

Sources and Limitations of Data

Data used for this study are mainly from secondary sources of farm statistics and from completed research projects.¹ In addition, the analysis of part ownership is supplemented with data secured on part owners and other operators in Southampton and Halifax counties, Virginia, for a study of farm leasing.

The farms surveyed in Southampton and Halifax counties, especially those in Halifax county, were chiefly interested in cash crops as the main source of income. Inferences from these data need to take this fact into consideration, since livestock-grain farms usually require control of even more capital than some of our cash-crop farms. Conclusions relative to this study should be applicable to other type-of-farming areas.

The farms surveyed in the two counties realized a large portion of their income from cash crops (and feeder hogs in Southampton county) from which most of the returns could be realized within the period of the typical short-term lease arrangement. Therefore, tenant operations may be more feasible in areas such as these where returns from the investment are realized within a relatively short period, even though there exists in leasing systems imperfections which as yet have not permitted the tenant farmer to plan his operations over a long period as the "ideal" owner-operator can do. It is common knowledge that a large proportion

¹Since commercial farms in 1954 produced approximately 98 percent of the value of farm products sold, data for these farms only will be used where they are available, as only 2.1 percent and 2.3 percent of the part owners for 1940 and 1954, respectively, were included in non-commercial farms.

of tenant farmers engage in some type of cash-crop farming--one with a quick turnover.

In examining data on yields and gross returns, some important factors affecting these variables have not been considered. For example, managerial ability and soil type would have a definite bearing on such data. Also, the general tendency for operators with "above average managerial ability" to settle on the "above average farms" is known. Because of the imperfections in leasing systems, the relative effects of managerial efficiency by tenure are difficult to determine. Moreover, it is difficult to evaluate the managerial contribution of landlords.

REVIEW OF LITERATURE

In the past, much important work has been done on land tenure problems. The majority of these studies have dealt with part ownership in our American land tenure system as a part of some more general problem or topic.

As our land tenure system developed, research workers made numerous studies of how this system functioned to fulfill the goals of American farmers and their families. Gradually, there came a recognition of certain advantages and disadvantages of the different forms of tenure. For example, both owner-operatorship and tenancy were found to have specific advantages as well as disadvantages.

Although the practice of part ownership or the "hiring of additional land" was recognized early in the development of our tenure system, relatively few analyses have been made that relate specifically to part ownership. However, many important works in the past, through pointing out advantages of the different tenure types, suggest that a combination of the advantages of both renting and owning land may be possible with part ownership as a type of tenure.

It would be impossible to include in a study of this type all of the literature relating to this analysis. Therefore, an attempt has been made to include only the most important works related to part ownership and the objectives of this study. By separating the various works into several general areas of study, the review of literature can be approached in a more objective manner.

Goals of Land Tenure Policy

To understand why our tenure system operates as it does, we need to examine some of the generally recognized goals of land tenure policy. According to Timmons, land tenure "goals are the outward manifestations of deep-seated wants existent within the nature of American people."¹ He suggests the following six goals "as the ends of tenure policy towards which means should be directed."

(1) Freedom to develop one's resources and to realize his inalienable rights of life, liberty and the pursuit of happiness. (2) Widely distributed rights in land (control over land resources) to provide the physical resources with which to work and enjoy life. (3) Security in the future possession of present landed rights. (4) Stability of rural institutions including the school, church and local government. (5) Efficiency of production directed towards the maximization of the produce from the resources in which rights are held. (6) Conservation of the resources in which rights are held or over which control is exercised.²

Similar goals have been put forth by other writers.³ Thus, goals such as these have played an important part in shaping our land tenure system. As explained by Harris, the early settlers and founding

¹John F. Timmons, "Land Tenure Policy Goals," The Journal of Land and Public Utility Economics, XIX (1943), p. 168.

²Ibid., pp. 167-168.

³For example see the followings: Marshall D. Harris, "Objectives of Land Tenure Policy," reprinted in Readings on Agricultural Policy, ed. O. B. Jesness (Philadelphia, Blakiston Co., 1949), p. 379; C. Von Dietze, "Long-Term Objectives in Land Tenure," Proceedings of the International Conference of Agricultural Economists, Eighth Conference (London, Oxford University Press, 1953), p. 240.

fathers of this country foresaw the great advantages in a system of "widely distributed rights in land." It was their earnest desire, in the interest and hope of new religious, economic, and social freedom, that ownership of the abundant land resources in America be divided among those who cleared and tilled the soil.¹

The Development of American Land Tenure Theory

To determine how part ownership has acquired a definite place in our present tenure system, we need to retrace briefly the conditions associated with the settlement and growth of our country-- conditions which played an important part in the development of American land tenure theory. Part ownership, as it presently exists in our tenure system, was practically absent in the period of early settlement. However, with rapid expansion into the West, encouraged by liberal land settlement policies on the part of our government, good farm land became less plentiful. In the eastern part of the country, free land was no longer available. For succeeding generations, the inheritance and renting of land became increasingly important as a means of acquiring use rights in land. By 1880, when such data were first compiled by the Bureau of the Census, the results showed that one fourth of our farmers were renting their land.²

¹Marshall D. Harris, Origin of the Land Tenure System in the United States (Ames, The Iowa State College Press, 1953), pp. 348-354; 362-366.

²E. A. Goldenweiser and Leon E. Truesdell, Farm Tenancy in the United States: 1920, Census Monographs IV, U. S. Dept. of Commerce, Bureau of the Census (Washington, 1924), table 53, pp. 145-150.

The Agricultural Ladder

Around 1914, W. J. Spillman began to determine the manner in which American farmers acquired their status of tenant or owner. From these studies, Spillman and his associates discovered that a number of farmers passed through a series of stages starting as workers without tools and finally emerging as debt-free owners. In the first report on these studies, E. H. Thomson commented that:

A careful study of a large number of farm operators in different parts of the country shows the various steps which the farmer goes through in becoming an owner. In districts where few tenant farms are found, first, they are usually hired men, and from this to ownership. In the Central and Plains States where a large percentage of tenants is found, they are first hired men; second, tenants; and third, owners.¹

The idea of some pattern whereby men acquired and held landed property was established in this way. Later in 1918, in a study of 2,112 farm owners in five states, Spillman used the concept of the agricultural ladder with four rungs in explaining how men progressed from farm laborers to farm owners:

The first rung . . . is represented by the period during which the embryo farmer is learning the rudiments of his trade. In the majority of cases this period is spent as an unpaid laborer on the home farm. The hired man stands on the second rung, the tenant on the third,

¹E. H. Thomson, "Gaining a Foothold on the Land," The Proceedings of the Sixth Annual Meeting of the American Farm Management Association (1915), p. 34.

while the farm owner has attained the fourth or final rung of the ladder.¹

Spillman also mentions "various intermediate stages" in climbing the ladder.²

These studies, and others, were important in offering the beginning of a theory of American land tenure. Through this work, much interest was stimulated in tenure theory and policy. In addition, authorities of land tenure began to recognize within our tenure system the principle of "a normal percentage of tenancy" as subsequently explained by Wehrwein in 1927.³

The Significance of Farm Tenancy

In the early stages of the development of the agricultural ladder concept, authorities were of the opinion that either of two land tenure policies was possible—a system leading to complete farm ownership by those who tilled the soil, or a system in which farmers emerge as a permanent tenant class. However, the tenure system then existing failed to conform to either of these policies. The previously mentioned studies by Spillman and his associates, and studies by Richard

¹W. J. Spillman, "The Agricultural Ladder," The American Economic Review, Supplement, IX (1919), p. 170.

²Ibid.

³G. S. Wehrwein, "The Problem of Inheritance in American Land Tenure," Journal of Farm Economics, IX (1927), p. 163.

T. Ely and others, clearly showed the increasing importance of tenure groups, some owning their land and others renting their land.

The condition of an increasing percentage of tenancy was of much concern for some who considered tenancy as a hindrance to goals of land tenure as advocated by the founding fathers. Ely and Galpin in 1918 pointed out:

A strange misconception in regard to tenancy is current, and this has led, on the one hand, to unduly alarming prognostications, and on the other hand, to proposed remedies which would produce ten times as much evil as they would cure.¹

The authors explain that "tenancy may be a good, and it may be an evil; as we find it in the United States, it is partly a good and partly an evil."² The following three places in our land tenure system where tenancy should be considered a desirable institution were suggested:

(1) Tenancy is everywhere to be regarded as a goal for some farmers In other words, there are men who are good farmers as there are men who do well in other business enterprises, when they are guided by those who have the managerial ability which they themselves lack. (2) Tenancy is one means of transmission of landed property from one generation to another (3) Tenancy is also a good thing when it represents a rung in the agricultural ladder and means a step upwards in the winning of a competency.³

¹Ely and Galpin, op. cit., p. 180.

²Ibid. See also Gray, et al., "Farm Ownership and Tenancy," Yearbook of Agriculture, 1923, U. S. Dept. of Agr. (Washington, 1924), p. 507.

³Ibid., pp. 180-185.

Thus, there developed an increasing interest in studies and research in farm tenure, especially with respect to the increasing proportion of tenant farmers in some areas of the country. In 1920, the Census of Agriculture collected a large volume of data on farm tenure and incorporated it into a single volume.¹ A comprehensive article entitled "Farm Ownership and Tenancy" appeared in the 1923 Yearbook of Agriculture, which gives the important facts in the development of the agricultural ladder along with a number of graphical aids.² In this article, the authors present the agricultural ladder with the following seven rungs:

(1) farm wage laborers; (2) croppers, especially in the South; (3) tenants other than croppers; (4) part owners, mortgaged; (5) part owners, free of mortgage; (6) owner farmers, mortgaged; (7) owner farmers, free of mortgage.³

Hence, part ownership was mentioned for the first time as a definite form of tenure. Work of this type was particularly significant because it was done in a period of inflation and increasing land values. The implications are that part ownership was already beginning to be used to acquire more economically efficient farm units.

The authors suggest that "the various successive stages may not always represent progress" for the farmer. For example, heavily

¹Goldenweiser and Truesdell, *op. cit.*

²Gray, *et al.*, *op. cit.*, pp. 507-600.

³*Ibid.*, p. 548.

indebted owners may progress slower and have less independence than debt-free tenants. Likewise, some men will prosper more under "the supervision of a capable and honest landlord" than if they were to assume the responsibilities of management.¹ Research and articles of this type were important in depicting more clearly the existing farm land tenure system.

The Agricultural Ladder and Recent Developments

In recent years, there has been the feeling on the part of some authorities that the agricultural ladder as it existed after the turn of the century is now inadequate as a theory of American land tenure. Several important reasons for the modification of the tenure ladder are cited by Harris in his article in which he presents a "new operating agreement-transfer arrangement ladder"² Harris maintains that a new ladder exists partly because there is no longer free land to be settled. A rapid progress in technology and opportunities for industrial employment are having far-reaching effects on our tenure system. Furthermore, Harris explains that "difficulty was experienced by many in paying off farm mortgages For many people the agricultural ladder ceased to operate." In fact, the author states, "it became a two-way ladder that carried . . . an

¹ Ibid.

² Marshall Harris, "A New Agricultural Ladder," Land Economics, XXVI (1950), pp. 258-267.

increasing number of farmers from ownership down to tenancy and even down to wage laborer."¹ With improved technology and the substitution of more and more capital for labor, coupled with a steadily rising standard of living, a whole new concept of farming began to take place. With more valuable farm units and the training of farm youth through high school agricultural and rural life programs, farm owners "began to take their sons into the farm business"² Thus, we find the father-son operating agreements providing a place for the son in the farm business in addition to paving the way for an orderly and efficient transfer of the farm business. Harris further elaborates on how each rung of the old ladder is being replaced as the son gradually moves up the new ladder. Nevertheless, the author stresses the fact that neither the old ladder ceases to operate completely nor do all father-son agreements "fit" on the rungs of the new ladder.

Simultaneously with Harris' article, and in the same publication, E. J. Long presents a discussion in which he maintains the agricultural ladder is deficient as a "model for farm tenure research" to the extent that it does not take into account either "the physical structure of the farm operating plant" or "the human capacities and potentialities of the family in question."³ Long contends that the size and other

¹Ibid., p. 260.

²Ibid., p. 261.

³Erven J. Long, "The Agricultural Ladder: Its Adequacy as a Model for Farm Tenure Research," Land Economics, XXVI (1950), pp. 268-273, especially pp. 269-270.

physical aspects of the farm strongly influence farm tenure decisions. For example, many farms are unable to support more than one family. The remainder of his paper treats the condition of the relatively fixed farm labor costs and the inadequacy of the agricultural ladder in utilizing the family labor to acquire farm ownership. If farmers use the traditional ladder to obtain ownership, their labor capacity will be greatly reduced when they finally acquire sufficient funds for a down payment. Thus, the implications are that a man must spend the best years of his productive life on property which he usually does not anticipate owning.

In addition, Long maintains that as a farmer grows older, his chances of substituting capital for labor become less and less because "capacities to develop new skills in order effectively to use new tools diminish with age."¹ The author concludes that an appropriate agricultural ladder in a theoretical capacity must take into account the relation of family processes, the physical capacities of the farm plant, and the possible alternatives for a given farm unit. Therefore, these two articles are significant in that provisions for continuous improvement and change in the tenure ladder are advocated. Thus, a new exploration and examination of the forces that shape our tenure system very clearly suggests a constantly changing tenure system.

¹Ibid., p. 273.

The Role of the Family Farm

The concept of the family farm is of extreme importance in the development of a theory of American land tenure. It has long been recognized that the family farm has significant and far-reaching influences on our tenure system.

Research work pertaining to the family farm can be divided broadly into two types: (1) studies dealing with the family farm as a theory of land tenure;¹ (2) studies of firm-household relationships and how the biological processes and goals of the family affect the farm as a producing unit.²

The ideal system of land ownership envisaged by the founding fathers was that of placing the land in the hands of those who tilled the soil. This policy was in keeping with the ideal of equality in human rights and economic opportunity for all.³

Many definitions of what constitutes a family farm have been formulated. Parsons explains that the family farm traditionally has

¹For example, see Rainer Schickele, "Theories Concerning Land Tenure," Journal of Farm Economics, XXXIV (1952), pp. 734-746. Schickele also presents in this article the "Farm Business Theory of Tenure" in which he states that "maximum production efficiency rather than distributive equity is the social value upon which the Farm Business theory is based." p. 742.

²For example, see the following: Leonard A. Salter, Jr., Land Tenure in Process, Res. Bul. 146, Wisconsin Agr. Exp. Sta. (Madison, 1943); Long and Parsons, op. cit. For a study of firm-household relationships, see Heady, et al., op. cit.

³Harris, op. cit., Origin of the Land Tenure System in the United States. See especially, "Some Forces that Influenced the Evolving Land System," pp. 345-366.

been defined "in terms of labor required to operate the farm."¹ Briefly, the traditional definition specifies that the farm family is responsible for doing most of the work on the farm, with some additional hired help. The author further states that, in addition, more recent "definitions recognize that (a) some minimum size and income are necessary and that (b) the conception must provide room for genuine management decisions and control."² After giving his definition of the family farm, Parsons concludes that "all that is implied is that the farm should offer a reasonably sufficient vehicle or instrument for family security." In this country, farm ownership with limited indebtedness has been the chief means of providing security of expectations to permit the planning of long-run production and of the whole farming career.³

Studies of the farm family life cycle, farm family labor supplies, and capital availability and productivity have revealed that the productivity of the farm business follows a pattern which is governed largely by the "natural processes of life and death" and the goals

¹Kenneth H. Parsons, "Research in the Succession of Farms: A Comment on Methodology," Land Economics, XXIV (1948), p. 295. (See also the footnotes on p. 295 for references which Parsons uses in developing the traditional definition.) For a more specific definition of the family farm, see the following: Joe R. Motheral, "The Family Farm and the Three Traditions," Journal of Farm Economics, XXXIII (1951), pp. 514-529; Marshall Harris and Joseph Ackerman, Town and Country Churches and Family Farming (Dept. of Town and Country Church, New York, n.d.), pp. 3-4.

²Parsons, op. cit., pp. 295-296.

³ibid.

which the farmer and his family desire the most. Heady, et al., in their work on firm-household interdependence showed that generally, with the exception of managerial ability, a farmer's productive resources (land, labor, capital, and managerial ability) first increased with the age of the farmer, then reached a peak, and finally declined in the later years.¹ Although it was not tested in the study, managerial know-how was strongly expected to increase "throughout the Life cycle or until near the end of the farming career"² In their study of How Family Labor Affects Wisconsin Farming, Long and Parsons state that "the evidence . . . demonstrates conclusively that the farms do run down with the physical energy of the operator if he is working alone"³

Thus, it is plain that the family farm as a theory of tenure may not guarantee economically efficient use of productive resources simply because farm people place great value on other goals such as freedom to develop human resources, and security of occupancy. It is partly for this reason—a deep-seated desire for security—that the family farm continues to be an important institution in the holding of landed property.

¹Heady, et al., op. cit., pp. 401-418.

²Ibid., p. 417.

³Long and Parsons, op. cit., p. 33.

The National Economy and Agricultural Policy

The condition of our national economy has considerable effect upon the debt-paying capacities of farm people and consequently upon the rapidity with which they are able to acquire (or lose) control of their farms. This fact has been recognized especially since the depression of the 1930's when the President's National Resources Committee reported the following:

Thousands of farm owner-operators are burdened with indebtedness contracted for amounts so large, at rates so high, or for terms so short that without alleviation of their conditions they are likely to be forced to become tenants or croppers or join the ranks of migratory farm laborers or casual workers in other employments.¹

In a more prosperous period, Benedict (1952) maintains that a reduction in tenancy "during the past ten years . . . came about through the great upsurge in profits to farm operators that began in the early 1940's . . ."² As explained by Salter, if farm incomes rise to such heights that farm titles can be cleared of debt, increased farm transfers take place because farmers wish to retire at an earlier age and will offer their farms to tenants or encumbered owners.³ Thus, the income of farmers has affected significantly the

¹Farm Tenancy, Report of the President's National Resources Committee (Washington, 1937), p. 5.

²M. R. Benedict, "Tenancy Reform and Agricultural Credit Policy," International Conference on Agricultural and Cooperative Credit Proceedings, ed. Elizabeth K. Bauer, I (Berkeley, University of California Printing Dept., 1952), p. 422.

³Salter, op. cit., p. 42.

proportion of operators within a tenure class for a given period.

Government officials, research workers and others interested in the well-being of farm people have recognized adverse effects of fluctuating farm income on a desirable tenure system. Accordingly, some of our federal government legislation has been credit legislation that was designed to alleviate the low income periods of farm people and to assist them in acquiring ownership and in holding on to their farms. However, Benedict points out that although the credit system we set up in 1916 was "intended as a means of helping tenants to become owners . . . it had little effect."¹

A problem closely associated with fluctuating farm incomes and the ability of farmers to realize their desired goals is that of speculative elements or forces in the price of land. The seriousness of this condition has been recognized by a number of authorities. In 1919, Spillman suggested that "in helping tenants to buy farms it would be legitimate to limit the purchase price, say to a specified number of years' rent. This would tend to prevent farm land from rising to such prices that men cannot hope to pay for their farms during their working life."²

A summary of the effects of land speculation is offered by Goldenweiser and Truesdell (1920).³ The authors show that when land

¹Benedict, op. cit., p. 421.

²Spillman, op. cit., p. 179; see also pp. 177-178.

³Goldenweiser and Truesdell, op. cit., pp. 67-70.

prices are increasing, ". . . there is a tendency to capitalize the annual rate of increase in establishing the price at which the land is held."¹ They also explain that increasing land prices are responsible for an increasing proportion of tenancy, and for much of the short-term farm tenure. Thus, the landowner is reluctant to enter into a long-term lease or year to year renewal if he anticipates selling his farm "on short notice when offered an attractive price."² As reported by Gray, et al., ". . . there is reason to believe that increase in the valuation of land has been a large factor in enabling purchasers of farms to refund or repay the indebtedness incurred, even though it may have tended to discourage many from attempting to buy and to increase the difficulty of the purchaser in the early stages of repayment."³

In the depression years of the early 1930's, many farm people faced a severe struggle in trying to hold on to their farms. Some succeeded in their venture while others had to give up title to their farms and become tenants or seek employment elsewhere. The alarming increase in foreclosures and in the number of tenants prompted President Roosevelt to appoint a special committee to study the undesirable condition of the farm economy and to report its findings.⁴

¹Ibid., p. 67. This problem was recognized later (1937) in Farm Tenancy, op. cit., p. 17.

²Ibid., p. 68.

³Gray, et al., op. cit., p. 568.

⁴Farm Tenancy, op. cit.

The significance of this report is that it presented the public, and especially the legislators, with a view of tenure problems. By expressing its concern over tenure conditions, the federal government helped to develop the attitude that the well-being of farm people is important to the economy as a whole. Thus, the way was opened for much federal legislation which was intended primarily to aid in the "establishment of family-size farms."¹

The Influence of Federal and State Legislation

Federal and state legislation has been directed primarily toward measures which would improve the tenure system through better credit facilities. The relatively small amount of legislation for improvement of farm tenancy and landlord-tenant relations has come not from the federal government but almost entirely from the individual states. As explained by Cotton, "conditions vary so greatly between states that legislation which would be suitable in one state, and arouse little opposition there, might be unsuitable or very unpopular in another."²

The early credit policy of the federal government was necessary to encourage the purchasing of public land shortly after the Revolutionary War. The credit policy grew more lenient with longer repayment periods in response to the inability of many landowners to meet their

¹Ibid., p. 13.

²Albert H. Cotton, "Regulations of Farm Landlord-Tenant Relationships," Law and Contemporary Problems, IV (1937), p. 509.

payments.¹ Murray states that ". . . because of difficulties in collecting the amounts due, Congress in 1820 repealed the credit provisions . . . [and] stipulated cash sales . . . at a lower price" ² A rapid increase in the price of farm land from 1900 to 1910 was the forerunner of the Federal Farm Loan Act of 1916. This Act provided for farm loans for a number of purposes.³

In 1933, a new era in farm credit legislation began. The Emergency Farm Mortgage Act, passed in 1933, allowed loans to equal up to 75 percent of the purchase price of a farm. In 1945, more lenient legislation was enacted which permitted the maximum amount loaned by Federal Land Banks to be increased from 50 percent of the normal agricultural value of the farm to 65 percent.⁴ In 1937, the Bankhead-Jones Farm Tenant Act was passed. The law, as explained by Maddox, ". . . has three principal purposes: (1) to promote farm home ownership . . . ; (2) to rehabilitate distressed farm families (who cannot be aided in purchasing a farm). . . ; and (3) to provide for the

¹William G. Murray, "Governmental Farm Credit and Tenancy," Law and Contemporary Problems, IV (1937), pp. 489-497.

²Ibid., p. 490.

³Ibid., pp. 494-496.

⁴William G. Murray, Agricultural Finance (3rd ed., Ames, The Iowa State College Press, 1953), pp. 275-276; 392-394. See pp. 86-90 for an explanation of the "normal agricultural value" concept. See also R. C. Engberg, "Reorientation of Policies in Agricultural Financing," Journal of Farm Economics, XXXVII (1955), pp. 930-935 for more recent adjustments of normal agricultural values—generally to higher levels.

development of a land conservation and utilization program"¹ Maddox states ". . . that in major principles [the act] . . . authorizes nothing more than an ordinary farm mortgage program on very liberal terms." The author further explains that "the highest type tenant . . . is the person whom the framers of this law intended it to aid."² The general feeling among agricultural credit authorities is that as a whole, governmental farm credit has had little influence in reducing farm tenancy.³ Probably of more significance is the moratorium legislation which has enabled many farm owners to hold on to their farms in times of severe depression. Through this legislation, the number of costly foreclosures and the shifting of farm operators has been reduced significantly.⁴

The experience of several of the states in the loaning of funds to farmers was very unsuccessful. Murray offers some reasons for the failure of state credit systems:

Officials in charge of state agencies are too close to the electorate; they cannot, if they will, escape the prevailing optimistic estimation which citizens of any state place in the value of farm land in their commonwealth.⁵

¹James G. Maddox, "The Bankhead-Jones Farm Tenant Act," Law and Contemporary Problems, IV (1937), p. 446.

²Ibid., p. 449.

³For example, see Murray, op. cit., "Governmental Farm Credit and Tenancy," p. 506.

⁴Murray, op. cit., Agricultural Finance, pp. 152-154.

⁵Ibid., p. 392.

In addition, Murray explains that "states as a rule are too small to balance losses and gains resulting from crop yield and price variations. States . . . which are subject to wide fluctuations, do not have the diversity of loan risk needed to make a state farm credit system operate on a stable basis."¹

On the other hand, some few states have made progress in tenure improvement through striving for legislation that would permit more workable farm tenancy arrangements. Cotton (1937) explains that other than ". . . statutes affecting the right of the tenant to remove fixtures and statutes affecting the tenants duty to repair the premises, . . ." only four states have had legislation pertaining to landlord-tenant relationships which definitely are for the protection of the tenant's interests.²

The second recommendation in the report of the President's Committee on Farm Tenancy was "for state action in improvement of lease contracts and landlord-tenant relationships."³ This recommendation was followed by a number of specific proposals for improvement, some of which are: (1) written leases; (2) compensation to the tenant for the value of unexhausted improvements; and (3) settlement of differences "by local boards of arbitration."⁴

¹Ibid.

²Cotton, op. cit., p. 512.

³Ibid., p. 527, n. 120.

⁴Farm Tenancy, op. cit., pp. 17-18. For a discussion of these recommendations, see Cotton, op. cit., pp. 527-537.

Lindsey is of the opinion that future improvement of landlord-tenant relationships is largely a task of education whereby tenants and landlords can gain a clearer understanding of changes which affect their farming program. In addition, the author suggests that educational efforts should point out how farm operators may respond to these changes through adjustments in shares and for total quantity of inputs and outputs.¹

Efficiency in Relation to Tenure Types

The relative efficiency of the various tenure types can be approached from a number of aspects. Therefore, the question is, efficient in what? Schickele points out that "efficiency refers to the degree of success with which a definite device is used to achieve a definite purpose. It is a measure of the appropriateness of certain specific means to a given end."² The author further emphasizes that high efficiency in maximizing money income "may well be associated with low efficiency regarding such ends as providing a secure livelihood . . . [and] satisfying the want for agreeable social and cultural surroundings."³

Early efficiency studies often were centered around analyses of the advantages of owning land versus renting or vice versa. For

¹Lindsey, *op. cit.*, p. 49.

²Rainer Schickele, "Effect of Tenure Systems on Agricultural Efficiency," Journal of Farm Economics, XXIII (1941), pp. 185-186.

³Ibid.

example, Ely and Galpin (1919) point out the possibility, in some areas, of greater returns without ownership than with it. In addition, they suggest that the tenant has the advantage of being able to discover the size and type of farm best suited to him, before he makes an investment in land. Furthermore, they point out that the renting of land allows elderly farm owners to retreat more gradually if they so desire, and at the same time permits the landlord or retiring farmer to utilize his valuable experience through helpful advice to the tenant who often has much less experience.¹

Similarly, Goldenweiser and Truesdell (1924) attribute the larger labor income of tenant farmers partly to ". . . a considerable amount of expert supervision" of the landlords whose "skill . . . taken as a group is much higher than that of the owner-operators" ² They conclude that within the limits of the "size of a farm that can be economically operated under normal circumstances . . . a tenant generally succeeds better [than an owner] with the same amount of capital . . ." because he is better able to utilize labor and equipment. ³

The preceding statements strongly suggest tenancy as the more advantageous tenure type. However, Gray, *et al.*, (1923) concluded the following:

¹Ely and Galpin, *op. cit.*, pp. 191-207.

²Goldenweiser and Truesdell, *op. cit.*, pp. 80-82 (See p. 80 for the author's definition of labor income).

³*Ibid.*, p. 82.

In general, the available statistics indicate that efficiency is less a matter of the class of tenure than it is of the personal qualities of the farmer, the character of the land, and the adequacy of farm equipment and operating capital.¹

The relative disadvantages of tenancy as recognized by tenure authorities are stated by Gray, et al. They explain that "most of the evils attributed to tenancy in the United States are connected in one way and another with the instability of tenant farmers or with their insecurity of tenure."²

The effects of capital rationing and risk or uncertainty on tenure types are discussed by Schultz.³ When a farmer is faced with the choice of borrowing funds for real estate versus renting the land, what are the factors related to profit maximization which will influence his decision? Schultz observes the following condition which, to a large extent, holds true today:

Under existing institutional facilities a farmer is allowed to rent a larger volume of capital (in the form of land and buildings) than he is permitted to borrow. The smaller the total assets the farmer owns, the greater the relative difference between the amount of capital that is rentable and the amount that is borrowable.⁴

¹Gray, et al., op. cit., p. 576.

²Ibid., p. 589.

³T. W. Schultz, "Capital Rationing, Uncertainty, and Farm-Tenancy Reform," The Journal of Political Economy, XLVIII (1940), pp. 309-324.

⁴Ibid., p. 314.

Schultz explains further that when the farmer chooses encumbered ownership he has "(a) the 'privilege' of large prospective windfalls and losses and (b) . . . higher social status in the community which ownership bestows."¹ He also states that when a farmer buys land instead of renting, he is generally forced to operate a smaller and usually less productive farm, with the probable result of a lower income.²

Highly significant to the farmer are the "incidences of uncertainty" realized from encumbered ownership versus renting. Schultz points out that ". . . the unforeseeable windfalls and losses which arise out of changes in prices, interest rates, and technology make ownership, especially when the property is heavily incumbered, a much greater gamble for the farmer than is the case when he rents. His capital assets may be doubled or trebled in a decade or wiped out in a few years."³ In conclusion, Schultz writes:

It is perfectly plain that the incidences of uncertainty fall much more heavily upon farmers who are heavily incumbered than they do upon those who keep their assets in equipment, livestock, and other essentially liquid forms, as is the case more generally when the farmer is a tenant.⁴

¹Ibid., p. 315.

²Ibid., pp. 315-317.

³Ibid., p. 324.

⁴Ibid.

Schickele has offered an analysis of the efficiency of tenure systems as related to income maximization of the individual farm, returns to society, and "income distribution among the agricultural population."¹ The author shows how the various lease arrangements can fall short of the "ideal type" of farm ownership which he uses for comparison. Assuming a competitive economy and profit maximization of the farm firm, Schickele mentions two conditions required for simple analysis and for attaining maximum efficiency of the farm. They are: (1) marginal costs must equal marginal returns per unit of input; and (2) all factors must yield equi-marginal returns.²

In discussing the various lease agreements, the author assumes a year-to-year lease with a fixed cash rent or proportion of the crop. If the costs and returns are shared in a disproportionate manner, Schickele concludes, the share lease will be less efficient than the ideal owner-operator situation or the cash lease. This condition is true because the tenant, receiving only part of the marginal product, but supplying all of the input, cannot afford to push production as far as if he were receiving the total output. Furthermore, unless the tenant is reasonably secure, distortion of farm output will occur since the tenant will tend to produce those crops from which he can realize the greatest return from his inputs for his anticipated length of tenure on a given farm. However, the author points out that various

¹Schickele, *op. cit.*, "Effect of Tenure Systems on Agricultural Efficiency," pp. 185-207.

²*Ibid.*, pp. 185-186.

practices which tend to equate the sharing of costs and returns partly alleviate the disproportionality of share leasing.¹

Important social costs of tenancy as listed by Schickele are: (1) excessive mobility of tenants and (2) the tremendous costs of moving, including the time involved, cash expenses, getting established in the community, and becoming acquainted with the management of another farm. Soil deterioration and displacement of farm families (because of conditions of insecurity and instability) are also cited by the writer as social costs.²

As reported by Maier, "Schickele's and Heady's analyses of the amount of the crop-share landlord's contribution of buildings and other improvements are critical of the crop-share lease."³ Maier maintains that if the authors gave sufficient consideration to the market competition between tenants for farms, landlords for tenants, and the alternative leasing forms such as the cash lease, the crop-share lease would prove more favorable.

Using two models with partly different assumptions, but with similar assumptions of "no price and yield uncertainty and that

¹Ibid., pp. 194-195.

²Ibid., pp. 199-202. An analysis of leasing and tenure systems by Heady, although somewhat more detailed, is similar to Schickele's analysis. See Earl C. Heady, Economics of Agricultural Production and Resource Use, (New York, Prentice-Hall, Inc., 1952), pp. 587-621.

³Frank H. Maier, The Effects of the Crop-Share Type of Lease upon Resource Allocation Within the Individual Farm-Firm (Unpublished Paper), p. 19.

landlords and tenants have complete knowledge of their respective alternatives in the market" Maier concluded:

. . . the crop-share type of farm lease tends to result in farms with optimal amounts of buildings and other improvements (and with optimal amounts of land)-- because a landlord need not let his farm under any particular crop-share arrangement which is less profitable for him than the best of his other alternatives, including among which are other crop-share arrangements with different lease terms, rental for a fixed amount of cash, operation of the farm with a hired manager or even outright sale of the farm for the capitalized value of its future net returns.¹

What is the outcome when the two rather unrealistic assumptions of complete knowledge of the actions of other landlords and tenants in the market, and no price and yield uncertainty are "relaxed"? Maier explains that the landlord's willingness to invest in buildings and other improvements will be modified (either more or less improvements) to the extent that market knowledge situations and views on uncertainty differ among landlords and tenants.² Thus, for the prospective part owner, the crop-share lease needs to be considered as one of the important alternative lease arrangements.

The previously cited work by Maier is significant for three reasons. First, the author brought together the most important works on the subject of lease arrangements--particularly the crop-share arrangement. Second, he compiled a valuable discussion of the

¹Ibid., pp. 28-29.

²Ibid., pp. 30-31.

similarities and differences in these works. Third, he offered some alternative analyses and expanded his work in the direction of varying knowledge situations of landlords and tenants. While his contribution emphasizes the crop-share arrangement, other lease types are necessarily discussed.

As reported by Maier, "Johnson's analysis of the size of farm rented under the crop-share lease is favorable to this type of lease."¹ Both Johnson and Heady concluded that a crop-share tenant, considering his interests only, would prefer to rent additional land for use with his fixed resources until the marginal productivity fell to zero.² However, Johnson pointed out in his analysis that tenants would not be permitted to carry out their wishes because of the limited supply of land and the consequent competition between tenants for farms.³ The question for the small owner-operator, who is considering expansion, is: will this farm be large enough under the provisions of the proposed lease (given the productive capacity of the farm) to permit efficient utilization of resources?

The latter part of Johnson's study centers around the use of the short-term lease as a powerful tool by landlords to enforce upon their

¹Ibid., p. 31.

²D. Gale Johnson, "Resource Allocation Under Share Contracts," The Journal of Political Economy, LVIII (1950), pp. 115-121. This statement is more in terms of Johnson's work. Similarly, Heady observed that both the landlord and the tenant ". . . must seek out resources of the other until the marginal value productivity of the latter resources become zero." (Heady, op. cit., p. 596).

³Johnson, op. cit., pp. 117-118.

tenants the desired intensity of farming. Johnson states that:

With a short-term lease renters are obviously aware that landlords have the alternative of renting their land for a cash rent independent of current output.

If the renter does not give certain assurances that the degree of intensity of cultivation will be such as to provide the appropriate rent, he will be unable to find a farm. Once he has found a farm, he may fear that his lease will not be renewed unless sufficient rent is actually paid. Since the cost of moving is substantial and his previous production performances are likely to affect his ability to locate a new farm, he will have an incentive to farm in a fashion that will provide the necessary rental payment.¹

Maier points out that included in Johnson's assumptions are a landlord's market with alternative lease arrangements, ". . . a short-term lease which involves either an explicit understanding or an implied expectation as to the intensity of the tenant's cultivation," and price and yield uncertainty. In addition, the landlord and tenant are assumed to know accurately what a given farm should produce—i.e., the production function, and that both parties are informed of market alternatives. ". . . for landlords this knowledge includes the past performance of tenants."²

Johnson states that when landlords sell the use of their land to tenants, the landlords still maintain "a real interest in how the land will be used." Thus, the selling of the use right of land is very much different from that of selling a bushel of wheat, for the owner of the

¹Ibid., p. 120.

²See Maier, *op. cit.*, pp. 40-42 for a comprehensive discussion of the assumptions.

wheat is unconcerned with how it is used. Because the landlord is still interested in his land, he carefully considers "what the impact of the tenancy will be upon the value of the asset."¹

In a landlord's market, therefore, the one-year lease is an effective tool for the landlord. In a tenant's market, where renters have a wider choice of farms, the short-term lease would be much less effective since tenants could move to another farm when the "pressure" to alter production becomes too great. Johnson admits some of the usually recognized faults of the short-term lease, but concludes that deviations from optimum resource use under the crop-share lease do not ". . . depart as far from the optimum as is suggested by the analysis of what the tenant would do if he were left free to do as he chooses."²

An alternative analysis by Maier, in which he assumes that the landlords have less than complete knowledge of production functions and cash rent possibilities "is largely favorable to but slightly critical of" the crop-share type of lease.³ Essentially, where such a situation exists the tenant can 'get by with' somewhat less intensive production, especially, if he has some idea of the "degree of his landlord's vagueness as to the production function and also how certain

¹Johnson, op. cit., p. 121.

²Ibid., p. 123. For a similar comparison, see Goldenweiser and Truesdell, op. cit., p. 135.

³Maier, op. cit., p. 44.

his landlord desired to be in making such operational judgments about the degree of intensity of a tenant's farming efforts."¹

Since the ability of the farmer to withstand risk and uncertainty has a marked effect upon the success or failure of the farm business, it is desirable to consider leasing systems relative to these factors. As Heady explains, the straight cash lease approaches the owner-operator firm in allocation of resources. However, Heady states that the fixed rent (especially in periods of unfavorable prices or demand) can cause farms to be smaller because tenants may not wish to assume additional investment.

This condition of greater risk and uncertainty also is conducive to enterprises with a rapid turnover on the investment.² Under a flexible lease arrangement, Heady explains that the tenant's equity is not lowered as readily as under the straight cash lease where he is depending upon the entire crop. Therefore, production periods should be somewhat longer, with "a scale of operations consistent with the product and resource prices of the market."³ Likewise, the livestock-share lease is more favorable to a decrease in the amount of risk and uncertainty borne by the tenant. Since the landlord is able to realize a greater return on his building investment through the livestock under the typical 50-50 share lease, Heady contends there is less tendency

¹Ibid., p. 49.

²Heady, op. cit., pp. 618-619.

³Ibid., pp. 619-620.

for rationing of durable resources. In addition, a greater quantity of capital is available through use of the landlord's funds and possibly the stronger credit position of the tenant.¹ Therefore, the attaining of increased capital needed for a livestock operation generally should not create an additional hardship.

Studies Suggesting Part Ownership as a Beneficial Tenure Type

The works already included in this review were mentioned for several purposes. The reason for citing literature on the advantages and disadvantages of the tenure types is to show that research workers have recognized conditions peculiar to a given tenure type which lessen the efficiency in attaining the goals of farm people.

The studies on the family life cycle, and the goals of the family and of society suggest not only a needed solution, but also increasing benefits from more efficient resource use. Through mentioning shortcomings of institutional facilities such as credit availability, and imperfections in our leasing systems, it is hoped that the problems leading to the suggestion of part ownership as a possible solution will be more clearly stated.

Most of the early tenure studies, although citing many problems for which it is anticipated that part ownership may provide a solution, refer only briefly or indirectly to part ownership. Subsequent works have treated part ownership more thoroughly, although for the most

¹Ibid., pp. 620-621.

part their scope still has been rather limited. Ely and Galpin (1919) point out the possibility of tenancy returning the farmer more than with the ownership of land resources. The authors also mention the fact that farmers either are forced to retire gradually or that they prefer gradual over sudden retirement.¹ Later studies on the family life cycle and firm-household interrelationships substantiate these findings.²

Goldenweiser and Truesdell explain that the fact that the owner is able to rent land "possibly improves . . . his economic status." The authors also maintain that a part owner will take better care of the rented land than will a tenant under a short-term lease.³

Gray, et al., (1923) report the greater prevalence of part-owner farms in the Midwestern and Western states, and cite the original small size of farms as a major reason for this condition.⁴

Schultz strongly suggests that the advantages to be gained through renting land have been overlooked largely by those who advocate ownership as the sole means of obtaining the goals of family farming.⁵

¹Ely and Galpin, op. cit., pp. 190-207.

²For example, see Long and Parsons, op. cit., Heady, et al., op. cit., and William G. Adkins and Joe R. Motheral, The Farmer Looks at His Economic Security, Bul. 774, Texas Agr. Exp. Sta. (College Station, 1954).

³Goldenweiser and Truesdell, op. cit., pp. 30-31.

⁴Gray, et al., op. cit., pp. 519-520.

⁵Schultz, op. cit. Convincing arguments to this effect are presented throughout his article.

Both Heady and Ottoson present a rather critical examination of the part-owner type of tenure. However, this criticism is mainly because of the imperfections arising from lease arrangements, and need not necessarily exist if the criteria for perfect leasing systems are met.¹

In conclusion, previous research works generally point toward a definite place for part ownership in our tenure system. Moreover, the implications of previous work, in the light of the economic setting of our farming industry, suggest the possibilities of the increasing advantages of part ownership as a type of tenure.

¹Heady, op. cit., pp. 610-611; H. W. Ottoson, "The Application of Efficiency to Farm Tenure Arrangements," Journal of Farm Economics, XXXVII (1955), pp. 1341-1353.

AGRICULTURE IN A CHANGING ECONOMIC ENVIRONMENT

In recent decades, pronounced changes have occurred in farm organization and operation, and farm land tenure arrangements. These changes are more readily understood when they are considered in relation to the economic setting in which farmers have operated. A brief survey of such changes in relation to the economic environment should aid in depicting more clearly recent trends in the structure of tenure arrangements and farm organization. In turn, such a discussion can be used as the framework for the various phases of this analysis.¹ Adjustments in the size of farms, the amount of capital used, the substitution of capital for labor, and tenure and age of farm operators during recent periods have important implications for this analysis.

The Depression and Recovery, 1930 to 1940

From 1930 to 1935, the general depressed condition of the economy, with widespread farm foreclosures and the accelerated transfer of farms, was accompanied by a decrease in size of farms and a corresponding increase in number of farms both in the United States and Virginia (appendix A, table 1).

¹It is generally agreed that the more significant changes in Twentieth Century farming have occurred since 1940. However, for purposes of comparison, data for the previous decade also are included.

Increases in unemployment and the return of people to farms resulted in a number of small subsistence units, especially around industrial centers where employment was lacking. Gradual recovery of the economy after 1935 led to a readjustment in number of farms and acres per farm by 1940. Farm size, as measured by gross income, (value of sales for commercial farms) increased both for all commercial farms and for commercial family-operated farms from 1930 to 1940.¹ Five-year averages of gross income for commercial family-operated farms increased more than one thousand dollars per farm (constant dollars) from 1930-1934 to 1935-1939 (appendix A, table 2). The number of commercial farms in the United States with sales of \$5,000 and over increased from 1929 to 1939, although the total number of commercial farms decreased (appendix A, table 3). Thus, between 1930 and 1940, farm size, whether measured by acres per farm or by gross income, increased in all cases except that of acres per farm for Virginia.

¹For a discussion of the limitations of gross income as a measure of farm size, see Jackson V. McElveen, Family Farms in a Changing Economy, Agr. Info. Bul. 171, Agr. Res. Ser., U. S. Dept. of Agr. (Washington, 1957), pp. 14-15; 40-42. Commercial family-operated farms are those farms operated largely with the family labor force, providing the family with its major type of employment and source of income. At 1944 levels of prices, values of farm products on these farms were required to range from \$1,200 to \$20,000, while the total investment per farm could not exceed \$70,000, and the operator did not work off the farm more than 100 days per year.

See the "Value of sales" column and footnotes to table 3, appendix A, for the criteria for the "all commercial farms" classification for the United States used in tables 1 and 3, appendix A. Because of differences in the criteria used by McElveen and those of the Census of Agriculture, more than 200,000 farms classified as commercial in the Censuses of 1950 and 1954 were excluded in the McElveen study. For a comparison with the Census criteria, see table 1, appendix B.

The effects of the depression upon total capital used were evident even before 1935. In terms of 1947-1949 dollars, total capital per farm decreased approximately 34 percent from 1930 to 1935 (appendix A, table 4). Although data for the five-year interval, 1935 to 1940, are not entirely comparable, there is a strong indication of a substantial increase in farm capital by 1940. Five-year averages of capital used by commercial family-operated farms show a somewhat different trend (appendix A, table 2). This condition existed primarily because the higher price level (before the depression) carried over several years into the 1930's, and recovery was slow until the latter part of the decade. Data on the individual commercial family farms show a decrease in total capital measured in terms of constant dollars from 1930-1934 to 1935-1939 in all except one case. For the same period, only four of the farm types had an increase in total capital in terms of actual dollars (appendix A, table 5). However, a comparison of capital used on these farm types for the same years as the "all farms" data (1935 to 1940) shows an increase (constant dollars) in capital used in all except three of the farm types, all of which are located in the Northern Great Plains.

The degree of substitution of capital for labor by farm operators is influenced by the general level of economic activity, and by changes in resource combinations as a result of changes in the prices and availability of productive resources (land, labor, capital, and management). Farm production, prices, and income also are important determinants of the ability of operators to purchase inputs and expand

farm operations. One method of recognizing the substitution of capital for labor is to compare, for a given period, data on the amounts of labor, machinery and equipment used, and farm production with the same type of data for another period.

A decrease in both labor used and in value of machinery for all farms took place from 1930 to 1935 (appendix A, table 4). Farm operators were unable to make normal purchases of new machinery and equipment. Although farm population increased by more than one million from 1930 to 1935,¹ there was an 8 percent decrease in total hours of labor used. For the same period, total output remained unchanged, while there was a 9 percent increase in production per man-hour. Five-year averages of capital and labor used by commercial family-operated farms show a pattern similar to that of all farms (appendix A, table 2). Data for these farm types (if adjusted for differences in farms included in the averages) fluctuate less than data for all farms for at least two reasons. First, because they are averages for a period of years; second, and of greater significance, these farms are more stable as producing units.

Data for 1935 to 1940 for all farms indicate the beginning of new adjustments in farm organization. Operators were compelled to replace worn-out machinery and equipment to a much greater extent in this period than previously. Furthermore, the recovery of farm income

¹Agricultural Statistics, 1953, U. S. Dept. of Agr. (Washington, 1953), table 661, p. 563.

enabled operators to increase the number of tractors on farms by almost 50 percent from 1935 to 1940.¹ As a result of these factors, there was a marked increase in the value of machinery and equipment (appendix A, table 4). A slight decrease in labor used, with an increase both in total output and production per man-hour, suggests that operators were beginning to reap the benefits of improved production practices and technology. Five-year averages of labor used, and value of machinery and equipment declined the latter part of the decade for commercial family-operated farms. However, an examination of the data for 1940 shows substantial increases in the value of machinery and equipment over 1935. During the same period, the volume of labor used remained relatively constant if adjusted to correct for differences in farms included in the averages. Value of machinery and equipment as a percentage of total capital increased slightly as did production per man-hour (appendix A, table 2).

Commercial farms as a whole probably felt the effects of the depression more severely than the farms included in the "all farms" group. This condition appears to exist because the total expenses for farms with larger investments generally are greater in amount than for smaller farms.

Adjustments in capital-labor substitution also have affected significantly non-real estate capital. Investments in machinery and

¹Changes in Farm Production and Efficiency, 1956 Summary, Agr. Res. Ser., U. S. Dept. of Agr. (Washington, 1957), pp. 40-41.

equipment, as a percentage of total capital, increased for the 1930-1940 decade both for all farms and for commercial family-operated farms. Data in appendix A, table 5, for the individual commercial family-operated farm types show, for the 1930-1934 to 1935-1939 period, an increase in real estate capital in terms of constant dollars for only one farm type but an increase in non-real estate capital for five farm types. Total non-real estate or operating capital used was becoming larger as operators were financially able to adapt their farming operations to changes in farm organization and in production techniques.

In addition to influencing adjustments in the number and size of farms and in capital used, economic conditions for a given period also influence the farm tenure pattern. For the 1930-1940 decade, the proportion of operators within the tenure classes, both for the United States and Virginia (appendix A, tables 6 and 7), remained relatively stable, although slight adjustments were evident. For the United States, the proportion of part owners and tenants for the decade was considerably larger than for Virginia. An analysis of percentage change in the number of farms by tenure for the decade shows somewhat greater fluctuations for Virginia farms than for the United States. Both for the United States and Virginia, the percentage change in tenant farmers was greater than the full-owner or part-owner tenure types.

Some of the most significant changes related to the economic environment and to technological achievements are changes in the ages of farm operators over a period of years. An examination of tables 8 and 9, appendix A, considering the years 1910 to 1940, reveals definite

decreases in the proportion of operators under 35 years of age and increases in the proportion 55 years of age and over both for the United States and Virginia. In 1910, operators under 35 years of age comprised 28.9 percent of all operators in the United States and 23.3 percent in Virginia. By 1940, these proportions had changed to 20.3 and 16.9 for the United States and Virginia, respectively. The percent of operators 55 years of age and older for the two periods changed from 23.6 to 33.8 for the United States and from 29.6 to 39.5 for Virginia. Thus, the trend toward an industrialized economy has left fewer beginning farm operators. The number of young men entering farming has decreased as the opportunities for off-farm employment increased. Likewise, remarkable discoveries in science and medicine have greatly increased the life expectancy of man. Labor-saving devices have eased the work load of farm operators, making it possible for elderly farmers to continue partially active in their business for longer periods if they so desire.

The World War II Years and Postwar Adjustments, 1940 to 1950

With the coming of World War II, farmers were called upon to increase production, and at the same time to adjust to a war economy by altering the combination and amounts of productive inputs. By adopting labor-saving techniques and mechanizing their operations at every opportunity, farmers responded remarkably to the need for increased production. Higher prices for farm products and a favorable demand outlook also encouraged farmers to expand and intensify their

operations. This period marked the beginning of accelerated changes in farm organization and operation--some of which are still taking place in present-day farming.

Although prices and income had recovered somewhat from the depression level, farm product surpluses and low prices were still characteristic of the agricultural situation at the close of the 1930-1940 decade. However, even before the United States formally declared war, the need abroad for farm products eased the problem of farm surpluses and low prices. By the time the United States began concentrating on the war effort, farm operators were initiating changes in farm size and output. From 1940 to 1945, most farm types for the United States had a substantial increase in acreage, the largest increase being that for commercial farms. The trend in size continued from 1945 to 1950, with even greater gains in acres per farm than for the 1940 to 1945 period in some instances (appendix A, table 1). For the decade, the increase in acreage for Virginia farms was much less pronounced. However, with the type of farming that existed on a number of farms in the State, it was possible to expand output without purchasing additional acreage. A larger proportion of Virginia farms were of the type on which it was possible to expand output considerably without purchasing additional acreage than was true for United States farms as a whole. For example, output from tobacco farms, and broiler and poultry operations, both of which were important in Virginia, quite frequently can be expanded on land which the operator already owns, provided the labor and capital are available. Thus, data

for average size tend to distort adjustments which are much greater in size for some farm types than for the average.

Farm size for the 1940's not only increased in acres per farm but also by gross income. Commercial family-operated farms, for the 1940-1944 period, had an increase in gross income in terms of constant dollars of approximately 50 percent over the previous five years. The rapid rise in gross income for the war years continued for the succeeding five years, although the increase was not as great. The proportion of all commercial farms having gross incomes of over \$2,500 increased steadily for the decade. Although the total number of commercial farms decreased almost 20 percent from 1939 to 1949, there was a significant increase in the number of farms having gross incomes of \$10,000 and over (appendix A, table 3). As for commercial family-operated farms, the increase in gross income was more pronounced in the war years than was true for the postwar period.

With the increase in size of farms, the movement of farm workers into industry and the armed forces, and the consequent decrease in quantity and quality of farm labor, greater capital outlays per farm were required. Although capital used per farm for 1940 had increased 38 percent over 1935 for all farms, a further gain of 27 percent took place from 1940 to 1945 (appendix A, table 4). This gain was a sizable outlay when the large increase for 1935 to 1940 is taken into account. After adjustments to correct for differences in farm types comprising the five-year averages, total capital used (constant dollars) for each of the commercial family-operated farm types increased steadily for

the 1940's, with the larger increase taking place in the latter part of the decade (appendix A, table 5).

Among the more important changes in farm operation in the 1940's was the replacement of farm labor with machinery and equipment. Value of machinery and equipment rose more rapidly than total capital, both in constant dollars and percent wise. Commercial family-operated farms had a somewhat higher proportion of capital invested in machinery and equipment than the "all farms" group (appendix A, tables 2 and 4). Technical improvements in production, such as improved varieties and management practices, have increased significantly farm production and production per man-hour. However, the adoption of labor-saving equipment has been an important factor in increasing production—especially production per man-hour. Hours of labor for all farms declined for the decade. After adjustments to correct for differences in farm types used in the five-year averages, labor used on commercial family-operated farms increased slightly for the first part of the decade; however, a definite decrease in labor used was evident by the close of the decade.

Thus, the opportunity for capital-labor substitution by operators in the 1940's was unprecedented in previous decades. After the war years, more farm equipment was available than ever before. Relatively high farm incomes, rising wage rates and labor shortages, and the desire of farm operators to respond to the needs of a war economy were some of the reasons for such pronounced increases in capital-labor substitution.

An additional trend in farm capital that was having profound implications for operators in the 1940's was the increase in non-real estate capital used. Although machinery and equipment was responsible for part of the increase, other types of non-real estate capital were important constituents of the increase. The build-up of livestock and crop inventories from 1940 to 1950, and the increase in value of household furnishings and equipment from 1945 to 1950, were responsible for large shares of the gain in non-real estate capital.¹ Therefore, as shown in tables 2 and 4, appendix A, an increasingly larger sum, both in proportion and amount, was being used for non-real estate capital. A substantial part of this increase was because of changes in farm production expenses which took place at an accelerated rate as farmers responded to the demands of a war economy. Compared with the 1935-1939 period, many production expenses rose more than 50 per cent for the following five-year period (appendix A, table 10). For the latter part of the 1940-1950 decade, the rise in production expenses continued, with the exception of hired labor which showed a marked decrease. Operating capital requirements were becoming greater and greater as postwar adjustments began moving in full swing.

Associated with the desire to take advantage of increased incomes (further encouraged by favorable growing seasons) and to utilize machinery and equipment which frequently required large, initial

¹For trends in types of non-real estate capital, see The Balance Sheet of Agriculture, 1957, Agr. Info. Bul. 177, Agr. Res. Ser., U. S. Dept. of Agr. (Washington, 1957).

expenditures, was a definite change in the farm tenure pattern from 1940 to 1950. Conditions for this period were such that many operators were able to increase their equity in the farm business and to become farm owners in some instances.

The American farmers' desire to own land is strongly evidenced by the fact that in the 1940's, operators took advantage of their opportunity to acquire title to the land they farmed. During the 1940's, the largest increase in the proportion of farm owners for the United States was from 1940 to 1945. There was a simultaneous decrease in the proportion of tenant farmers (appendix A, table 6). The actual number of both full owners and part owners increased approximately 7 percent from 1940 to 1945, while the number of tenants decreased 21 percent. For the latter part of the decade, the number of full owners decreased by about 6 percent. The continued decrease in tenant operators (22 percent) reflected the beginning of a pronounced shift in the tenure pattern, with an increase in the number of part owners of 25 percent. Likewise, the proportionate increase in part owners was greater than that for full owners.

Data for Virginia farms show similar but somewhat more pronounced changes in the tenure pattern for the ten-year period than was true for the United States (appendix A, table 7). A 7 percent decrease in Virginia part owners and a 25 percent decrease in tenants from 1940 to 1945, was probably associated with excellent employment opportunities for a number of farmers who did not consider themselves established soundly enough to forego the call of nonfarm employment. The pattern

of farm tenure, especially for tenant operators, was affected by the entering into service and subsequent returning of the younger operators, a larger proportion of which were tenants at the outset of the war. Thus, the marked increase in the number of part owners, both for the United States and Virginia, suggests that operators were beginning to use the part-ownership type of tenure as a means of more fully utilizing their productive inputs.

The increasing industrialization of the American economy after the 1940's and the movement of men to and from the armed forces also left an imprint on the number of operators by age groups. From 1940 to 1945, the number of operators under 35 years of age declined 15 percent both for the United States and Virginia (appendix A, tables 8 and 9). The decrease was associated with the exodus of young men into industry and the armed forces. The number of operators 35 years of age or older increased 3.1 percent in the United States and 6.4 percent in Virginia for the same period. The proportional increase in age is probably attributable to several factors. The lure of favorable farm incomes and the need for labor and management to replace the loss of younger operators encouraged some men to try farming as a vocation. Moreover, operators over 55 years of age probably had less opportunity to think of retirement, although a portion of such operators may have retired earlier than they had anticipated because of the difficulty in hiring labor to replace their sons who were in the service.

The proportion of operators within the age classes, from 1945 to 1950, differed somewhat for the United States and Virginia. Veterans

returning from the armed forces and enrolling in the on-farm training program were sufficient in number to increase the proportion of operators under 35 years of age from 17.2 percent to 18.9 percent for the United States as a whole. However, for Virginia farmers, the trend in the proportion of operators under 35 years of age continued downward from 14.0 percent to 13.7 percent. The number of operators 65 years of age and over for the United States and Virginia decreased from 1945 to 1950. Similarly, the proportion of operators within this age class decreased slightly for the United States. This decrease probably can be attributed to the fact that the number of veterans enrolled in the on-farm training program, most of whom were under 35 years of age, reached the peak in the census year of 1950.¹ Virginia operators in the "65 or older" age group increased in proportion for the latter part of the decade. Therefore, after allowing for adjustments prompted by wartime population shifts, the continued trend of an increasingly smaller proportion of beginning operators and an increasingly larger proportion of elderly operators was evident for the decade.

Trends Since 1950

Changes in farming since 1950, that are associated with changing economic conditions, generally have been continuations of the trends in the 1940's. Some adjustments since 1950 have been more pronounced than in the previous decade, while a leveling off in adjustments is

¹See McElveen, *op. cit.*, p. 29.

evident for others. Conditions in the 1950's also have been conducive to further changes. The Korean conflict, in the early 1950's, halted any fears of a general recession such as that of the 1930's. In addition, price supports for a number of the major farm commodities were beginning to be viewed by farm operators as a permanent part of agricultural policy. With some of the price risks removed from production, farmers probably expanded their units more readily than they otherwise would have for this period.

Both for the United States and Virginia, the trend in size of farms has continued upward since 1950. An increase in size of 36 acres for commercial farms for the United States was the largest gain in size from 1950 to 1954 (appendix A, table 1). The percentage increase of the "all farms" group for Virginia was approximately one third that of the same group for the United States. Commercial farms in Virginia increased about one half as fast as for the United States. Farm size as measured by gross income increased at a faster rate than for the 1944 to 1949 period. The increase in the number of commercial farms with gross incomes of \$10,000 and over was twice as great as for the previous period, while farms with gross incomes under \$1,200 decreased over 25 percent in number from 1949 to 1954 (appendix A, table 3). Gross incomes for commercial family-operated farms for the 1950-1954 average increased 4 percent over the 1945-1949 period in terms of constant dollars. The increase in gross income for 1955-1956 was almost 8 percent, or nearly twice the gain over the previous period (appendix A, table 2).

Larger farms, both in acres per farm and gross income were likewise requiring more capital per farm. An examination of data for all farms (appendix A, table 4) and an analysis of yearly averages of capital used for commercial family-operated farm types showed that capital increases from 1950 to 1955, in terms of constant dollars, were similar in amount to those of the World War II years. Thus, both of the larger increases in capital occurred during periods of international conflict when demand for farm products was favorable and operators financially were able to undertake adjustments in capital inputs. However, the efforts of alert farm operators to attain greater efficiency in their desire to maintain a satisfactory income also have been conducive to larger amounts of capital used per farm. This fact is supported by the continued increase in capital used per farm since 1955.

One of the most persistent trends in farm operation since 1940, has been the growth in the value and proportion of machinery and equipment in relation to total farm capital. Just as persistent was the increase in total output, and especially in production per man-hour, and the simultaneous decrease in labor used. For commercial family-operated farms, five-year average values of machinery and equipment increased 50 percent from 1945-1949 to 1950-1954. Although average value of machinery and equipment for 1956 decreased slightly for several of the farm types, the two-year average for 1955-1956 increased 12 percent over the 1950-1954 average for all the farm types (computed from appendix A, table 2). Machinery and equipment as a proportion of total capital for all farms has been slightly less than that for commercial

family-operated farms. However, the percentage gain in value of machinery and equipment per farm for all farms has been more rapid since 1940, with the exception of 1945 to 1950. The implications are that commercial family-operated farms did not require as great an adjustment in capital outlay for machinery and equipment since these farms had much larger amounts invested to begin with. The continued growth in production per man-hour for farms as a whole and the ability of operators to accept more readily the frequent changes in production techniques suggest even greater outlays for machinery and equipment, given the assumption that labor costs remain high.

As in the 1940's, capital-labor substitution since 1950 has been responsible for a significant portion of the increase in non-real estate capital. Larger livestock and crop inventories as a consequence of greater output per farm also have contributed to the increase. In addition, value of household furnishings and equipment has increased as farm families desire more conveniences for their homes. Were data on this type of capital available for commercial family-operated farms, the proportion of non-real estate capital would be somewhat larger than is shown in table 2, appendix A. Production expenses (which comprise a large portion of non-real estate capital) increased rapidly over the 1945-1949 period (appendix A, table 10). Again, the only exception was hired labor expense which decreased slightly for the 1950-1954 period, and for 1955. Although farm prices weakened in 1955, production expenses (with the exception of hired labor) continued to rise. The decline in prices received by farmers for crops, and especially

for livestock, in 1955 and 1956, primarily is responsible for the decrease in non-real estate capital in value and in proportion to total capital for commercial family-operated farms. Data in tables 2 and 4, appendix A, show that since the early 1930's, non-real estate capital has increased in proportion to total capital approximately 10 percent. Operators who are facing the alternative of investing heavily in real estate versus renting part of their capital cannot afford, in making their decisions, to overlook the condition of increasing requirements for operating capital.

Recent changes in the proportion of operators in the several tenure groups imply that farmers have continued their response to increases in capital requirements by the renting of additional land. From 1950 to 1954, full owners and tenants decreased both in proportion and in number of operators for the United States and Virginia, with the exception of a slight increase in number of tenants for the United States (appendix A, tables 6 and 7). Both the number and proportion of part owners increased for the United States and Virginia during the same period. Although the percentage increase in the number of part owners for Virginia was more than 3 times as great as in the United States for all farms and almost 5 times as great as for commercial farms, the proportion of part owners for Virginia was still less than for the United States. However, the difference in proportion of part owners in 1954, for the two areas, was less for both all farms and commercial farms than for 1950. Thus, indications are that the lag in increase of part owners for Virginia during the World War II

years as compared with the United States is now nonexistent.

Only in comparatively recent years, data have become available on the number of operators by tenure for the economic classes of commercial farms. An examination of such data reveals some important characteristics in farm size by tenure of operator as measured by gross income. Data by tenure of operators are presented primarily to show the existence of a large number of small, commercial farm owners operating at something less than a size which would permit operation of a farm sufficiently large to utilize technological advancements and managerial ability.

Bachman and Jones report that for 1940, full-owner farms comprised 57.1 percent of the small-scale farm classification used in their study.¹ Data from the same work for 1945 show that 42 percent of the full owners were on small, commercial and small-scale farms. A smaller proportion of full owners fell in the large, commercial family farm class than in any of the tenure groups with the exception of croppers.²

Somewhat more complete information is available for economic classes of commercial operators by tenure for 1950 and 1954.³ The

¹Kenneth L. Bachman and Ronald W. Jones, Sizes of Farms in the United States, Tech. Bul. 1019, Bureau of Agr. Econ., U. S. Dept. of Agr. (Washington, 1950), table 41, p. 76. See table 16, p. 54, for the criteria for the economic classification used in the study.

²Ibid., p. 60.

³See table 1, appendix B, for an explanation of the criteria for the economic classes of farms for 1950 and 1954.

proportion of full owners with gross incomes under \$2,500 (economic classes V and VI) was larger for 1950 and 1954, than for part owners or tenants. For 1950, almost 50 percent of the full owners fell in classes V and VI (appendix A, table 11). This group comprised approximately 24 percent of total commercial farm numbers for 1950 and 21 percent for 1954. The largest decreases in proportion of operators in classes V and VI from 1950 to 1954, was for tenants, followed by part owners. Under the criteria for class VI farms, operators could not have realized off-farm income greater than \$1,199. This amount, in addition to the income from gross sales of not over \$1,199 (without income from other sources), is insufficient for the needs of many farm families under the American standard of living.

Since 1950, adjustments in number of operators within the age group classifications are of the type that normally would be expected with the trend toward a more industrialized economy. The shifting of young men to industrial pursuits and the traditional ideals of American farmers about the uselessness of complete retirement until it is forced upon them by physical disability may explain, in part, the increase in proportion of operators 55 years of age and over since 1950. For the United States, the proportionate change from 1950 to 1954 was from 34.6 percent to 36.9 percent of total operators; for Virginia, the proportionate change was from 41.6 percent to 42.6 percent. Historically, the proportion of operators under age 35 has been greater for the United States than for Virginia (appendix A, tables 8 and 9). On the other hand, the proportion of operators 55 years of age and over has

been considerably less for the United States than for Virginia, especially for the "65 or older" age group. However, trends in numbers since 1950 indicate that proportions in the various age classes for the United States are more closely approaching those of the Virginia pattern. If such adjustments are true, continued decreases in the proportion of younger operators and increases in the proportion of elderly operators can be expected.

Throughout the discussion of the effects of the economic environment upon farm operation, emphasis was placed both upon total changes in capital used and structural changes in capital outlays for individual farms. Likewise, the significance of changes in tenure and age of operators was stressed. However, little has been said about the amounts and types of capital used in the latter part of the 1950-1960 decade, in terms of actual dollars. Constant dollar amounts have little meaning for operators who need to know how much capital is required for successful operation of a given farm.

The two-year average of total capital used for commercial family-operated farms for 1955-1956, ranged from a low of \$10,705 for tobacco farms (small) Coastal Plain, North Carolina, to a high of \$90,705 for cash grain farms in the Corn Belt (appendix A, table 5). Average total capital used for the fifteen types was \$38,456 (appendix A, table 2). Non-real estate capital used ranged from a low of \$1,880 for tobacco farms (small) to a high of \$19,852 for hog-beef farms in the Corn Belt, with average non-real estate capital for the fifteen types amounting to \$11,234. Average total capital used for all farms

for 1956 was \$33,453 while non-real estate capital (including household furnishings and equipment) averaged \$10,518 per farm. In terms of actual dollars, there has been roughly a threefold increase in capital used on American farms since 1930. In terms of constant dollars, the increase has been 71 percent for the "all farms" group and 21 percent (1930-1934 to 1955-1956 averages) for commercial family-operated farms. Although real estate capital as a proportion of total capital has declined approximately 10 percent for American farms since 1930, it still is much the largest farm capital outlay.¹ Therefore, granted that the amount of capital used has increased tremendously, an important question confronting operators today is how can limited capital best be utilized in combination with given amounts of labor and managerial ability to obtain an income (both monetary and non-monetary) comparable with other occupations requiring similar inputs.

¹For a discussion of trends in the amounts and structure of farm capital for the United States by regional areas, see Alvin S. Tostlebe, Capital in Agriculture: Its Formation and Financing Since 1870, National Bureau of Economic Research, New York, Princeton (Princeton University Press, 1957).

RESOURCES NEEDED TO OBTAIN SPECIFIC LEVELS OF INCOME

One conclusion drawn from the analysis of capital used on the various sizes and types of farms is that the dollar value of resources employed fluctuates considerably for different types of farms. Furthermore, the region in which a farm is located will influence the amount of capital used for a given farm type. In general, operators in the Southeast have substituted capital for labor to a lesser extent than have operators in other areas for similar types of farms.

A comparison of resources used in the Southeast and the Corn Belt to obtain given income levels in 1944, reveals marked differences in the combinations of labor and capital employed.¹ Farms in the Southeast with a net income from agriculture of \$4,000 used 27 percent less capital than farms in the Corn Belt. However, Southeastern farms used almost twice as much labor as Corn Belt farms with \$4,000 net income from agriculture (table 1).

Bishop reports that average net income derived from agriculture by farm operator families in 1949 was \$1,611 for the Southeast and \$3,675 for the rest of the nation. After adjustments for differences in income by racial composition and off-farm employment between the two areas, he concluded that the average income for farm operator

¹C. E. Bishop, "Underemployment of Labor in Southeastern Agriculture," Journal of Farm Economics, XXXVI (1954), especially pp. 261-268.

Table 1. Resources Used to Obtain Specified Levels of Net Income from Agriculture, Southeast and Corn Belt Areas, 1944

Net income from agri- culture ^{1/}	Resources used				Additional resources used for additional \$1,000 net income			
	Southeast		Corn Belt		Southeast		Corn Belt	
	Capital	Labor ^{2/}	Capital	Labor ^{2/}	Capital	Labor ^{2/}	Capital	Labor ^{2/}
\$1,000	\$3,990	1.43	\$10,942	1.36	\$3,708	.43	\$6,256	.16
2,000	7,698	1.86	17,198	1.54	5,808	.67	7,249	.18
3,000	13,506	2.53	24,447	1.72	10,609	1.23	8,783	.24
4,000	24,315	3.76	33,230	1.96	9,280	1.13	8,784	.24
5,000	33,595	4.89	42,014	2.20	13,750	2.19	17,150	.81
7,500	47,345	7.08	59,164	3.01	13,750	2.19	16,443	.84
10,000	61,095	9.27	75,607	3.85				

^{1/} Net income from agriculture includes: (1) net income of farm operators (adjusted for changes in inventories of crops and livestock), (2) farm wages, and (3) net rents to landlords living on farms.

^{2/} Males 14 years of age or older.

Source: C. E. Bishop, "Underemployment of Labor in Southeastern Agriculture," Journal of Farm Economics, XXXVI (1954) p. 267.

families in the Southeast was nearly 50 percent lower than for other regions.¹ Over 97 percent of the farm families in the Southeast (excluding part-time and residential units) had average net incomes of \$3,000 or less in 1944. During the same year, approximately 80 percent of the Corn Belt farms had average net incomes of \$3,000 or less.²

In the study of resources used in the Southeast and Corn Belt areas and from the data presented in table 1, Bishop infers that the productivity of capital (both average and marginal) in the Southeast is greater than for the Corn Belt. He concludes that, with an elasticity of demand of less than unity, for Southeastern farm products, "capital must be substituted for labor in Southeastern agriculture if the value productivity of labor is to be equalized among agricultural regions."³ Therefore, if increased capital-labor substitution is needed to attain greater productivity, capital requirements for the Southeast would be higher than is indicated in table 1.

A study of Northern Illinois farms by Mosher (using 1954 data) shows varying returns from farms of different size groups and levels

¹Ibid., p. 262.

²Ibid., p. 267.

³Ibid., p. 268. For an additional marginal analysis of the substitution of capital for labor on Montana, Iowa, and Alabama farms, see Earl O. Heady and Harald R. Jensen, Farm Management Economics (New York, Prentice-Hall, Inc., 1954), pp. 418-424. The authors conclude that ". . . the productivity of labor on low capital farms in Alabama can be increased to levels comparable with . . ." the Montana and Iowa farms ". . . if more capital were available . . ." p. 424.

of investment.¹ For the sample of farms used in Mosher's study, more families in the "standard earnings class" fell in the 180 to 259 acres size-of-farm group than for any other group.² Farms in this size group had average farm and family earnings of \$9,704, including a charge of \$4,406 for farm capital. Total investment for this farm size averaged \$101,481.³ Capital used for the 50 to 99 acre group was \$41,146, with average farm and family earnings of only \$2,859. Although Mosher concluded that farms ranging in size from 80 to 320 acres (depending upon the farm type, productivity and tenure of operator) were the most desirable for serving the goals of farm people, he showed that the "optimum use of land, labor and capital was found on farms of 260 to 399 acres in the Northern Illinois studies in 1954."⁴ Total investment for farms of this size averaged \$130,839 per farm. The average farm and family earnings of \$13,844 on these farms were almost twice the amount considered as a minimum for adequate living requirements.

Brewster has conducted an examination of the value of resources

¹M. S. Mosher, Farms Are Growing Larger, Bul. 613, Illinois Agr. Exp. Sta. (Urbana, 1957).

²Standard earnings ranged from \$7,000 to \$11,000. Seven thousand dollars was considered the minimum amount necessary for a farm family of three children to provide for living expenses, continuity of ownership, college education or the equivalent, and retirement income for the parents. See p. 8.

³Mosher, op. cit., table 1, pp. 4-5. Farm and family earnings include returns for capital and family living obtained from the farm.

⁴ibid., p. 40.

needed to obtain operator earnings of \$2,500 and \$3,500 for six farm types and geographical areas.¹ The amount of net worth required for full ownership and part ownership of these farm types is shown in table 2. To realize operator earnings of \$2,500, total capital used ranged from over \$20,000 for Eastern Oklahoma cotton farms to almost \$98,000 for Judith-Basin, Montana Wheat farms (appendix C, table 1, full-owner column). For operator earnings of \$3,500, resources used ranged from \$17,000 to approximately \$122,000. In all cases, the \$2,500 earnings group required more investment per dollar of operator earnings than the \$3,500 earnings group. Brewster found that the wide variation in the capital used on the farm types examined was "explained mainly by the fact that the same operator earnings can be achieved with widely differing proportions of labor and investment."²

An analysis of investments on Virginia farms in 1949 showed widely varying amounts of capital used to obtain a given income.³ The authors cite two principal reasons for this variance. First, the possibilities for capital-labor substitution differed markedly for the principal types of farming studied. Second, many owners of Virginia farms had nonfarm business interests and incomes. These farms often were of high

¹John M. Brewster, Farm Resources Needed for Specified Income Levels, Agr. Info. Bul. 180, Agr. Res. Ser., U. S. Dept. of Agr. (Washington, 1957). Operator earnings as defined by Brewster equal gross farm income (including the value of production for household use) minus (1) total farm expenses, (2) interest on total investment and (3) an allowance for unpaid family labor. Long run "normal price and cost rates" were used in the study. For these and other assumptions used, see pp. 5 and 6.

²Ibid., p. 1.

³Fred L. Garlock, et al., Financial Structure of Virginia Agriculture, Agr. Info. Bul. 97, Bureau of Agr. Econ., U. S. Dept. of Agr. (Washington, 1953).

Table 2. Required Net Worth Needed to Acquire Full Ownership and Part Ownership of Specified Types of Farms with Budgeted \$2,500 and \$3,500 Operator Earnings, Selected Areas

<u>Farms with operator earnings of \$2,500^{1/}</u>					
<u>Farm type</u>	<u>Full owners Net worth required</u>	<u>Part owners</u>			
		<u>Net worth required</u>	<u>One third of real estate rented</u>	<u>One half of real estate rented</u>	<u>Net worth required for full owner</u>
			<u>Net worth over part owner</u>	<u>Net worth over part owner</u>	
Cotton-beef, Piedmont, S. C.	\$12,754	\$10,322	\$2,432	\$9,104	\$3,650
Dairy-cotton, Western Tenn.	13,200	10,670	2,530	9,405	3,795
Cotton, Eastern Okla.	6,935	5,142	1,793	4,245	2,690
Dairy, Eastern Wis.	23,580	19,953	3,627	18,140	5,440
Wheat-beef, Cent. Pins., Kan.	42,220	31,352	10,868	26,188	16,032
Wheat, Judith-Basin, Mont.	47,825	34,613	13,212	28,007	19,818
<u>Farms with operator earnings of \$3,500^{1/}</u>					
Cotton-beef, Piedmont, S. C.	\$16,089	\$13,171	\$2,918	\$11,712	\$4,377
Dairy-cotton, Western Tenn.	13,605	10,979	2,626	9,668	3,937
Cotton, Eastern Okla.	8,040	5,788	2,252	4,662	3,378
Dairy, Eastern Wis.	26,705	22,237	4,468	20,003	6,702
Wheat-beef, Cent. Pins., Kan.	52,945	39,295	13,650	32,470	20,475
Wheat, Judith-Basin, Mont.	63,780	45,578	18,202	36,478	27,302

^{1/} For the definition of operator earnings as used in this table, see table 1, appendix C, n.

Source: Compiled from table 1, appendix C.

value; however, the ratio of output and returns to capital invested was lower than for farms operated by owners whose chief source of income was from farming.¹ Furthermore, livestock farms and, to some extent, dairy farms accounted for practically all of the farms in the group with a relatively low ratio of output and income to investment, making the disparity between farm types even greater.

Data in table 3 show the capital used to obtain an average net cash income for three levels of gross cash receipts. The Virginia study showed that, in 1948, almost two thirds of the commercial farms had gross cash receipts of less than \$2,500, and over one half had investments under \$10,000.² The average capital used to obtain a net cash income of approximately \$2,000 to \$6,000 by Virginia commercial farmers whose primary source of income was from farming, ranged from \$20,031 to \$77,280. To realize a net cash income of about \$3,600 to \$8,600, including off-farm income, Virginia commercial operators whose off-farm income was relatively large used from \$33,195 to \$79,306.

The average amount of capital used on commercial farms in the Virginia study varied considerably for four important farm types (figure 1). Capital investments used on these four types were: peanut, \$10,000; tobacco, \$9,000; dairy, \$22,000; livestock, \$26,000; and other types, \$14,000. Average investment for all commercial farms

¹Ibid., pp. 23-25.

²Ibid., p. 2.

Table 3. Average Capital Used, Mid-1949, and Average Net Cash Income of Commercial Farm Operators by Source and by Specified Amounts of Gross Cash Farm Receipts, Virginia, 1948

Gross cash farm receipts	Commercial A operators ^{1/}			Total capital used
	Net cash income ^{2/}		Total	
	Farm	Off-farm		
\$250-\$2,499	\$621	\$17	\$630	\$9,445
2,500-9,999	2,023	15	2,038	20,031
10,000 or more	6,092	28	6,120	77,280

	Commercial B operators ^{1/}			Total capital used
	Net cash income ^{2/}		Total	
	Farm	Off-farm		
\$250-\$2,499	\$602	\$1,316	\$1,918	\$15,210
2,500-9,999	2,075	1,535	3,610	33,195
10,000 or more	5,700	2,911	8,611	79,306

^{1/} Commercial farms as defined in this study are mainly those farms having gross farm sales of at least \$1,200. Farms having gross farm sales from \$250 to \$1,199 were included as commercial farms provided the operator derived his principal income from his farming operations. Commercial farms were subdivided on the basis of the amount of earnings from off-farm sources. Off-farm earnings for commercial A farms were less than \$250; commercial B farms had off-farm earnings of \$250 or more.

^{2/} Net cash income does not include value of products used on the farm or allowance for rental on the farm dwelling.

Source: Compiled from Fred L. Garlock, et al., Financial Structure of Virginia Agriculture, Agr. Info. Bul. 97, Bureau of Agr. Econ., U. S. Dept. of Agr. (Washington, 1953).

Capital investment,
thousand dollars

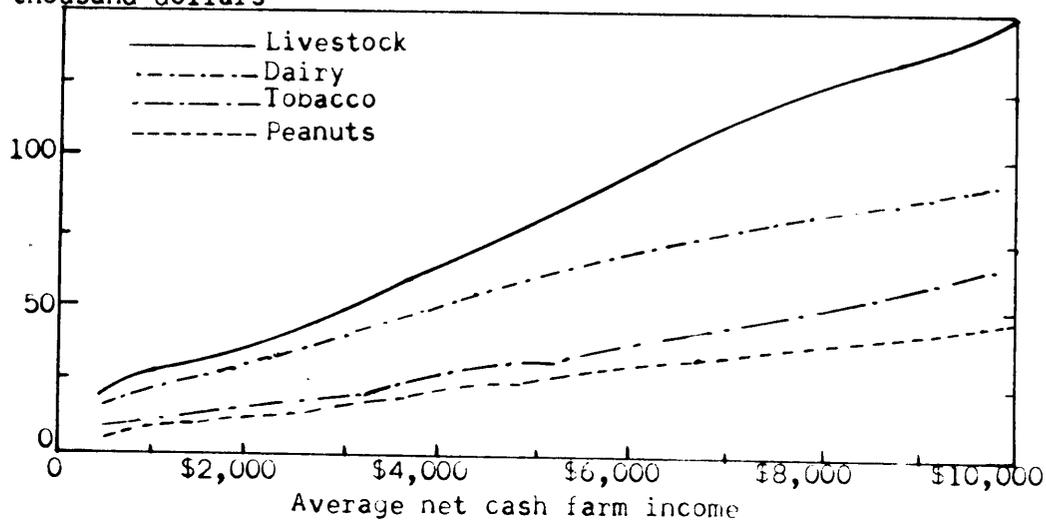


Figure 1. Capital Used on Commercial Farms to Produce Varying Net Cash Farm Incomes By Type of Farm, Virginia, 1949^{1/}

^{1/} Land, buildings, livestock, machinery, and other capital items; excludes bank deposits and other nonfarm assets of operator.

Source: Fred L. Garlock, et al., Financial Structure of Virginia Agriculture, Agri. Info. Bul. 97, Bureau of Agr. Econ., U. S. Dept. of Agr. (Washington, 1953), p. 25.

was about \$15,000.¹ However, the approximate amounts of capital used to realize a net cash income of \$6,000 on commercial farms in 1947 were: peanut, \$31,000; tobacco, \$37,000; dairy, \$68,000; and livestock, \$94,000, with an average of \$57,500 for all farm types.² Thus, there was considerable disparity between the amount of capital used on farms to return a \$6,000 income and the amount used on the average commercial farm for Virginia. Also, type of farm was a major factor influencing the amount of capital used to obtain a given income on Virginia farms. The shortage of capital, the "aversion" to tenancy, and the reluctance or inability of operators to borrow and use additional capital are cited as the cause of many undercapitalized and low-income farms.³

Therefore, the amount of capital used to obtain a given income varies among types of farms and among farming areas. There are some commercial farm operators who presently are realizing returns comparable to earnings of industrial workers with the same degree of skill. In terms of the economic classification of farms, as used by the Census, Brewster reports that the farm types examined in his study fell into

¹Garlock, *et al.*, *op. cit.*, p. 2.

²These amounts are approximated from figure 1 and may vary slightly from the actual averages.

³*Ibid.* For a summary of the conditions affecting scale of operations and capital used, see pages 2 to 4. The data used in the Virginia study have some limitations that need to be considered when interpreting them. For example, it is reasonable to assume that the farmers underreported their net cash income to some extent. See the appendix for additional limitations associated with the sampling and enumeration procedure.

economic classes II and III.¹ However, most of the farms fell into class II. Farms in class III were all in the \$2,500 earnings group and were in the Piedmont of South Carolina and in Eastern Wisconsin. In 1954, sixty-one percent of the farms in the United States were below class III; more than 82 percent were below class II.² Therefore, a majority of farms had gross product sales that returned operator earnings of less than \$2,500.

It is evident that a large number of operators have farms of insufficient size. This condition may exist partly because of limitations on their ability to acquire the necessary capital or because of their reluctance to invest heavily in building long-run farm programs under short-term lease arrangements. If operators choose to acquire title to all the assets needed for an efficient-size farm, they may be old men before they have possession of such a farm. Moreover, payments on the principal and interest of a farm mortgage and operating loan may be so great that the indebted owner may be worse off than a tenant with insecurity of occupancy.

In the presence of increasing capital requirements (both real estate and non-real estate), part ownership may be one means of acquiring a unit of sufficient size to allow the operator to utilize more efficiently his productive resources.

¹Brewster, op. cit., p. 2.

²See appendix B, table 1, for criteria for the economic classes of farms.

Data in table 2 show the required net worths for obtaining specified income levels for various types and locations of farms. The amount of net worth needed by full owners is compared with that of part owners who rent one third or one half of their real estate capital.¹ Assuming the operator can borrow approximately one half of his needed capital investment, how much less capital does the part owner need than the operator who chooses to acquire title to all of the assets which he manages? Required net worth for the farm types in table 2 varies considerably between types of farms and level of operator earnings. For example, the required net worth on Piedmont, South Carolina, cotton-beef farms with operator earnings of \$2,500 is \$12,754 for full owners, \$10,322 for part owners renting one third of their real estate, and \$9,104 for part owners renting one half of their real estate. Therefore, the net worth required of part owners is \$2,432 less when one third of the real estate is rented and \$3,650 less when one half of the real estate is rented. Percent wise, the net worth required for full ownership of this type of farm is approximately 24 percent and 40 percent greater, respectively, than for part owners renting one third and one half of their real estate. With the exception of Piedmont,

¹Appendix C, table 1, gives a more detailed presentation of capital requirements by type of investment. In computing the required net worths, the assumed amounts borrowable were one half of the investment in real estate (including land and service buildings, and dwelling), non-real estate (excluding crops for sale, feed and seed), and operating expenses. The method of computing required net worth varies slightly from that used by Brewster, *op. cit.* (see pp. 39-40). The main variation is the inclusion of the value of dwellings in computing the amounts borrowable in table 1.

South Carolina, cotton-beef farms, percentage differences are equal to or slightly larger for the same farm types with operator earnings at the \$3,500 level. For example, on farms with operator earnings of \$3,500, net worth required for Central Plains, Kansas, wheat-beef farms is \$52,945 for full owners, \$39,295 for part owners renting one third of their real estate and \$32,470 for part owners renting one half of their real estate. Full owners for this farm type required a net worth approximately 35 percent and 63 percent greater, respectively, than part owners renting one third or one half of their real estate. Corresponding percentages for the same farm type with \$2,500 operator earnings are 35 percent and 61 percent, respectively.

In some instances, the data in table 2 understate the difference in the net worth required for full owners and part owners. The principal reason for this fact is the rapid increase in non-real estate capital in recent years. An assumption for the data in table 2 is that the part owner rents a portion of his real estate only. Such would be the case if he were renting the real estate on a cash basis. However, if the part owner share rents the real estate, a portion of the expenses of producing a given crop is shared by the landlord, and under some circumstances the landlord also may furnish a part of the livestock investment. The operating capital and, consequently, the net worth required for the operator is further reduced by the amount of the landlord's share of the expenses.

Therefore, through part ownership, it is possible for an operator to acquire control of a given size farm with less net worth than

if he assumed full ownership. The implications are that those full owners who are so limited in capital funds that there exists a pronounced inefficiency of physical or managerial resources, need to give serious consideration to part ownership as an alternative type of tenure arrangement.

RELATION OF AGE AND TENURE TO SIZE OF FARM OPERATION

Several studies have shown that size of farm is affected by the age of the farm operator and by the life cycle of the farm family. Findings of these studies are presented to substantiate the thesis that many farm operators do alter the size of their businesses to adjust to the biological processes of age and the family life cycle. Furthermore, data from various sources show a definite relationship of tenure of operator to the size of farm business. These relationships may have significant implications for operators who desire greater efficiency of farm operation and resource use.

Relation of Age to Size of Farm Operation

An examination of data on Wisconsin dairy farmers, completed by Long and Parsons in 1950, shows the "impact" of the life cycle on the farm.¹ The authors found that on approximately 1600 "man and wife" farms the decrease in the size of the dairy herd corresponds closely with the decrease in the man-equivalents of labor as operators increase in age. They report that "for the married couples, the number of cows and heifers kept for milk drops from an average of 16.3 while the men are in their twenties and thirties, to an average of 5.8

¹Long and Parsons, op. cit.

for those 70 years old or older" (figure 2).¹ The findings show similar trends between age of operator and the number of crop acres per farm where the operators have no children over ten years of age. On the average, both married and unmarried operators in their twenties and thirties produce about 60 acres of crops. As age increases, crop acres decline steadily to an average of 38 for married farmers in their seventies and to an average of 25 for unmarried farmers in their seventies.²

On the other hand, size of farms, whether measured by the dairy herd or by crop acres, remains relatively constant where there are one or more mature sons to assume the farm work load and managerial responsibilities. Therefore, the significance of the above relationships depends, in part, upon the relative number of farms which are classified as "man and wife" farms or which have no son to take over the farm business. Data from the Wisconsin study show that "of a total of 4,544 male farm operators for whom schedules were complete, 60 percent had no sons over ten years of age living and working on the farm."³

The authors also cite three case studies which relate how a farm can either remain a going concern over more than one generation or how it can become a "one generation" farm, making recapitalization

¹Ibid., p. 10.

²Ibid., p. 23.

³Ibid., p. 16.

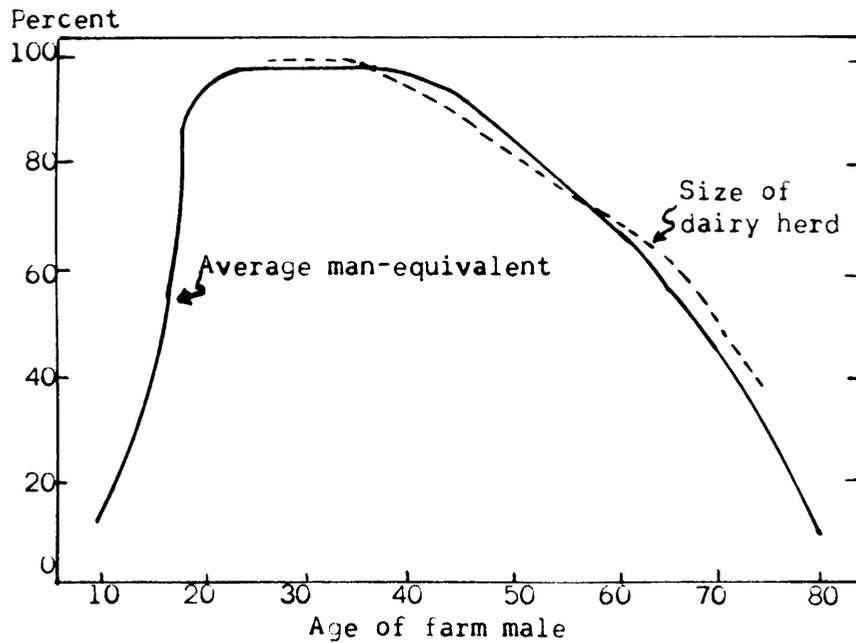


Figure 2. Index of Man-Equivalent of All Farm Males, and of Size of Dairy Herd on Man and Wife Farms, as related to Age of Male

Source: Reproduced from Erven J. Long and Kenneth H. Parsons, How Family Labor Affects Wisconsin Farming, Res. Bul. 167, Wisconsin Agr. Exp. Sta., (Madison, 1950).

necessary for each succeeding generation.¹ Therefore, farm operators need to give more careful attention to alternative methods of retirement if they are to realize the greatest amount of benefits from their investment.

A study of provisions made for old age by 257 farmers in Wharton County, Texas, (completed in 1954) showed that "partial retirement for farm operators is either more acceptable or more practicable than full retirement."² Approximately one half of these farmers either had reduced their operations or planned for reduction as they grew older. Moreover, about four out of five operators 65 or older have either reduced, or planned for reduction of their farm businesses. These data further support the fact that the size of operations decrease for a substantial number of farmers as they grow older.

Work by Heady, et al., shows that as the operator's age increases, the size of farm business first increases, then reaches a maximum and finally declines as the operator becomes older.³ This study is an analysis of 144 operators in the North Central Cash Grain Area of Iowa, excluding dairy or other specialty farms. Statistical methods

¹Ibid., pp. 12-14.

²Adkins and Motheral, op. cit., p. 18. Of the operators "who had not expressly denied the intent to retire," (approximately 33 percent expressed such denial) more than three out of four preferred to live on a farm after retirement, and about four out of five chose to live on the farm which they were on at the time of the survey. Of the latter group, more than 80 percent owned the farm to which they referred. See p. 19.

³Heady, et al., op. cit.

employed in the study include a regression analysis of 90 of these farms with age of operator as the independent variable, and a comparison of age group means. Acres operated, value of land managed, value of livestock, value of machinery, and total value of assets managed are some of the dependent variables which are considered in the analysis. The regression analysis in the study excludes farms with father-son agreements, characterized as two-generation or two-manager farms.¹ Owners, part owners, and tenants are included in the analysis. A cross-sectional sample of operators stratified by age groups is used rather than time-series data.

For the Iowa farms surveyed, the prediction equation shows that acres operated increase steadily from 117.5 acres at age 25 until the operator is approximately 48 years of age (figure 3). From a maximum of approximately 196 acres operated at 48 years of age, farm size declines to approximately 123 acres at 70 years of age.

To relate the value of land, and acres operated to the farm family life cycle, the authors computed the average maximum for value of the land and for acres operated. These values were derived by expressing the regression equations as percentages for value of land and for acres operated. Value of land and number of acres operated by the given age groups are expressed in figure 4 as percentages of the maximums for the value of land and acres operated which equal 100 percent. The rise and decline of the value of land and of number of

¹Ibid., p. 399.

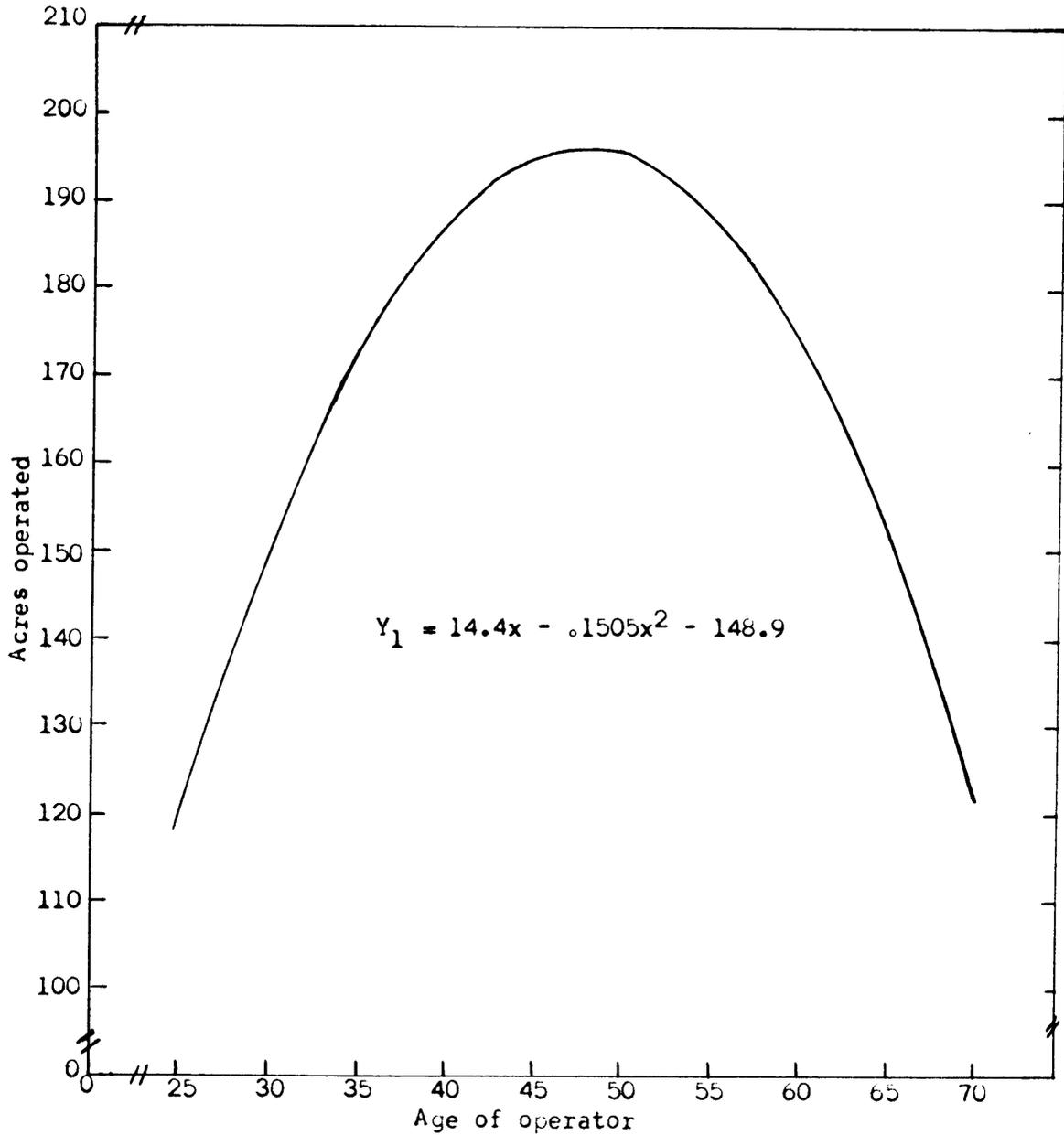


Figure 3. Relationship of Number of Acres Operated and Age of Operator

Source: Reproduced from Earl O. Heady, et al., Interdependence Between the Farm Business and the Farm Household with Implications on Economic Efficiency, Res. Bul. 398, Iowa State College Agr. Exp. Sta. (Ames, 1953).

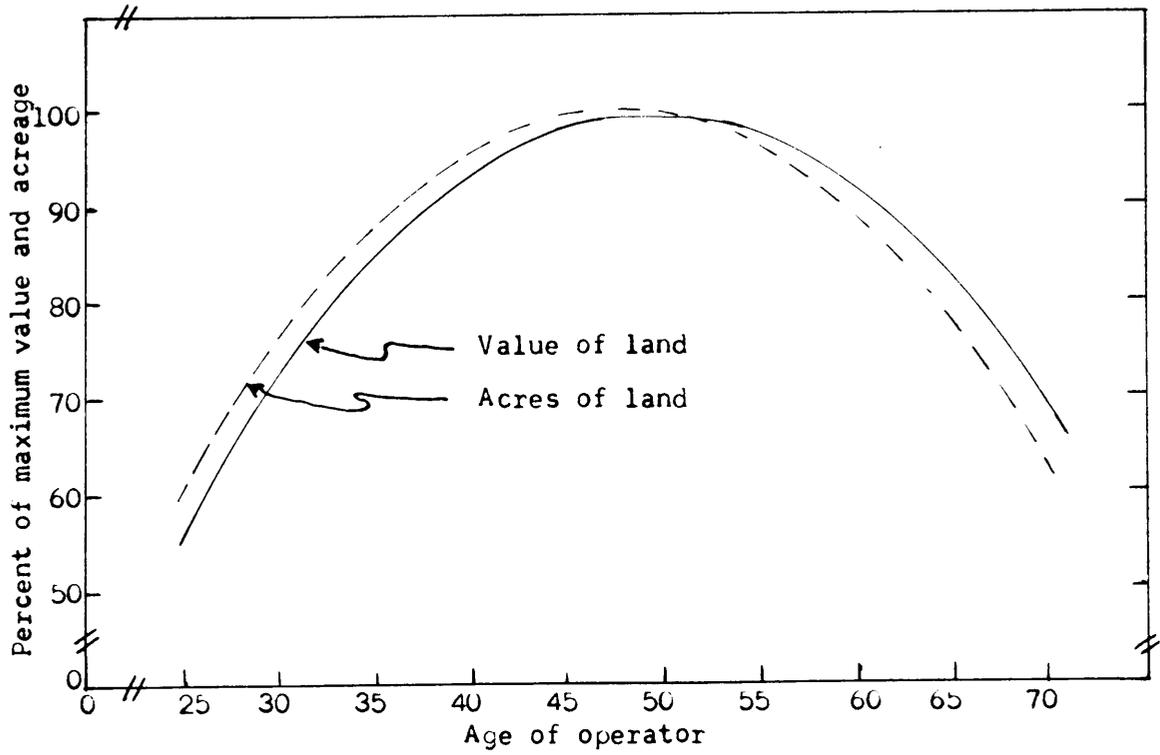


Figure 4. Comparison of Farmer Estimates of Land Operated and Acres Operated in Percent of Maximum of Each Age of Operator

Source: See source note to figure 3.

acres operated closely follow the same pattern over the family life cycle, "beginning with an average of 55-60 percent of maximum for an operator age 25 and ending with 55-65 percent of maximum at operator age 70."¹

A study of the relation of the value of all assets managed to the family life cycle again reveals a pattern of increasing and decreasing values as operator age increases (figure 5). The authors found the machinery and livestock value curves to be much less pronounced than the value of land managed per operator. From the study, data were collected which supported the anticipation that operators have greater flexibility in the accumulation of livestock than they do in the accumulation of machinery.² In other words, the operator must provide for minimum machinery expenditures while he can purchase or dispose of smaller quantities of livestock as his supply of other resources dictates. The curve plotted from prediction equation Y_5 is the sum of the other three curves. It is more pronounced than the machinery and livestock curves because of the marked adjustments in land value per farm (prediction equation Y_2) over the family life cycle.

Therefore, the studies in this section indicate that over the span of the family life cycle, operators either desire to make marked adjustments in the size of their farms, or else they are forced to do

¹ibid., p. 402.

²ibid., p. 403.

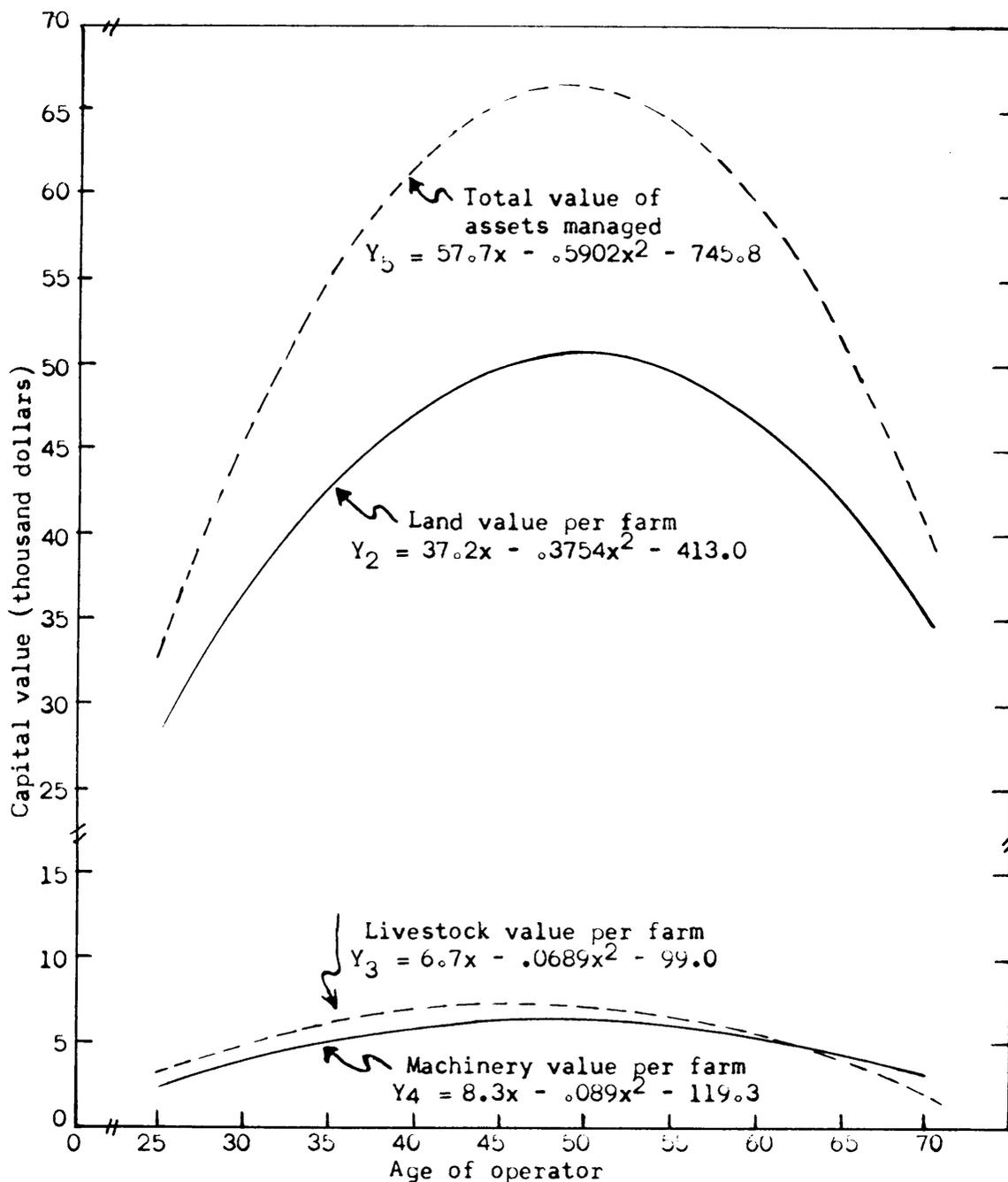


Figure 5. Value of Livestock, Machinery and Land, and Total Capital per Farm by Age of Operator^{1/}

^{1/} The x and x^2 coefficients in the above equations all were significant at the 1 percent level (p. 402, n.).

Source: See source note to figure 3.

so because of limited resources during a given period in their farming careers.

Relation of Tenure to Size of Farm Operation

An examination of the relation of tenure to size of farm operation should point out some of the differences in size of business by tenure of operator. Assuming that farm size is a rough measure of the amount of total income realized per farm, differences in farm size by tenure groups may partly explain the variation in farm income.

Data in this section are drawn from two sources. Presented first is the number of all United States commercial farms by economic class of farms and by tenure of operators as reported by the Census. Second, data from a sample survey of Virginia farm operators in Halifax and Southampton counties provide a measure of size by comparing the acres of crops grown per farm by tenure of operator.

Size of Commercial Farms by Tenure

Using commercial farms by economic class of farms is a means of measuring farm size by the amount of gross income per farm.¹ The proportion of operators in the economic classes of farms varies considerably by tenure of operator. The number and proportion of operators by economic class and by tenure of operator is shown in appendix A, table

¹See appendix B, table 1, for the criteria for the economic classification of farms.

11. An examination of the sum of the number of class V and VI farms by tenure of operator shows that a larger proportion of full owners falls in these two classes than do either part owners or tenants.

The proportion of operators in the larger farm classes also varied considerably by tenure of operator. In both 1950 and 1954, a considerably larger proportion of part owners operated class I, II, and III farms than did either full owners or tenants. For the small commercial farms the opposite situation existed, with 43.9 percent of the full owners and 35.9 percent of the tenants operating class V and VI farms in 1954.

Size of Farms by Acres of Crops Grown,
Halifax and Southampton Counties, Virginia

Field schedules enumerated from a sample of Halifax and Southampton county farm operators for a study of landlord-tenant relationships and farm leasing practices provide an important source of data for comparing size of farms by tenure of operator.¹

A tabulation of crops grown in Southampton county by tenure of operator shows the average number of acres of specified crops and all crops per farm (appendix D, table 1). Although a number of crops were grown on Southampton county farms, peanuts were by far the most

¹ The study in Halifax and Southampton counties was conducted by Professor W. L. Gibson, Jr., in 1954 and 1955. The primary purpose of securing data was for an analysis of landlord-tenant relations and farm leasing practices. However, the survey questionnaire was prepared in anticipation of obtaining data for a study of part ownership as a type of farm tenure. Professor Gibson has generously supplied to the writer in tabular form much of the data for Halifax and Southampton counties in this section and throughout the remainder of this study.

important cash crop. Cotton also was grown as a cash crop on approximately 50 percent of the farms with the exception of the one-fourth and one-third share tenant group which had less than 16 percent of the farms growing cotton. The 118.8 acres of crops grown by part owners far exceeded the average for the other tenure types.¹ One-half share tenants with 89.5 acres were the next largest, followed by full owners with 72.4 acres. The one-fourth and one-third share tenant operators had fewer acres of crops than the other operators in table 1. In fact, these operators grew only four and one-half more acres of crops than did part owners on the land which they rented. The one-fourth and one-third share tenant farms had only 53 percent as many acres of crops as the part-owner farms. Acres of crops grown on full-owner farms were approximately 61 percent of the number grown on part-owner farms. The farms of the one-half share tenants were more nearly the size of the part-owner farms, since they had approximately 75 percent as many acres of crops as was reported on the part-owner farms. However, it would be expected that to obtain a given income, the one-half share tenants would require larger acreages than the other tenure types since the landlord receives one half of the crops as rent.

Halifax county farms were much less diversified than those in Southampton county, especially when they were considered from the standpoint of major-income producing crops. Although the acres required for

¹The remainder of the schedules from which data on crop acres were secured included 32 mixed tenants, 13 cash tenants, and 6 share-cash tenants. The number of cash and share-cash tenants was considered too small for comparison.

the production of tobacco were a small proportion of the acres used for all crops, tobacco was by far the most valuable crop grown in the county. A considerable number of operators also grew small acreages of wheat as a cash crop (appendix D, table 2).

Farm size by tenure of operator in Halifax county, as measured by acres of crops, followed a pattern somewhat different from that in Southampton county when acres of all crops were compared. Full owners, with 52.4 acres, had the largest number of acres of all crops. They were followed by part owners and one-fourth share tenants with 44.7 acres and 25.5 acres, respectively.¹ Thus, Halifax county part owners had approximately 85 percent as many acres in crops as full owners, while one-fourth share tenants grew slightly less than 50 percent of the acres of crops grown by full owners. When size of farm is considered by comparing the acres of tobacco grown, the data in appendix D, table 2, show that part owners had, on the average, 0.6 acre more tobacco than did full owners. Since two of the sixty-two part owners grew no tobacco on their own land and four of the sixty-two had no tobacco on rented land (a total of 96.8 percent of the part owners grew tobacco on their own land and 93.5 percent grew tobacco on the rented land; 100 percent of the full owners and one-fourth share tenants grew tobacco) the total number of acres actually grown on these farms would be slightly higher than 10.1. Tenant operators

¹The one-fourth share type of lease arrangement was the principal leasing system used in Halifax county. The seven additional schedules which were completed for tenants were classified as mixed tenants.

had 65 percent as much tobacco acreage as full owners—a somewhat higher percentage than for all crops. When the same comparison and analysis is made of wheat grown by full owners and part owners as was made for tobacco, it is seen that a pattern exists similar to that for tobacco.

In both Halifax and Southampton counties (with the possible exception of one-half share tenants in Southampton county), there were a number of tenants who had operating units which were smaller than those of the other tenure groups. This condition also was true for full owners in Southampton county, although it was perhaps less pronounced than for the one-fourth and one-third share tenants.

In Southampton county, part owners, on the average, almost doubled their acres of crops by choosing to rent part of their real estate. Halifax county part owners increased the acres of crops per farm by more than 50 percent through the leasing of additional acreage. Had the part owners in both Halifax and Southampton counties chosen to remain full owners, their units would have been approximately the size of the one-fourth share tenants in Halifax county and the one-fourth and one-third share tenants in Southampton county, assuming they were unable to expand operations by the purchasing of additional land.

Farms in Southampton county were better able to utilize mechanized methods in the growing and harvesting of crops than is presently true in the Halifax county tobacco area. Thus, some differences do exist between the areas in motivation for farm size adjustments. Furthermore,

acreage control programs, especially on peanuts and tobacco in the two areas, need to be considered when analyzing adjustments in farm size. Additional discussion of this topic is reserved for a succeeding section.

Summary of Relation of Age and Tenure to Size of Farm Operation

Data on relation of age and tenure to size of farm operation have been presented from a number of sources. The studies on age of operator and size of farm business have shown definitely that farm size is closely related to the family life cycle. This condition is particularly true of those farms characterized as one generation farms—where there is no son or other person interested in working with the operator. The Wisconsin study particularly, has pointed out that a large number of such farms do exist.

Although the studies discussed in this section have emphasized more strongly operator adjustments after middle age, the work by Heady, et al., has shown that young operators also need a type of tenure that will allow them to expand their operations as they are able to accumulate additional resources (including managerial ability). Modern farming methods and living standards have placed a high premium on capital, such that it is becoming increasingly difficult for capable young operators to obtain ownership of all the resources for an efficient-size farm.

The problem of adjustment in farm size for elderly operators is

presently more prevalent than ever before. For one reason, the proportion of elderly operators has been steadily on the increase. An additional reason is that an increasing number of operators are beginning to accept at least partial retirement as a reality. This condition is clearly pointed out in the Texas study on farmers' provisions for old age.¹ Farmers' increasing acceptance of Social Security and the intermingling of rural and urban populations have been conducive to such a trend. Furthermore, the increase in life expectancy of man affects the population of elderly farmers as well as the rest of the population.

How well does the present land tenure system provide for adjustments in farm size over the life span of a farm family? A partial answer to this question is found through the examination of size of farm by tenure of operator. In 1954, full owners comprised approximately 75 percent of the small commercial farms (classes V and VI) in the United States. Some of these farms were owned by operators who decreased the size of operation because of old age. However, part of these farms were owned by operators who could realize a larger income by increasing the size of their operation.

Both the Census data and the data on Halifax and Southampton county farms show that part ownership is a very effective way of increasing farm size. Although empirical data are impossible, it would be interesting to know the financial status of these operators

¹Adkins and Motheral, op. cit.

had they not decided to enlarge their farms by renting additional land.

Little has been said of tenant operators and farm size. This group may have a great potential for increasing farm size. However, there are many factors which tend to inhibit such an increase. For one, the share tenant is usually limited to one farm, and it may be difficult for him to locate a farm of desirable size at the time when it is necessary for him to move. Furthermore, many tenants may not have the desire or the managerial ability to operate a larger farm or to purchase land of their own. This latter condition is prevalent especially among Southern farm operators.

Thus, for tenants as well as for the other tenure types, farm size is a function of many factors, some of which are extremely difficult to measure. Nevertheless, for all tenure types, adjustments in farm size are prompted by the family life cycle. How efficiently and effectively such adjustments are made often will depend upon the choice of available alternatives.

PART OWNERSHIP AS A TYPE OF FARM TENURE

Characteristics of Part Owners

Trends Since 1900

The growth of part ownership in both the United States and Virginia was fairly steady for the first half of the century. From 1950 to 1954, each experienced a marked increase in the number and proportion of part owners in relation to all farm operators (table 4). The proportion of part owners in the United States increased from 7.9 percent in 1950, to 18.2 percent in 1954. The number of part owners increased by more than 90 percent. The proportion of Virginia part owners in relation to all operators in the state has been somewhat lower than for the United States. However, there was a 14 percent increase in the number of part owners in Virginia from 1950 to 1954, and a 5 percent increase in the United States. This difference in increase suggests that if the trend continues in the future, the proportion of part owners for the two areas may be more nearly the same. While the number of part owners has increased, there has been a considerable decrease in the total number of operators, especially since 1930.

The increase in the percentage of land controlled by part owners in relation to all farm land is even more phenomenal than the increase in the number of part owners. In 1900, part owners in the United States comprised 7.9 percent of the total number of operators and had control of 14.9 percent of all farm land. In 1954, part owners

Table 4. Number of Part Owners, Percentage Land Controlled by Part Owners is of All Farm Land, and Percentage of Part-Owner Land Owned and Rented, United States and Virginia, Selected Years

	United States				Change from 1900 to	
	1900	1930	1950	1954	1930	1954
Number of part owners	451,376	656,750	824,923	868,180	205,374	416,804
Percent part owners are of all operators	7.9	10.4	15.3	18.2	2.5	10.3
Percent increase in part owners since 1900		45.5	82.8	92.3		
Percent land owned by part owners is of all farm land	7.5	/	21.5	23.9	/	16.4
Percent land rented by part owners is of all farm land	7.4	/	16.9	18.3	/	10.9
Percent land controlled by part owners is of all farm land	14.9	/	38.4	42.2	/	27.3
Percent owned land of part owners is of total land controlled by part owner	50.4	/	56.0	56.6	/	6.2
Percent land rented by part owner is of total land controlled by part owner	49.6	/	44.0	43.4	/	-6.2
Virginia						
Number of part owners	10,382	16,148	16,209	18,545	5,766	8,163
Percent part owners are of all operators	6.2	9.5	10.7	13.6	3.3	7.4
Percent increase in part owners since 1900		55.5	56.1	78.6		
Percent land owned by part owners is of all farm land	3.5	5.6	10.9	15.5	2.1	12.0
Percent land rented by part owners is of all farm land	2.1	3.8	5.7	7.2	1.7	5.1
Percent land controlled by part owners is of all farm land	5.6	9.4	16.6	22.7	3.8	17.1
Percent owned land of part owners is of total land controlled by part owner	62.3	59.5	65.8	68.3	-2.8	6.0
Percent land rented by part owner is of total land controlled by part owner	37.7	40.5	34.2	31.7	2.8	-6.0

/ Not available.

Source: U. S. Census of Agriculture, 1954.

comprised 18.2 percent of the total number of operators but controlled 42.2 percent of all farm land (table 4). Part owners in Virginia had control of a somewhat lower percentage of Virginia farm land than did part owners in the United States.¹ However, in more recent years, part owners in Virginia also have been acquiring an increasingly larger proportion of Virginia farm land.

The proportion of land owned and rented by part owners has remained relatively stable over the years (table 4). However, part owners in Virginia have owned a larger proportion of the land they control than have part owners in the United States. In 1954, part owners in Virginia owned 68.3 percent of the land which they controlled. The percentage of land belonging to part owners in the United States in relation to the total land which they controlled was 56.6. The proportion of owned land was somewhat higher in 1954 than for earlier periods. In recent years, part owners probably have been able to increase the proportion of land they owned because of periods of favorable prices which have permitted them to accumulate capital more rapidly.

In periods of unfavorable prices, part owners may own a smaller proportion of the land they control. This condition existed for Virginia operators in 1930, even before the full effects of the depression were realized in tenure adjustments. Thus, it is not unreasonable to assume that an operator can rent from one third to one half of his

¹Land controlled is defined as all farm land owned and rented by part owners.

real estate capital, if he chooses part ownership as a type of tenure.

Size of Part-Owner Farms¹

The proportion of land that part owners controlled in 1954 was more than double the proportion of part owners in relation to all operators (table 4). This fact indicates that, on the average, part-owner farms were considerably larger in acres per farm than all full-owner and tenant farms.

Data on commercial farms by economic class of farm and by tenure of operator show that for 1950 and 1954, a larger proportion of part owners fell in the three larger economic classes of farms than did full owners and tenants (appendix A, table 11). Likewise, a much smaller proportion of part owners fell in the two small classes V and VI than did full owners and tenants.

A third source of data—the survey of Southampton and Halifax county farms—shows the size of part-owner farms in comparison with the other tenure types (appendix D, tables 1 and 2). Part owners in Southampton county had 29.3 more acres of all crops and 11.2 more acres of peanuts (the principal cash crop) than did the one-half share tenants who had the second largest number of crop acres and acres of peanuts. Although part owners in Halifax County had fewer total crop acres than did full owners, the tobacco acreage (the principal income-producing crop) was 0.6 acre larger on the part-owner farms.

¹For a more thorough discussion of the size of part-owner farms in relation to full-owner and tenant farms, see pp. 98-104 of this analysis.

The above data and the analysis referred to in footnote 1, page 109, strongly suggest that, on the average, part-owner farms are the largest of the tenure types. If the increase in non-real estate and operating capital requirements continues, part owners can be expected to continue to enlarge the size of their farm businesses.

Comparison of Adequacy of Buildings and Household Facilities
by Tenure of Operator in Southampton and Halifax Counties, Virginia

The condition of dwellings and other farm buildings varied considerably by tenure of operator both for Southampton and Halifax counties. Part owners in Southampton county had a larger percentage of their dwellings and farm service buildings rated good by the enumerators than did either full owners or tenants (table 5).¹ Likewise, they had no dwellings rated poor, and only 5 percent of their farm service buildings were rated poor. The percentage of tenant dwellings falling in the "poor class" was only 1.6 percent higher than for full owners. The average number of rooms per dwelling varied little by tenure of operator. Part owners had the largest dwellings with an average of 6.9 rooms, full owners the next largest with 6.8 rooms, and tenants the smallest with 6.2 rooms.

A larger proportion of the part owners in Southampton county had specified household facilities than did either full owners or tenants.

¹In rating buildings good, fair, or poor, enumerators were shown samples of buildings that would fall into each of the three classes. They were then instructed to use their judgment in rating the buildings on the sample of farms.

Table 5. Condition and Adequacy of Dwelling and Facilities, and of Farm Buildings, by Tenure of Operator, Southampton County, Virginia, 1954

	Full owners	Part owners	Tenants
Farm dwelling:			
Number of farms	38	40 ^{1/}	97 ^{2/}
Average number of rooms per dwelling	6.8	6.9	6.2
Condition of dwelling:			
Poor (percent)	21.1	0.0	22.7
Good (percent)	52.6	67.5	33.0
Facilities in dwelling:			
Electricity (percent)	84.2	100.0	90.7
Running water (percent)	63.2	82.5	54.6
Electrical refrigeration (percent)	81.2	100.0	87.6
Electric or gas range (percent)	52.6	77.5	70.1
Bath (percent)	47.4	72.5	27.8
Farm service buildings:			
Number of farms	38	40 ^{1/}	109 ^{3/}
Condition of buildings:			
Poor (percent)	26.3	5.0	35.8
Good (percent)	29.0	32.5	16.5
			Tenants
Proportion of farms needing repairs or improvements on dwelling, or on other buildings, or, a new dwelling or additional buildings			76.2 ^{4/}

^{1/} Of a total of 40 field schedules, 4 were not applicable.

^{2/} Of a total of 112 field schedules, 15 were not applicable.

^{3/} Of a total of 112 field schedules, 3 were not applicable.

^{4/} Information was not obtained from 7 of the 109 farms that had service buildings, and three schedules were not applicable.

One hundred percent of the part owners had electricity and electrical refrigeration, and 72.5 percent had baths in their dwellings. A larger percentage of tenants had electricity, electrical refrigeration and electric or gas ranges than did the full owners. However, a considerably lower percentage of the tenants had plumbing facilities than did the full owners.

This condition is to be expected under existing lease arrangements. Although tenants are willing to acquire facilities which they can move from farm to farm, (refrigerators and ranges) they are unwilling to invest in more permanent improvements (water systems and plumbing facilities) when they are uncertain how long they will remain on a given farm and benefit from the use of the improvements.

The data on adequacy of buildings and facilities in Halifax county varied somewhat differently than did the Southampton data (table 6). A greater proportion of full owners in Halifax county had larger dwellings, good buildings, and facilities in their dwellings than did either of the other tenure groups. Similarly, more part owners had larger dwellings, good buildings and facilities than did tenants. Tenant operators may have had a decided disadvantage because of the large proportion of dwellings that were small and that lacked facilities. Forty percent of the tenant houses were rated as small. Only 10.8 percent had running water, and even a smaller percentage (2.3) had a bath in the dwelling.

For both Southampton and Halifax counties, operators who chose to become part owners had a better chance of having adequate buildings

Table 6. Condition and Adequacy of Dwelling and Facilities, of Tobacco Barns, and of Other Farm Buildings, by Tenure of Operator; Proportion of Tenants Indicating Their Willingness to Share in the Cost of Building Improvements Under a Given Leasing Agreement, Halifax County, Virginia, 1955

	Full owners	Part owners	Tenants
Farm dwellings:			
Number of farms	48	52 ^{2/}	130 ^{3/}
Size of dwellings: ^{1/}			
Small (percent)	12.8	19.2	40.8
Large (percent)	40.4	17.3	12.3
Condition of dwellings:			
Poor (percent)	8.3	17.3	34.6
Good (percent)	58.4	40.4	13.9
Facilities in dwellings:			
Electricity (percent)	97.9	94.2	90.0
Running water (percent)	72.9	53.8	10.8
Bath (percent)	45.8	26.9	2.3
Farm service buildings:			
Number of farms	48	52	142 ^{4/}
Condition of tobacco barns:			
Poor (percent)	2.1	3.9	10.6
Good (percent)	50.0	34.6	21.8
Condition of other buildings:			
Poor (percent)	2.1	17.3	19.2
Good (percent)	33.1	26.9	9.2
Machinery shed on farm (percent)	87.5	80.8	58.4
			<u>Tenants</u>
Proportion of farms needing repairs or improvements on dwelling or on other buildings, or, a new dwelling or additional buildings			75.9 ^{5/}
Proportion of tenants willing to pay a separate cash rent for dwelling if landlord would make needed improvements			15.0 ^{6/}
Proportion of tenants willing to share the cost of building improvements if landlord would sign a five-year lease			47.0 ^{7/}
Proportion of tenants willing to share the cost of building improvements if the lease included a clause on payment for unexhausted improvements if the tenant moves from the farm			57.6 ^{8/}

^{1/} Data on size of dwelling are for 47 farms.

^{2/} Of a total of 62 field schedules, 10 were not applicable.

^{3/} Of a total of 142 field schedules, 12 were not applicable.

^{4/} One farm had no service buildings other than tobacco barns.

^{5/} Information was not obtained from 5 of the schedules.

^{6/} Information was not obtained from 17 of the schedules. Twelve schedules were not applicable.

^{7/} Information was not obtained from 25 of the schedules.

^{8/} Information was not obtained from 24 of the schedules.

and facilities than did tenants. No doubt the reluctance of the landlords to provide for building repairs and improvements is one of the reasons for inadequate facilities on tenant farms. Approximately 75 percent of the tenant operators in both counties indicated they needed improvements or repairs on their farm buildings (tables 5 and 6).

It is difficult to determine the efficiency and income that is lost because of inadequate buildings and facilities. However, the extent to which tenants reason they are hampered in their farming operations by inadequate buildings and facilities is further indicated by their replies to questions concerning their willingness to share in the cost of building improvements under given lease arrangements. Fifteen percent of the tenants in Halifax county indicated they would be willing to pay a separate cash rent for dwelling improvements made by the landlord (table 6). When tenants were asked if they would be willing to pay a part of the cost of making improvements to buildings, if the landlord agreed to give them a five-year lease, 47.0 percent replied in the affirmative. In reply to a question on whether tenants would be willing to pay a part of the cost of making improvements to buildings, provided the landlord agreed to refund a proportion of the cost in the event the tenant moved to another farm, 57.6 percent of the tenants replied in the affirmative. Therefore, even though the above practices were uncommon in present lease agreements, a considerable proportion of the operators indicated the need for more adequate buildings and facilities by stating that they were willing to share in the costs of such improvements.

Length of Occupancy by Tenure of Operator

An examination of years on the present farms in 1954 by tenure of operator shows that part owners have been on their farms nearly as long as full owners and considerably longer than tenants. Only 2.7 percent of the part owners in the United States have been on their farms less than one year (table 7). This percentage was slightly higher for the South and for Virginia. On all United States farms, the proportion of full owners residing on their farms one year or less was almost as high as for part owners.

The pattern is similar for the proportion of operators living on their farms less than five years. However, tenant operators comprise the largest proportion of operators living on their farms five years or less. Similarly, a lower proportion of the tenant operators (ranging from 24.6 to 30.2 percent) have lived on their farms longer than five years than have full owners and part owners. Thus, insecurity of occupancy and the shifting of operators is more prevalent among tenants than for either full owners or part owners. These conditions are especially true of tenants in the South since they have a high of 47.8 percent residing on their farms five years or less.

Approximately one half of the tenants have been on their present farms five years or longer. However, since a large portion of all tenants operate under a one-year lease agreement, the fact that they have lived on their farms for long periods does not prove they have had security of occupancy beyond one year in advance.

Table 7. Operators of Commercial Farms in Each Tenure, by Years on Present Farm, with Percent Distribution for the United States and the South, 1954, with Similar Data for All Farms, Virginia

	Operators reporting years on present farms				
	Total	Less than 5 years			
		Total	1 year or less	5 to 9 years	10 or more years
United States:					
Total commercial	3,249,992	679,676	206,863	807,116	1,763,200
Full owners	1,559,704	182,925	40,917	329,958	1,046,821
Part owners	743,691	92,216	19,820	191,340	460,135
All tenants	929,861	397,909	144,150	281,255	250,697
The South:					
Total commercial	1,366,279	347,847	122,248	338,876	679,556
Full owners	575,065	60,728	13,421	121,472	392,865
Part owners	269,946	38,408	9,213	73,833	157,705
All tenants	513,308	245,520	98,650	141,306	126,482
Virginia:					
Total all farms	133,274	23,805	6,953	30,608	78,861
Full owners	92,767	11,220	2,484	19,876	61,671
Part owners	18,815	2,459	591	4,976	11,380
All tenants	21,120	9,903	3,827	5,588	5,629
Percent					
United States:					
Total commercial	100.0	20.9	6.4	24.8	54.3
Full owners	100.0	11.7	2.6	21.2	67.1
Part owners	100.0	12.4	2.7	25.7	61.9
All tenants	100.0	42.8	15.5	30.2	27.0
The South:					
Total commercial	100.0	25.5	8.9	24.8	49.7
Full owners	100.0	10.6	2.3	21.1	68.3
Part owners	100.0	14.2	3.4	27.4	58.4
All tenants	100.0	47.8	19.2	27.5	24.6
Virginia:					
Total all farms	100.0	17.8	5.2	23.0	59.2
Full owners	100.0	12.1	2.7	21.4	66.5
Part owners	100.0	13.2	3.1	26.4	60.4
All tenants	100.0	46.9	18.1	26.5	26.6

Source: U. S. Census of Agriculture, 1954.

The fact that part owners have been on their present farms almost as long as full owners indicates that part owners have had at least a certain measure of success in locating and renting additional land to enlarge their farm units. Part ownership should thus permit operators to contribute much to increased farming efficiency through permitting long-run planning both for the farm business and the farm family.

Characteristics of Lease Agreements of
Southampton and Halifax County Part Owners and Tenants

Data were secured from farm operators on farm leasing provisions in the two counties for farms or farmland leased by landlords to the part owners and tenants in the survey. In both counties, it was not uncommon for an operator to have more than one landlord. Occasionally, an operator had three or more landlords. In the Southampton county sample, the 44 part owners and 112 tenants had an average of slightly more than three landlords for every two operators. The 62 part owners and the 142 tenants in the Halifax county sample had slightly less than three landlords for every two operators. Thus, the totals in tables 8 and 9 are the number of lease agreements in effect on the part-owner and tenant farms in the survey.¹

Length of lease. - By far the largest proportion of lease agreements in Southampton and Halifax counties were either tenancies from year-to-year or one-year leases (tables 8 and 9, respectively). In

¹Lease agreements of both part owners and tenants are included in the discussion since it is assumed that land available for leasing by tenants also is available to part owners.

Table 8. Characteristics of Leasing Agreements of Part Owners and Tenants, Southampton County, 1954

	Part owners		Tenants	
	Number	Percent	Number	Percent
Length of lease:				
Tenancy from year-to-year	58	85.3	165	89.7
One year	5	7.3	8	4.4
Two years	0	0.0	1	0.5
Three years	4	5.9	3	1.6
Five years	1	1.5	4	2.2
One year with privilege of five	0	0.0	2	1.1
One year, tenant option of three years	0	0.0	1	0.5
Total	68	100.0	184	100.0
Is a longer lease preferred?				
Yes	18	26.5	43	26.1
No	46	67.6	124	67.4
No-not with present landlord	4	5.9	10	5.4
Does not know	0	0.0	2	1.1
Total	68	100.0	184	100.0
Type of lease:				
Oral, tenant prefers written	11	16.2	31	16.8
Oral, tenant prefers oral	34	50.0	98	53.3
Written, tenant prefers written	9	13.2	21	11.4
Written understanding-no lease	0	0.0	2	1.1
Oral, written not preferred with present landlord	14	20.6	32	17.4
Total	68	100.0	184	100.0
Termination notice required:				
Three months by law	29	42.6	59	32.1
Two months	0	0.0	2	1.1
Three months	0	0.0	15	8.2
Four months	25	36.8	67	36.4
Five months	3	4.4	16	8.7
Six months	1	1.5	5	2.7
None	0	0.0	1	0.5
Tenancy for years ✓	10	14.7	19	10.3
Total	68	100.0	184	100.0
Termination notice preferred:				
Satisfied with present agreement	53	78.0	138	75.0
Three months	1	1.5	8	4.4
Four months	2	2.9	5	2.7
Five months	0	0.0	1	0.5
Six months	2	2.9	12	6.5
Unknown	0	0.0	1	0.5
Tenancy for years ✓	10	14.5	19	10.4
Total	68	100.0	184	100.0

✓ Although a tenancy for years requires no termination notice, the number of leases that had this provision is included to make the total equal 100.

Table 9. Characteristics of Leasing Agreements of Part Owners and Tenants, Halifax County, 1955

	Part owners		Tenants	
	Number	Percent	Number	Percent
Length of lease:				
Tenancy from-year-to-year	55	68.8	175	88.4
One year	21	26.2	18	9.1
Two year	2	2.5	2	1.0
Five year	2	2.5	3	1.5
Total	80	100.0	198	100.0
Is a longer lease preferred?				
Yes	19	23.8	31	15.7
No	61	76.2	162	81.8
Not with present owner	0	0.0	5	2.5
Total	80	100.0	198	100.0
Type of lease:				
Oral, tenant prefers written	22	27.5	32	16.2
Oral, tenant prefers oral	54	67.5	161	81.3
Written, tenant prefers written	4	5.0	5	2.5
Total	80	100.0	198	100.0
Termination notice required:				
Three months by law	14	17.5	22	11.1
One month	1	1.2	3	1.5
Two months	0	0.0	1	0.5
Three months	0	0.0	2	1.0
Four months	2	2.5	2	1.0
Five months	7	8.8	18	9.1
Six months	29	36.3	122	61.6
Seven months	0	0.0	4	2.1
Nine months	2	2.5	1	0.5
Tenancy for years ✓	25	31.2	23	11.6
Total	80	100.0	198	100.0
Termination notice preferred:				
One month	1	1.2	3	1.5
Two months	0	0.0	1	0.5
Three months	12	15.0	13	6.6
Four months	2	2.5	3	1.5
Five months	2	2.5	2	1.0
Six months	36	45.0	151	76.3
Seven months	0	0.0	1	0.5
Nine months	2	2.5	1	0.5
Tenancy for years ✓	25	31.3	23	11.6
Total	80	100.0	198	100.0

✓ Although a tenancy for years requires no termination notice, the number of leases that had this provision is included to make the total equal 100.

Southampton county, 7.4 percent of the part-owner leases and 5.9 percent of the tenant leases were for periods longer than one year. In Halifax county, only 5 percent of the part-owner leases and 2.5 percent of the tenant leases were for periods longer than one year. Therefore, approximately 95 percent of the leases did not permit security of occupancy for more than one year in advance.

When operators were asked whether they preferred longer leases than they had presently, slightly more than one fourth of the replies for part-owner and tenant leases were in the affirmative. Part owners in Halifax county preferred longer leases for 23.8 percent of the agreements, while tenants expressed the desire that only 15.7 percent of their leases be made longer. Logically, tenants would be expected to be more concerned about the length of their leases than part owners, since the straight tenant does not have the element of security of occupancy which the part owner has.

When the operators in the survey indicated they preferred a longer lease, they were asked to give their reasons. The most frequent reason which the operators gave was that a longer lease would permit them to plan ahead for their farm operations or for some specific project, such as clearing land or erecting fences. Others replied that with a longer lease they would know farther ahead where they would be located. Still others expressed the desire for a longer lease because they had what they considered to be a good farm, or one with an adequate peanut or tobacco acreage allotment, depending upon the county in which they were located. When operators were asked whether they preferred longer

leases, occasionally they answered no, voluntarily stating that they did not want to commit themselves for longer than one year, since they would want to move if they found a "better" farm.

Type of lease. - A large proportion of the leases in both Southampton and Halifax counties were oral agreements. Part owners in Southampton county had 13.2 percent of their leases written while the proportion of tenant leases written was 11.4 percent (table 8). In Halifax county, the proportion of leases in writing was only 5.0 percent for part owners and 2.5 percent for tenants (table 9). However, part owners who had oral leases, that comprised 27.5 percent of the total leases, said that they preferred written leases. This percentage was considerably higher than for part owners in Southampton county. The remaining part owners in Halifax county with oral leases, that comprised 67.5 percent of the total leases, indicated that they preferred oral leases. The corresponding percentage for tenants in Halifax county was 81.3. In Southampton county, the part owners and tenants, with 50.0 percent and 53.3 percent, respectively, of the oral leases, indicated they preferred oral leases.

Data enumerated in Southampton county show that part owners who had 20.6 percent of the oral leases and tenants who had 17.4 percent of the oral leases did not prefer written leases with their present landlord. Thus, a particular landlord-tenant relationship had considerable influence on operator's preferences for written leases.

Termination notices required and termination notices preferred by part owners and tenants. - An examination of termination notices

required and of operator's preferences relative to termination notices may show more clearly the greater concern of tenant operators over the uncertainty of lease arrangements. If the leases that are tenancy for years arrangements are disregarded for the Southampton county data, 42.6 percent of the part-owner leases and 32.1 percent of the tenant leases had the legal termination notice of three months. The next most prevalent termination notice was the notice for four months which applied to approximately 36 percent of the leases in force. Tenants had a larger proportion of leases with termination notices longer than four months than did part owners.

Southampton county operators indicated they were satisfied with approximately 75.0 percent of the termination notices in their present leases. Although relatively few operators expressed the desire for a change in their termination notices, tenants did so more frequently than part owners. For example, there was a total of 2.7 percent of tenant's lease agreements that required a termination notice of six months. However, tenant operators indicated they preferred a notice of six months in 6.5 percent of their leases, or more than double the proportion of six months' notices that they presently had.

Termination notices required and preferred by operators in Halifax county show a somewhat different pattern. Again, if the leases with the tenancy for years provision are excluded, the larger proportion of the remaining leases fall into three categories. The most prevalent termination notice in Halifax county was the notice for six months. This provision was found in 36.3 percent of the part-owner

leases and in 61.6 percent of the tenant leases. The second most frequent notice required was the legal notice of three months. Part owners and tenants indicated they preferred termination notices of six months for 45.0 percent and 76.3 percent, respectively, of their leases. These proportions were considerably above the proportion of notices of six months which they had under their existing agreements. Moreover, the proportion of tenants preferring notices of six months was 31.3 percent higher than for part owners.

The fact that operators who rent land do recognize the insecurity of occupancy is supported by the proportion of operators that desire termination notices longer than those provided for in their present leases. Since tenant operators must depend solely upon rented land, they would be expected to be more concerned about having longer termination notices than would be part owners. This statement is supported also by the data in tables 8 and 9.

Compensation for unexhausted improvements. - The condition of insecurity of occupancy under existing lease agreements in Southampton and Halifax counties was made more severe because of the small number of operators who received compensation for unexhausted improvements in the event that they moved to another farm. A tabulation of the Southampton and Halifax data revealed that none of the operators in Southampton county, and only a few of the operators in Halifax county, would receive compensation. Operators in both counties were asked whether the landlord would compensate them for specific items, or improvements such as fertilizer and lime left in the land, cover crops

sown, small grain and pasture seedings, fencing, and dwelling and building repairs. A total of 197 part owners and tenants in Halifax county indicated that only nine of their lease agreements provided for compensation for unexhausted improvements. Eight of the nine leases provided only for the removal of fencing or payment to the operator for its value by the landlord or incoming tenant. The remaining operator, a one-fourth share tenant, indicated he would be reimbursed for three fourths of the seed for small grains, corn crops, and pasture seedings. Therefore, the majority of operators in these counties had little incentive to apply inputs from which they could not recover all or a large portion of the return during the length of their leases.

Types of lease agreements and provisions doubtless are influenced strongly by leasing customs that have been in effect over a long period of years. Also, it is safe to assume that the data enumerated from operators were influenced by the operator's anticipation of his landlord's views and willingness to accept various lease provisions and adjustments.

Analysis of Part Owners

Theoretical Advantages and Disadvantages

Historically, some writers have mentioned possible advantages of part ownership over other tenure types. Other writers have pointed out that important disadvantages exist for part ownership, especially under imperfect leasing systems.

Some writers in the early 1920's looked upon part ownership as a rung in the agricultural ladder leading to full ownership. They recognized the unsoundness of purchasing a farm without having adequate operating capital, or of purchasing a small farm, merely for the sake of becoming a full owner, unless the owner planned to rent additional land.¹

Goldenweiser and Truesdell suggest that part ownership can be a means of improving the financial position of an operator. Moreover, the authors maintain that even though the part owner may not be as concerned about the management of the rented land as he is of the land he owns, . . . "he will surely take better care of it than would a tenant who expected to use it for a single year only."²

More recently, some authorities have been critical of part ownership as a type of tenure. They point out that the part owner will apply scarce inputs in a more favorable manner on his own land than he will on the rented portion. Moreover, the contention is that the part owner will feed his share of the crops from the rented land to livestock on his own farm, and spread the manure on his land, thus effecting a transfer of fertility from the rented land. The part owner may also give priority to the cultivating and harvesting of crops on his land.³

¹For example, see Gray, et al., op. cit., p. 553.

²Goldenweiser and Truesdell, op. cit., p. 31.

³Heady, op. cit., pp. 610-611.

The above conditions have their roots largely in imperfect share-leasing systems and not in part ownership as a type of tenure. In the foregoing analysis, the assumption is made that the cost of resources applied to the rented land is shared between the landlord and tenant in a manner different from the sharing of the farm products. At least one writer also reasons that under a cash lease, the part owner still is faced with greater uncertainty than he is on his own land, assuming a fixed cash rent with no provisions for unfavorable prices and weather.¹ Again, the distortion of inputs on the owned and rented land has its roots in condition of uncertainty, and in the lack of flexibility in lease arrangements, and not in a specific type of tenure. Thus, the more severe objections to part ownership can be overcome if operators and landlords are willing to incorporate into their lease agreements adjustments necessary to eliminate existing imperfections in their leases.

Length of Time Used to Accumulate Equity
for Efficient Size Full-Owner and Part-Owner Farms

Empirical data are not available on the number of years used to accumulate the equity required for specified types and sizes of farms when the alternatives are full ownership or part ownership of the farm real estate. Some studies of the rate of capital accumulation by the amount of starting equity have been conducted.² However, for a complete

¹Ottoson, *op. cit.*, pp. 1348; 1350-1351.

²For example, see Arnold, *op. cit.*

analysis of the amount of starting equity required, additional data are needed to determine the number of operators who gave up farming because of inadequate capital.

Schultz has presented an analysis of the amount of starting equity and capital needed for full owners compared with tenants.¹ Research work of this type has pointed out the possibility of renting all the farm real estate as a means of acquiring control of an efficient-size farm with a lower starting equity. Such an analysis can be extended readily to a comparison of the starting equity required for full ownership and part ownership of a farm business, under normal or existing credit facilities.

Once capital requirements and operator equity have been established, data from the Census and from other published sources can be useful in estimating the time required to accumulate a given equity. An examination of the relation of age of operators to net worth, and to value of real estate, the ages of full owners and tenants, and the proportion of full owners and tenants in size-of-farm groups can be used to aid in the determination of length of time used for capital accumulation. Likewise, the relation of net worth of operators to the size of their operation and to the amount of their indebtedness provides estimates of the equity of operators on the average, and of the amount of indebtedness they are willing to assume with a given net worth. Such data provide only an indication of the time required for the

¹Schultz, *op. cit.*, see especially pp. 309-317.

accumulation of equity, assuming specified amounts of family assistance and a constant return from resources invested in agriculture.

Comparison of the amount of equity required for full owners and part owners. - From the discussion of capital requirements in a previous section of this analysis, one can see that investment per farm varies widely for given farming types and regions. Appendix C, table 2, shows farm investment by type of investment for selected commercial family-operated farms. The amount of capital required for full ownership of the real estate is compared with the amount required for part owners who rent one third or one half of their real estate capital.¹ Average investment for these farms for 1955 and 1956 varies from \$60,710 for hog-beef raising farms in the Corn Belt, to \$9,570 for peanut-cotton farms in the Southern Coastal Plains. A summary of the net worths required for full owners and part owners of these farm types is shown in table 10. The largest differences in net worth required by tenure of operator are in the Southern part of the United States. This condition exists because a higher proportion of the total investment is in real estate than is true for some other areas. For example, non-real estate capital used on dairy farms in the Central Northeast comprises approximately 45 percent of the total investment. On tobacco-cotton farms (large) in the Coastal Plain North Carolina region, non-

¹Similar data in appendix C, table 1, show the amounts of resources and net worths needed for specified operator earnings for selected farm types for full owners and part owners. These data, discussed in the section on "Resources Needed to Obtain Specific Levels of Income," are also applicable to the analysis that follows.

Table 10. Required Net Worth Needed to Acquire Full Ownership and Part Ownership of Specified Types of Commercial Farms^{1/}

Farm type	Part owners				
	Full owners Net worth required	One third of real estate rented		One half of real estate rented	
		Net worth required	Net worth required over part owners	Net worth required for full owners	Net worth required over part owners
Dairy, Central Northeast	\$12,873	\$10,223	\$2,650	\$8,898	\$3,975
Hog-beef raising, Corn Belt	17,498	13,594	3,904	11,642	5,856
Hog-beef fattening, Corn Belt	27,353	20,955	6,398	17,756	9,597
Tobacco-livestock, Kentucky Bluegrass	10,888	7,706	3,182	6,116	4,772
Tobacco-cotton (large), Coastal Plain N. C.	15,348	10,206	5,142	7,635	7,713
Peanut-cotton, Southern Coastal Plains	3,748	2,627	1,121	2,067	1,681

^{1/} In computing the required net worths, the assumed amounts borrowable were one half of the investment in land and buildings, non-real estate (excluding crops for sale, feed and seed), and operating expenses.

Sources: Compiled from table 2, appendix C.

real estate capital used amounted to only 19 percent of the total investment.

These two farm types had the greatest percentage differences in net worth requirements between full owners and part owners. The amount of net worth required for full-owner dairy farms in the Central Northeast was 26 percent greater than for part owners who rented one third of their real estate, and 45 percent greater than for part owners who rented one half of their real estate. Corresponding net worth required for full owners on tobacco-cotton farms (large) in the Coastal Plains, North Carolina region was 50 percent and 101 percent greater, respectively, than the part-owner units.

If the assumption is made that the part owner enters into a share-lease agreement, normally he would rent a considerable portion of his operating capital, and livestock capital in those areas where the raising of livestock is one of the major enterprises. Thus, the amount of net worth needed, as shown in table 10, would be reduced somewhat by the portion of the non-real estate capital furnished by the landlord.

After lengthy periods spent in accumulating capital, operators often are tempted to invest in a farm that is smaller in size than they have rented as tenants. Or, the purchase of a farm may require such a large down payment that the operator has little available capital for operating requirements. If the operator considers the alternative of part ownership and the adjustments which can be made over his life span, he may find that becoming a part owner enables him to

allocate more effectively his relatively fixed resources for a given period in his life span with his available capital. Furnishing information to farm operators on the length of time used to accumulate a given equity should further aid them in choosing the tenure type best suited to the obtaining of their desired goals.

Relation of age to equity in real estate, and to net worth of operators. - Data showing the equity in real estate, and net worth of operators by age are useful in indicating the amount of capital an operator of a given age can expect to accumulate. Similarly, data showing the amount of farm mortgage debt and the ratio of debt to value by age of operator indicate the amount and percent of indebtedness that mortgaged operators of a given age are willing to assume.

In 1956, approximately one third of all full-owner farms in the United States were mortgaged. Almost 55 percent of the farm mortgages were held by operators in the two middle-age groups--35 to 44 years, and 45 to 54 years (table 11). As age of operators increased, farm size, value of land and buildings, and equity in land and buildings also increased for each age group up to 65 years and over. The above characteristics decreased for the latter group of operators. The amount of mortgage debt per farm and the ratio of debt to value decreased for each of the successively older age groups.

Characteristics of mortgaged farms in the South Atlantic varied somewhat more than did the averages for the United States (table 11). Slightly over one fourth of the full-owner farms in the South Atlantic were mortgaged in 1956. Although value of land and buildings increased

Table 11. Number and Characteristics of Mortgaged Full-Owner Farms by Age of Operator, United States and South Atlantic, 1956

Number, size and value of farms, mortgage debt, and percent mortgaged	Age of operator							Age not reported
	Total number	Under 35 years	35 to 44 years	45 to 54 years	55 to 64 years	65 years and over		
United States:								
Number of farms	2,744,708	221,131	523,422	674,104	672,646	612,715	40,690	
Number of mortgaged farms	909,239	125,578	253,138	244,704	177,520	95,584	12,715	
Percent distributed	100.0	13.8	27.8	26.9	19.5	10.5	1.4	
Size of mortgaged farms (acres)	164.0	122.3	151.0	164.4	194.2	169.8	360.9	
Value of land and buildings per farm (dollars)	19,385	15,311	18,191	20,265	21,011	17,896	54,956	
Amount of mortgage debt per farm (dollars)	5,191	5,866	5,694	5,092	4,569	3,646	10,720	
Equity in land and buildings (dollars)	14,194	9,445	12,497	15,173	16,442	14,250	44,236	
Ratio of debt to value (percent)	26.8	38.3	31.3	25.1	21.7	20.4	19.5	
South Atlantic: ✓								
Number of farms	497,734	43,487	97,205	122,472	119,005	106,598	8,967	
Number of mortgaged farms	128,398	17,957	35,896	35,322	25,957	11,192	2,074	
Percent mortgaged	100.0	14.0	28.0	27.5	20.2	8.7	1.6	
Size of mortgaged farms (acres)	128.7	79.5	115.9	134.5	165.2	118.9	272.5	
Value of land and buildings per farm (dollars)	16,142	10,820	14,750	14,955	17,024	22,465	61,331	
Amount of mortgage debt per farm (dollars)	3,960	3,904	4,393	3,569	3,530	3,956	9,031	
Equity in land and buildings (dollars)	12,182	6,916	10,357	11,386	13,494	18,509	52,280	
Ratio of debt to value (percent)	24.5	36.1	30.0	23.9	20.7	17.6	14.7	

✓ South Atlantic Region includes Del., Md., Va., W. Va., N. C., S. C., Ga., and Fla.

Source: U. S. Census of Agriculture, 1954.

for each successive age group, the number of acres per mortgaged farm decreased considerably for operators 65 years of age and over. The ratio of debt to value decreased for each successive age group, while the equity in land and buildings increased as age of operator increased. Mortgage debt per farm was slightly higher for the group 65 years of age and over than the average for operators under 35 years of age.

Commercial farm full owners in Virginia, in mid-1949, had, on the average, a low ratio of debt to net worth (table 12). Net worth per operator rose steadily for the first three age groups and dropped sharply for operators 70 years of age or older. This condition would be expected because of the wide range in the age group classifications.

The above data have significance when they are related to the net worth and capital required for present-day farms. Mortgaged full owners in the United States under 35 years of age had an average equity in land and buildings of \$9,445 (table 11). Full owners in the same age group in the South Atlantic had an average of \$6,916 equity in land and buildings. Commercial full owners in Virginia had considerably more net worth than all operators in the South Atlantic, after allowing for equity in non-real estate on the South Atlantic farms.¹ These amounts do not appear to be significantly less than the required net worths for several of the farm types in appendix C, table 2, after allowance is made for the addition of equity in non-real estate capital.

¹The net worth of Virginia commercial full owners would be considerably larger if the dollar values were in terms of values for more recent years.

Table 12. Average Net Worth, Debt and Ratio of Debt to Net Worth of Commercial Farm Full Owners by Age of Operator, Virginia, Mid-1949

<u>Age of operator</u>	<u>Net Worth¹/ Dollars</u>	<u>Total debts Dollars</u>	<u>Ratio to net worth Percent</u>
Under 30 years	14,867	2,363	15.9
30 to 49 years	16,688	2,132	12.8
50 to 69 years	20,342	974	4.8
70 years or older	15,139	425	2.8

¹/ Includes liquid financial reserves.

Source: Compiled from Garlock, et al., Financial Structure of Virginia Agriculture (see source note to table 3).

However, the assumption made in computing the net worth required for the farm types in table 10 is that the full owner will be able to borrow at least 50 percent of his total capital requirements. The fact that the average full owner either is unwilling or unable to assume 50 percent or greater indebtedness is indicated by the ratio of debt to value in table 11. The highest ratios of debt to value are 38.3 for United States mortgaged full owners under 35 years of age, and 36.1 for the same age group in the South Atlantic. Commercial full owners under 30 years of age in Virginia have a much lower ratio of debt to net worth--only 15.9 percent (table 12). Therefore, if prospective full owners are unwilling to assume the risk of equities lower than the averages for the three areas discussed, they will in many instances have insufficient capital to purchase and operate a commercial family farm as an efficient producing unit. This statement is particularly true of the operators in the younger age groups.

Age of tenant operators in relation to other operators. - One of the noticeable characteristics of farm operators over time is the fact that a relatively large proportion of young operators are tenants. As these operators become older, they shift either to part ownership or full ownership of their farms. This characteristic is true for operators in both the United States and in Virginia (tables 13 and 14, respectively). The proportion of operators within the tenure classes and age groups doubtless is affected by a number of factors such as changes in technology, alternatives for off-farm employment, world conditions, and the level of prices for farm products and for all

Table 13. Number and Percentage of Operators by Age and Tenure, United States, for Specified Years

Tenure and year	Total operators reporting						65 years or older
	Under 25 years	25-34 years	35-44 years	45-54 years	55-64 years	65 years or older	
All tenures:							
1910	6,339,476	1,413,876	1,571,469	1,432,707	947,524	554,570	
1930	6,073,523	1,049,052	1,452,425	1,459,959	1,064,034	676,374	
1954	4,695,569	619,984	1,100,458	1,153,679	951,310	779,232	
Full owners:							
1910	3,342,361	78,130	490,008	880,140	663,107	442,161	
1930	2,808,122	37,395	250,764	747,751	678,233	517,134	
1954	2,702,655	17,810	221,500	664,354	652,602	624,928	
Part owners:							
1910	592,607	19,560	130,953	156,353	78,507	26,190	
1930	638,997	9,861	84,025	194,878	115,628	45,425	
1954	859,435	8,404	108,916	246,036	166,949	80,440	
All tenants:							
1910	2,347,662	316,820	777,215	384,490	200,070	83,669	
1930	2,575,355	321,641	703,080	504,990	263,129	110,808	
1954	1,114,293	64,042	286,111	238,418	128,889	72,522	

Table 13. Number and Percentage of Operators by Age and Tenure, United States, for Specified Years
(continued)

Tenure and year	Total oper- ators repor- ting age	Under 25 years					Percent				
		25 years	25-34 years	35-44 years	45-54 years	55-64 years	65 years or older				
All tenures:											
1910	100.0	6.6	22.3	24.8	22.6	14.9	8.7				
1930	100.0	6.1	17.3	23.9	24.0	17.5	11.1				
1954	100.0	1.9	13.2	23.4	24.6	20.3	16.6				
Full owners:											
1910	52.7	18.6	34.7	50.2	61.4	70.0	79.7				
1930	46.2	10.1	23.9	39.7	51.2	63.7	76.5				
1954	57.6	19.6	35.7	47.4	57.6	68.6	80.2				
Part owners:											
1910	9.3	4.7	9.3	11.5	10.9	8.3	4.7				
1930	10.5	2.7	6.0	13.0	13.3	10.9	6.7				
1954	18.3	9.2	17.6	22.6	21.3	17.5	10.3				
All tenants:											
1910	37.0	75.6	55.0	37.3	26.8	21.1	15.1				
1930	42.4	86.5	67.0	46.3	34.6	24.7	16.4				
1954	23.7	70.5	46.1	29.5	20.7	13.5	9.3				

✓ Percent by tenure for the given years will not add to 100 because managers are excluded.

Source: U. S. Census of Agriculture.

Table 14. Number and Percentage of Operators by Age and Tenure, Virginia, for Specified Years

Tenure and Year	Total oper- ators report- ing age	Number					65 years or older
		Under 25 years	25-34 years	35-44 years	45-54 years	55-64 years	
All							
tenures:							
1910	183,702	8,005	34,669	45,295	43,193	31,981	20,559
1930	165,603	7,041	21,826	37,022	42,406	33,168	24,140
1954	133,979	2,995	14,118	28,351	32,391	28,943	28,081
Full							
owners:							
1910	117,814	2,421	16,679	27,845	29,908	24,100	16,861
1930	102,186	1,439	8,608	20,338	27,294	24,405	20,102
1954	93,316	552	7,139	16,734	22,641	22,144	24,106
Part							
owners:							
1910	15,667	412	2,950	4,583	4,094	2,614	1,014
1930	15,803	228	1,639	4,155	5,084	3,297	1,400
1954	18,933	181	2,328	5,085	4,939	4,094	2,306
All							
tenants:							
1910	48,620	5,057	14,586	12,398	8,897	5,105	2,977
1930	46,144	5,298	11,296	12,105	9,687	5,213	2,545
1954	21,155	1,345	4,554	6,349	4,049	2,628	1,630

Table 14. Number and Percentage of Operators by Age and Tenure, Virginia, for Specified Years (continued)

Tenure and year	Total operators reporting age	Percent ²					65 years or older
		Under 25 years	25-34 years	35-44 years	45-54 years	55-64 years	
All tenures:							
1910	100.0	4.4	18.9	24.7	23.5	17.4	11.2
1930	100.0	4.3	13.2	22.4	25.6	20.0	14.6
1954	100.0	1.6	10.5	21.2	24.2	21.6	21.0
Full owners:							
1910	64.1	30.2	48.1	61.5	69.2	75.4	82.0
1930	61.7	20.4	39.4	54.9	64.4	73.6	83.3
1954	69.0	26.3	50.6	59.0	69.9	76.5	83.8
Part owners:							
1910	8.5	5.1	8.5	10.1	9.5	8.2	4.9
1930	9.5	3.2	7.5	11.2	12.0	9.9	5.8
1954	14.1	8.6	16.5	17.9	15.2	14.1	8.2
All tenants:							
1910	26.5	63.2	42.1	27.4	20.6	16.0	12.5
1930	27.9	75.2	51.8	32.7	22.8	15.7	10.5
1954	15.8	64.2	32.3	22.4	14.4	9.1	5.8

¹ Number of operators for 1910 was calculated by using the percentages (by tenure) of total operators.

² Percent by tenure for the given years will not add to 100 because managers are excluded.

Source: U. S. Census of Agriculture.

products. For example, the level of prices received by farmers during and following World War II enabled many operators to purchase farms and to eliminate or substantially reduce their indebtedness in a relatively short period. Thus, when tenant operators have accumulated capital at a comparatively rapid rate, they may decide to purchase a farm and become a full owner or a part owner. The fact that such a change actually took place is evidenced by the increase in the proportion of full owners in the various age groups from 1930 to 1954.

In 1954, after United States operators reached the 35 to 44 years-of-age group, the reduction in the proportion of tenancy was much less pronounced (table 13). Tenants comprised approximately 71 percent of the operators under 25 years of age. However, the proportion of tenants in the 35 to 44 years-of-age group dropped sharply to 29.5 percent. The largest reduction in the proportion of Virginia tenant operators in 1954 took place between the two younger age groups (table 14). Approximately 64 percent of the operators under 25 years of age were tenants. The proportion of tenants in the 25 to 34 years-of-age group dropped to 32.3 percent. This decrease was considerably greater than for United States operators for the same age groups. However, the decline in the proportion of tenants in the remaining age groups for Virginia was somewhat less than for the corresponding age groups for United States operators.

It is evident that land ownership is still one of the primary objectives of the American farmer. The proportion of tenancy for United States farms in the two age groups under 35 indicates that a considerable number of operators under this age are prevented from achieving

the objective of landownership. Certainly, the lack of capital is one of the major reasons for the large proportion of tenancy in the younger age groups. Virginia operators moved from tenancy at an earlier age than did all operators in the United States. For this reason, it would appear that they are somewhat less hampered in moving from tenancy to ownership than are all United States operators. The marked increase in the proportion of part owners in 1954 over the earlier periods for both the United States and Virginia (tables 13 and 14) indicates that more operators are beginning to realize the advantages of part ownership. Since the average farm is requiring increasingly larger capital outlays, some tenant operators, under existing tenure arrangements, may be no longer willing to invest large sums on land over which they have control for relatively short periods.

Relation of net worth of operator and equity in land and buildings to size of farm. - In 1956, commercial full-owner farms in both the United States and the South Atlantic had larger capital outlays for the larger farms (table 15). The amount of equity in land and buildings likewise decreased as farms became smaller. However, the percentage of equity was highest (or, a lower ratio of debt to value) for class I farms. The percentage equity decreased from class II farms through class IV farms for both areas, and again increased for the smaller classes V and VI. All classes of farms in the South Atlantic consistently had higher equities than did operators for all of the United States. For this reason, the amount of equity in land and buildings on South Atlantic farms was more nearly equal that for United States farms.

Table 15. Number and Characteristics of Commercial Mortgaged Full-Owner Farms by Economic Class of Farm, United States and South Atlantic, 1956

Number, size, and value of farms, mortgage debt and percent mortgaged United States:	Economic class of farm ^{1/}						
	All com-mercial	Class I	Class II	Class III	Class IV	Class V	Class VI
Number of mortgaged farms	602,756	22,383	73,803	137,351	158,612	148,861	61,746
Percent distribution	66.5	2.5	8.1	15.1	17.4	16.4	6.8
Size of mortgaged farms (acres)	217.1	686.2	389.6	228.5	179.1	132.4	117.3
Value of land and buildings per farm (dollars)	24,332	97,253	45,747	27,114	18,296	12,821	9,275
Amount of mortgage debt per farm (dollars)	6,376	21,293	11,183	7,575	5,181	3,603	2,314
Equity in land and buildings (dollars)	17,956	75,960	34,564	19,539	13,115	9,218	6,961
Ratio of debt to value (percent)	26.2	21.9	24.4	27.9	28.3	28.1	24.9
South Atlantic: ^{2/}							
Number of mortgaged farms	69,897	2,265	6,120	12,041	18,910	19,925	10,636
Percent distribution	54.4	1.8	4.8	9.4	14.7	15.5	8.3
Size of mortgaged farms (acres)	183.6	686.2	370.8	214.1	167.9	118.3	84.9
Value of land and buildings per farm (dollars)	21,637	138,152	41,805	26,581	14,961	12,409	8,781
Amount of mortgage debt per farm (dollars)	5,196	26,618	10,487	7,041	4,080	2,822	1,933
Equity in land and buildings (dollars)	16,441	111,534	31,318	19,540	10,881	9,587	6,848
Ratio of debt to value (percent)	24.0	19.3	25.1	26.5	27.3	22.7	22.0

^{1/} For criteria for the economic classes, see appendix B, table 1.

^{2/} South Atlantic region includes Del., Md., Va., W. Va., N. C., S. C., Ga., and Fla.

Source: U. S. Census of Agriculture, 1954.

Average net worth in mid-1949 for Virginia commercial farm operators by type of farm is shown in table 16. Net worth varied considerably by type of farm as well as for the three sizes of farms as measured by gross cash receipts. A significant fact is that as farms grew larger, net worth also increased substantially for both commercial A and B operators.

Although the data in tables 15 and 16 do not show the amount of net worth required, they do show the average position of established operators. Moreover, these data show that the amount of net worth required of a commercial operator who is willing to borrow approximately 50 percent of his capital is considerably less than the average net worths of commercial farm operators.

Relation of net worth of operator and value of farms to amount of loans and debts outstanding at commercial banks. - On January 1, 1957, commercial banks held approximately 13 percent of the outstanding farm mortgage debt in the country. All operating banks held about 72 percent of the non-real estate farm debt.¹ Table 17 shows the average size of debt by net worth for operators with and without real estate loans at commercial banks. As net worth increased, both the size of real estate and non-real estate debts increased. Thirty-nine percent of the real estate loans were in the \$10,000 to \$24,999 net worth class. The largest proportion of non-real estate loans was

¹Estimates are from The Balance Sheet of Agriculture, 1957. Operating banks include national and state commercial, mutual and stock savings, and private banks.

Table 16. Average Net Worth of Commercial Farm Operators, by Specified Amounts of Gross Cash Farm Receipts, and by Type of Commercial Farm, Virginia, Mid-1949

Gross cash farm receipts	All commercial operators					
	Type of farm					
	Live-stock Dollars	Dairy Dollars	Tobacco Dollars	Peanut Dollars	Other Dollars	All Dollars
\$250 - \$2,499	13,645	10,089	6,066	4,261	8,197	8,313
2,500 - 9,999	31,032	22,223	12,914	8,768	19,431	17,916
10,000 or more	89,690	53,282	47,950	13,800	55,386	63,022
All amounts	24,485	17,857	7,825	6,512	13,272	14,580
Commercial A operators ^{1/}						
\$250 - \$2,499	11,811	9,954	5,616	3,481	7,324	7,379
2,500 - 9,999	26,430	18,391	11,220	8,544	18,083	15,363
10,000 or more	99,164	46,489	24,800	13,800	53,780	61,684
All amounts	21,955	16,784	6,666	6,270	12,894	12,404
Commercial B operators ^{2/}						
\$250 - \$2,499	19,008	10,458	9,311	7,714	11,014	12,139
2,500 - 9,999	42,867	27,862	20,276	12,500	26,079	28,162
10,000 or more	67,583	83,850	55,667	2/	59,400	66,542
All amounts	32,113	20,233	13,469	8,419	14,385	22,051

^{1/} For a definition of commercial A and B operators, see table 2, n. 1.

^{2/} No commercial B operators in this class.

Source: Compiled from Carlock, et al., Financial Structure of Virginia Agriculture (see source note to table 3).

Table 17. Farm Borrowers and Average Amount of Bank Debt by Net Worth for All Federal Reserve Districts, June 30, 1956

<u>Net worth of borrower</u>	<u>Borrowers with loans to buy farm land</u>		<u>Borrowers without loans to buy farm land</u>	
	<u>Per-</u> <u>centage</u> <u>distri-</u> <u>bution</u>	<u>Average</u> <u>size</u> <u>of</u> <u>debt</u>	<u>Per-</u> <u>centage</u> <u>distri-</u> <u>bution</u>	<u>Average</u> <u>size</u> <u>of</u> <u>debt</u>
	<u>Percent</u>	<u>Dollars</u>	<u>Percent</u>	<u>Dollars</u>
All net worths	100	5,320	100	1,920
Under \$3,000	4	1,387	14	511
\$3,000-\$9,999	30	2,570	33	1,016
\$10,000-\$24,999	39	4,388	30	1,763
\$25,000-\$99,999	22	7,878	16	3,746
\$100,000 and over	3	29,092	2	14,816
Not reported ^{1/}	2	5,668	5	843

^{1/} For purchased where the bank did not know the characteristics of the borrower, data on net worth were not required.

Source: Partially reproduced from "Loans to Buy Farm Real Estate", Farm Loans at Commercial Banks. Issued by the Board of Governors of the Federal Reserve System (1957).

divided fairly equally between operators in the \$3,000 to \$9,999, and the \$10,000 to \$24,999 groups.

The average size of loans by Federal Reserve districts and by value of farm is shown in table 18. Real estate loans were smallest in the Atlanta and Minneapolis districts and largest in the San Francisco district. The ratio of loan to farm value varied considerably among the districts. Loans in the Dallas and Minneapolis districts amounted to only 13 percent of the farm value, while the ratio of loan to farm value in the Boston district was 41. The Richmond district with a ratio of 33 was considerably above the average ratio of 20 for all districts.

The average ratio of loan to farm value for all districts is somewhat lower than the ratios for mortgaged farms in tables 11 and 15. This condition is to be expected since commercial banks normally are considered more conservative in their lending policies than some of the other lending institutions. These data again support the premise that operators borrow less than 50 percent of their net worths. Moreover, operators who borrow from commercial banks have relatively large net worths compared with the size of their loans.

Length of time required to accumulate capital on farms in Culpeper and Orange counties, Virginia. - A study of beginning investments, the rate of capital accumulation, and other characteristics of owner-operator farms in Culpeper and Orange counties, Virginia, points out

Table 18. Original Average Size of Loans Related to Average Value of All Farms by Federal Reserve District^{1/}

<u>Federal reserve district</u>	<u>Value per farm^{2/}</u> <u>Dollars</u>	<u>Size of farm real estate loans from January 1 to June 30, 1956^{3/}</u> <u>Dollars</u>	<u>Ratio of loan to farm value</u> <u>Percent</u>
All districts	21,500	4,300	20
Boston	16,000	6,600	41
New York	18,000	4,000	22
Philadelphia	18,000	6,100	34
Cleveland	18,000	4,500	25
Richmond	10,000	3,300	33
Atlanta	11,000	2,900	26
Chicago	30,000	5,400	18
St. Louis	12,000	3,400	28
Minneapolis	24,000	3,000	13
Kansas City	31,000	5,000	16
Dallas	30,000	3,900	13
San Francisco	52,000	10,900	21

^{1/} Loans to buy farm real estate outstanding at insured commercial banks, June 30, 1956.

^{2/} Estimated from U. S. Department of Agriculture data for March 1, 1956.

^{3/} Size when originally made or (if renewed) when last renewed.

Source: See source note to table 17.

the many factors that influence capital accumulation.¹ These farms were primarily two types--beef and dairy--with poultry as a minor source of income. Usable schedules were obtained from 160 owners who, on the average, had acquired their farms 12 years prior to 1951; no farms were included that were acquired before 1923. Of the 160 operators, a total of 60 acquired their farms without family assistance. These 60 operators had an average beginning equity of 52 percent. By 1951, average equity had increased to 84 percent (table 19). Average total investment at the beginning of operation was \$6,529. Investment more than doubled by 1951 with an average of \$14,012. Thus, operators were able to increase simultaneously their equity and the size of their total investment.² The outstanding characteristic of the data for purposes of this analysis was the rapidity of capital accumulation--an average of \$808 per year. Therefore, in a period of 12 years, operators starting with 52 percent equity could expect to increase their equity to 84 percent, and at the same time develop their farms into efficient operating units. At the rate of \$808 accumulated per year, slightly more than 4 years would be required to accumulate the \$3,409 used for the operator's beginning investment on these farms. However, it must be remembered that this rate of accumulation was achieved after the initial starting equity was obtained. Moreover, a considerable

¹Frank D. Hansing and W. L. Gibson, Jr., Becoming a Farm Owner--Is It More Difficult Today?, Bul. 473, Virginia Agr. Exp. Sta. (Blacksburg, 1955).

²Ibid., p. 23. In terms of 1954 dollars, the dollar amounts would be increased approximately 2.46 times.

Table 19. Changes in Capital Investments and Operator's Equity in Commercial Farms Acquired Without Family Help from the Time of Initial Ownership to 1951, for Sixty Farmers, Culpeper and Orange Counties, Virginia^{1/}

Item	Method used to acquire farm			Total
	Non-farm employment	All credit	Agricultural ladder	
Number of farms	33	16	11	60
Years operated after ownership acquired	9.5	13.6	7.9	10.3
Total farm investments:				
1951 (dollars)	13,566	16,923	11,118	14,012
Beginning (dollars)	6,959	5,978	6,043	6,529
Increase (dollars)	6,607	10,945	5,075	7,483
Percent increase	95	183	84	115
Operator's investment:				
1951 (dollars)	11,459	13,264	10,234	11,716
Beginning (dollars)	4,489	236	4,780	3,409
Increase (dollars)	6,970	13,026	5,454	8,307
Percent increase	155	5,473	114	244
Operator's equity:				
1951 (percent)	84	78	92	84
Beginning (percent)	65	4	79	52
Average annual capital accumulation (dollars)	737	956	690	808

^{1/} All data except number of farms are presented as averages. All capital values are deflated by the Index of Prices Received for Farm Products in Virginia, 1940= 100.

Source: Partially reproduced from Frank D. Hansing and W. L. Gibson, Jr., Becoming a Farm Owner--Is It More Difficult Today?, Bul. 473, Virginia Agr. Exp. Sta. (Blacksburg, June, 1955).

number of these farms were acquired in a period of very favorable weather, and prices in relation to the cost of production.

The authors concluded that ". . . success in acquiring ownership of the farms depended greatly upon the general economic conditions during the years following the acquisition of the farm and upon the productivity of the soil."¹

Thus, there are numerous factors influencing the time required to accumulate a given amount of capital. During periods of unfavorable farm prices in relation to the cost of production and family living expenses, the rate of capital accumulation can be slow, and it may become a negative quantity.

Data in this section indicate that, on the average, full owners have farms somewhat smaller in size than part owners and tenants. Doubtless, the average size of farm is lowered for full owners because of the large number of elderly operators in this tenure group. However, when a normal rate of capital accumulation is assumed, or when adverse periods for accumulation are considered, one can see that an operator may spend a larger portion of his more productive years in trying to save the capital necessary for full ownership. As the operator becomes older, if he has not succeeded in accumulating the necessary capital, he may decide to purchase a farm smaller in size than the one he is renting presently. Or, operators who are anxious to achieve greater independence and security of occupancy

¹Ibid., p. 26.

also may choose the alternative of a small farm, rather than choosing to apply their total resources on land which they do not own. Therefore, the above factors also lower the size of full-owner farms. It is safe to conclude that the rate of capital accumulation is an important factor in determining the age at which an operator can assume the ownership of a given-size farm.

Analysis of Additional Data from Part Owners in
Southampton and Halifax Counties, Virginia

Data secured from part owners in Southampton and Halifax counties permit a comparison of resource inputs and returns between the owned portion and the rented portion of part-owner farms. An examination of such factors as the amount of fertilizer applied, crop yields, and the proportion of cropland covered during winter, should enable one to determine the extent of the differences in inputs between the owned and rented acreages.

One of the criteria for perfect share-lease agreements is that input costs be shared by the operator and landlord in the same proportion in which returns are shared. An attempt is made in this analysis to determine the extent of the deviation from the sharing, in the same proportion, of resource inputs and returns by comparing the operators' and the landlords' shares of the fertilizer cost with their shares of the fertilized crop.

In examining input-output data in these areas, it is important to consider the effects of government price support programs upon the amount of inputs applied. This statement especially refers to peanuts

and tobacco, the principal cash income crops in Southampton and Halifax counties, respectively. When operators are confronted with acreage controls, they may apply different quantities of fertilizer and other inputs in an effort to produce their maximum marketing quotas.

Crop yields and proportion of cropland covered during winter on part-owner farms. - The difference between crop yields on the owned portion and the rented portion of part-owner farms was relatively small in the survey of Southampton and Halifax county farms (table 20). In Southampton county, the yield of peanuts, cotton, and corn was slightly higher on the owned tracts than on the rented tracts. Tobacco and corn yields in Halifax county were also greater on the part owner's land than on the land which he rented. Again, the differences were relatively small. The yield of wheat was nearly the same, or only 0.2 bushels greater on the rented land.

The proportion of cropland covered during the winter on the owned and rented tracts of part-owner farms varied between the owned and rented tracts and between the two counties (table 20). Part owners in Southampton county had 85.5 percent of their own land covered and only 55.1 percent of the rented land covered. A smaller proportion of land owned and land rented was covered during the winter on Halifax county farms than on Southampton county farms. However, the differences in the proportion of land covered on the owned and the rented acreage was not as great for Halifax county farms as for Southampton county farms. Part owners had 62.5 percent of their own land covered and 52.3 percent of the rented land covered.

Table 20. Yields per Acre of Specified Crops, and Percent of Cropland Covered During the Winter, on Owned and Rented Tracts of Part-Owner Farms, Southampton and Halifax Counties, Virginia

<u>Crops grown</u>	<u>Land owned</u>	<u>Land rented</u>	<u>Differences owned minus rented land</u>
<u>Southampton county</u>			
Peanuts (lbs)	1,957	1,942	15
Seed cotton (lbs)	1,191	1,149	42
Corn for grain (bus.)	43.1	40.4	2.7
Soybeans (bus.)	22.7	23.5	-0.8
Proportion of cropland covered during winter (pct.)	85.5	55.1	30.4
<u>Halifax county</u>			
Tobacco (lbs.)	1,400	1,329	71
Corn for grain (bus.)	40.8	35.0	5.8
Wheat (bus.)	24.7	24.9	-0.2
Proportion of cropland covered during winter (pct.)	62.5	52.3	10.2

Although the data on yields vary little, the differences in proportion of cropland covered during the winter on the owned and rented tracts support the theory that part owners will first apply scarce resources to their own land provided the lease agreement on the rented land does not specify that certain practices be carried out by the operator.

Amount of fertilizer applied on all rented land in relation to the sharing of fertilizer cost, and crop returns. - Table 21 shows the average pounds of fertilizer nutrients applied on two groups of Southampton county farms.¹ Landlords and tenants in the "shared alike" group shared the cost of fertilizer in the same proportion as their share of the crop on which the fertilizer was applied. This group of operators had the one-fourth and one-third share lease arrangements. The "shared differently" group is comprised of the one-half share lease agreements, under which the landlord furnishes all of the fertilizer, but receives one half of the crop. Statistical tests for differences in the pounds of nutrients applied were significant at the five percent level of probability for nitrogen applied on peanuts and cotton, and for phosphoric acid applied on peanuts. Although there were considerable differences in the pounds of potash applied, the student t values were not significant at the five percent level of

¹The majority of share leases in the Halifax county survey were one-fourth share arrangements in which the landlord paid one fourth of the fertilizer cost and received one fourth of the crop. Thus, it was unnecessary to test for significant differences in the sharing of fertilizer costs, and crop returns.

Table 21. Amounts of Fertilizer Applied on Specified Crops, by Proportion of Costs Shared in Relation to Returns, Southampton County, Virginia, 1954

Share of fertilizer costs in relation to share of returns from crops	Fertilizer nutrients applied per acre of crops grown				
	Number of farms		Pounds of nutrients		
	Shared alike	Shared differently	N	P ₂ O ₅	K ₂ O
Peanuts	31	61			
Shared alike			6.3	52.9	66.4
Shared differently			4.0	38.1	50.1
t value			2.10*	2.34*	1.87
Corn for grain	33	50			
Shared alike			72.5	68.3	64.6
Shared differently			69.2	76.9	72.7
t value			0.76	1.68	1.33
Cotton	14	29			
Shared alike			30.6	58.0	53.3
Shared differently			44.0	59.0	65.1
t value			2.34*	0.00	1.02
Pasture	18	41			
Shared alike			8.3	48.7	47.3
Shared differently			10.1	42.7	41.2
t value			0.58	0.50	0.51

* Significantly different at the five percent level.

probability because of the wide variation in the amounts of potash applied on the farms in the sample.

Traditionally, it has been hypothesized that the amount of fertilizer applied would be expected to be less where the costs and returns are shared disproportionately rather than proportionately. However, the actual data for crops other than peanuts do not support this hypothesis. In the one-half share leases, the landlords bore all of the fertilizer cost; in the one-fourth and one-third share leases, the landlords bore one fourth and one third of the fertilizer cost, respectively. It is evident that factors other than the method of sharing fertilizer costs in relation to the share of the crop affect the amounts of fertilizer nutrients applied on the farms in the survey. The impossibility of holding constant the factors of capital and management accounts for some of the departure from the hypothetical assumptions. Therefore, differences in capital availability both between and within landlord and tenant groups will affect the amounts of inputs applied. Managerial differences between the sample of farms also influence the amounts of inputs applied on a given farm.

Pounds of fertilizer applied on owned land and rented land of part-owner farms. - It is possible to hold the factor of management relatively constant by comparing the owned portion of part owner's farms with the land they rent. There were no significant differences between the amounts of fertilizer applied on important crops on the owned land and the rented land of part owners in Southampton county (table 22). In fact, the differences were relatively small in the

Table 22. Amounts of Fertilizer Applied on Specified Crops on the Owned and Rented Portion of Part-Owner Farms, Southampton and Halifax Counties, Virginia

Classification	Number of farms	Fertilizer nutrients applied per acre of crops grown		
		Pounds of nutrients		
		N	P ₂ O ₅	K ₂ O
Southampton county:				
Peanuts	42			
Owned land		4.4	43.8	55.0
Rented land		4.2	42.3	50.5
t value		0.34	0.87	1.28
Corn for grain	44			
Owned land		73.2	75.5	72.4
Rented land		70.5	73.4	69.5
t value		1.95	0.95	1.17
Cotton	19			
Owned land		39.8	61.5	65.1
Rented land		38.3	59.5	63.1
t value		1.19	1.00	1.00
Halifax county:				
Tobacco	56			
Owned land		43.4	114.7	99.4
Rented land		42.8	114.7	99.3
t value		0.70	0.03	0.05
Corn for grain	37			
Owned land		25.2	35.9	22.4
Rented land		23.8	31.0	27.0
t value		6.00**	1.33	0.61
Wheat	11			
Owned land		32.5	34.5	31.0
Rented land		32.2	34.5	31.0
t value		1.00	1/	1/

** Significantly different at the one percent level.

1/ No t values were calculated for P₂O₅ and K₂O on wheat since there was no difference between the amounts applied on the owned and rented land.

average pounds of fertilizer nutrients applied. In most instances, slightly less fertilizer was applied per acre of crops grown on the rented land than for the owned land. Differences in the amounts of fertilizer applied on the important crops in Halifax county by owned and rented land followed a pattern similar to that of the Southampton data. The only significant difference in the amount of fertilizer applied was for nitrogen on corn which was significant at the one percent level.

Therefore, the differences between the quantity of fertilizer applied on the owned and rented portions of part-owner farms was insignificant in most instances. These findings also do not strongly support the traditional hypothesis that part owners will apply more scarce inputs on their own land than on the land which they rent. However, the averages of pounds of fertilizer nutrients applied do show that part owners tend to favor their land with slightly more fertilizer than they do their rented tracts.

Improving Leasing Practices as a Means of Overcoming Objections to Part Ownership

Granted that some inefficiencies exist in resource allocation on the rented tracts of part-owner farms, what are the alternatives for facilitating more efficient allocation of scarce resources? One suggestion for improving resource use on part-owner farms is through adjustments in leasing practices that will encourage more efficient resource use and equitable sharing of production costs and returns

by the landlord and tenant.¹

Students of land tenure generally have recognized that many of the problems of obtaining a lease agreement that provides for efficient allocation of resources are centered around the uncertainty of landlord-tenant expectations. Since the part owner usually owns a set of buildings in addition to some farmland, he should not be hampered as severely as the tenant by the uncertainty inherent in traditional lease arrangements. Nevertheless, under the majority of existing lease arrangements, the part owner is uncertain whether he will be able to recover the value of inputs that yield returns over a time period longer than the duration of the lease agreement.

Reduction of Uncertainty Through Longer Leases

One means of lessening the uncertainty of expectations for the part owner is by the signing of leases for more than one year. In addition, termination notices of six months or longer should aid the part owner in planning his production program (both on his land and on the rented land) more effectively. The desire for longer leases, and especially for longer termination notices, is evident from the replies from operators who rent land in Southampton and Halifax counties. With longer leases, operators would be more willing to adopt management practices based on more than one production period.

¹When the word "tenant" is used in combination with landlord in this section, it also may refer to the part owner.

Compensation Clauses as a Remedy for Insecurity of Occupancy

In some instances, the landlord may feel that he is not in a position to bind himself to a long-term lease agreement. Such may be the case if the landlord is elderly and does not wish his property to be tied to a long-term lease agreement in the event of his death. Furthermore, other landlords believe that they can use effectively a short-term lease to encourage the tenant to do a better job of farming.¹ Some writers have pointed out the disadvantage of entering into a long-term lease of five or ten years before the parties have proved their ability to work together effectively.² Thus, before the parties sign a long-term agreement, a short-term lease of one year may be desirable.

Another method of reducing uncertainty of expectations relative to long-term farm improvements and management practices, that has been advocated by a number of authorities, is the provision in lease agreements for compensation to the tenant for the value of unexhausted improvements in the event the tenant moves from the farm.³ The idea of incorporating compensation clauses into leases was uncommon among Southampton and Halifax county operators. As in the case of short-term

¹For example, see Johnson, op. cit., pp. 114-122.

²Heady and Jensen, op. cit., p. 575.

³Heady has suggested that in the determination of the amount of compensation due the tenant, the perfect leasing system requires that ". . . compensation would equal the value productivity of the unexhausted portion discounted back to the present." Heady, op. cit., pp. 614-615.

and oral agreements in these two counties, leasing customs did not recognize compensation clauses. Although information was not secured on building improvements from part owners, approximately 58 percent of the tenants in the survey of Halifax county farms indicated that they would be willing to share the cost of building improvements if a compensation clause were included in the lease (table 6, p. 113). General acceptance of such clauses should further encourage the part owner to initiate long-range improvements such as drainage or the establishment of improved pastures.

Cash Rents as Incentives for Building Improvements

In those instances when a part owner needs building improvements or additions that last over a long period of time and require a large capital outlay, some provision is needed that will not require the part owner to invest heavily in the landlord's farm.¹ On the other hand, the landlord may have little incentive to invest capital in building improvements for which he may pay additional taxes and upkeep, and yet receive little direct return. As a remedy to such disadvantages, both on the part of the landlord and the tenant, provisions for the tenant to pay a cash rent for building improvements can be incorporated into the lease. Again, this provision is relatively uncommon in present lease agreements. However, 15 percent of the tenants in the Halifax county survey indicated they would be willing to pay a cash rent for

¹ Ibid., p. 615.

needed improvements (table 6, p. 113).

Proportionate Sharing of Costs and Returns--
A Requirement for Efficient Resource Use

Other conditions necessary for efficient resource allocation on rented land relate to the sharing of inputs and returns by the landlord and tenant. Only if the expenses for each production enterprise on a farm are shared by the landlord and tenant in the same proportions, can optimum resource allocation result.¹ Figure 6 shows the rate of inputs applied to a single production enterprise when the cost of inputs is shared both proportionately and disproportionately by the tenant. Assuming that the landlord and tenant each receive one half of the marginal product from each marginal input, the rate of input will depend upon how the cost of the input is borne between the landlord and the tenant. If the tenant pays an amount P_2 , or all of the input costs, his rate of input will be OA, or where the cost of all the marginal input equals the price of one half the marginal return. However, if the tenant pays an amount P_1 , or one half of the input costs, he will want to apply OB inputs, or where the cost of one half the marginal input equals the price of one half the marginal return. A rate of input of OB also is the rate that would be expected under optimum resource allocation, since it is the rate where the cost of

¹ibid., pp. 599-602. Optimum resource allocation under perfect lease agreements is defined by Heady as allocation which will permit efficiency comparable to that found on cash-rented or owner-operated farms.

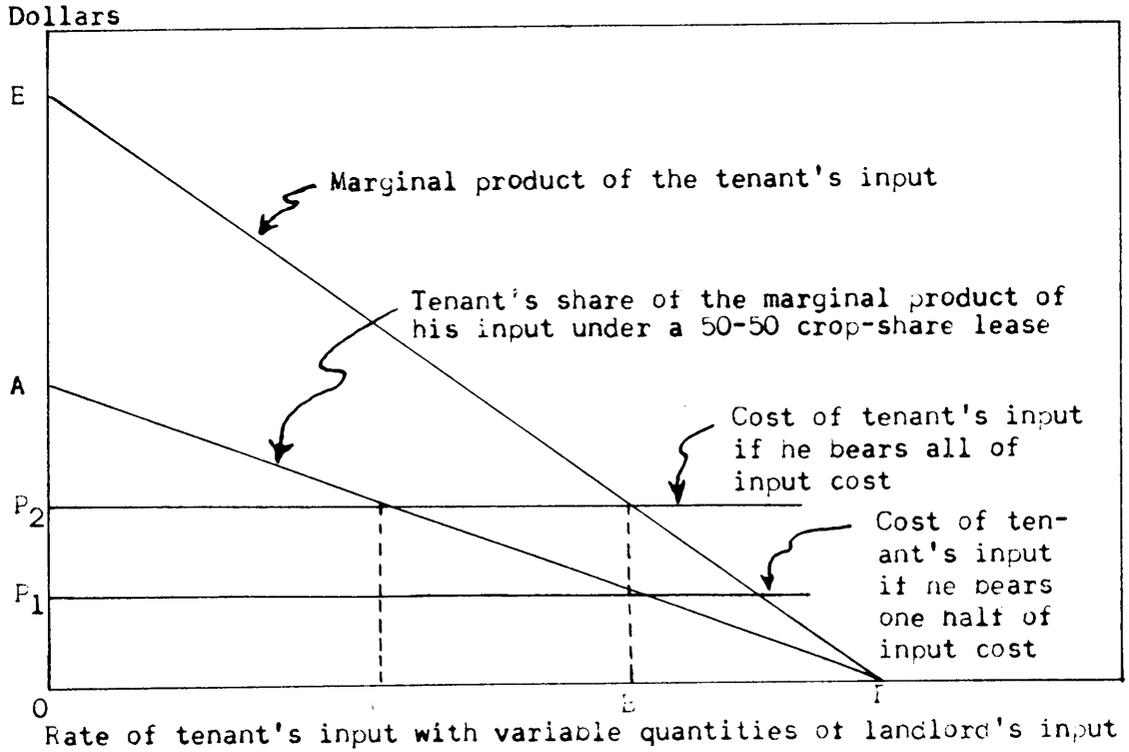


Figure 6. Amount of Inputs Applied Under Proportionate and Disproportionate Sharing of Costs and Returns

all the marginal input equals the price of all the marginal return.

Thus, if efficient resource use is to be realized, the lease agreement must provide for the sharing of costs and returns in the same proportions. Quite often, proportionate sharing of input costs is accomplished by a bargaining process in which the landlord and tenant each agree to furnish all of certain types of inputs, such as seed, lime and fertilizer, or the labor for performing a specific operation. Although the landlord and tenant may each furnish the total cost of a specific input, the costs of the various inputs can be balanced between the two, until each will share approximately in the same proportion as their share of the output.

Flexibility in Lease Arrangements

Historically, lease arrangements and rents have been referred to as "sticky", or as failing to provide for rent adjustments with changes in farm costs and prices, and in farm production. Thus, if a tenant is paying a fixed share of the crop or a fixed cash amount as rent to the landlord, the share of returns that each receives will be different when changes take place in production costs, prices and yields.

A number of studies have suggested ways of providing for flexibility of rents under cash and share-lease arrangements. Usually, the landlord and tenant agree upon a base rent for the farm. Allowance can be made for changes in prices, costs and yields by tying the rent to indexes of production based upon a normal yield factor as agreed

upon by the landlord and tenant.¹ The incorporation of some flexibility in rental agreements should provide for more equitable returns to the landlord and the tenant for each production period.

Written Agreements with a Definite Understanding of Management Practices

A written lease agreement or a written understanding between the landlord and tenant can be a means of helping to eliminate misunderstandings about the obligations of each party. Approximately two thirds of the Southampton and Halifax tenants were satisfied with oral agreements (tables 8 and 9, pp. 118 and 119). Tenant operators in the sample, who preferred oral leases, quite frequently expressed the opinion that they would prefer not to enter into a lease agreement with a landlord if it was necessary to have a contract in writing. Thus, in a number of cases, tenants looked upon a written agreement as an indication of a lack of confidence in the parties to the agreement.²

However, if the advantages of a written agreement are more widely recognized, neither landlords nor tenants should object to a written lease. There are at least two broad advantages to a written agreement.

¹For a study of rental practices and for examples of lease adjustments for changes in prices, costs and farm production, see Walter E. Chryst and John F. Timmons, Adjusting Farm Rents to Changes in Prices, Costs and Production, Special Report 9, Iowa Agr. Exp. Sta. (Ames, 1955). Throughout the study, the authors also provide numerous references to other studies of leasing practices and adjustments.

²The possibility of this type of objection to written agreements also is mentioned by Heady and Jensen, op. cit., p. 553.

First, the written lease can help to eliminate disagreements which may develop during the lease period. Second, writing out the lease provisions will enable each party to have a more definite understanding of his obligations.¹

One of the primary hypothesized objections to rental arrangements under part ownership is the tendency for the part owner to apply his scarce resources more favorably on his own land than on the rented tract. To alleviate this condition, a "spelling out" of specific management practices, including timeliness of cultivating and harvesting, should serve to remind the part owner of his obligation to the agreement. If the parties to the agreement have a definite and written understanding that the part owner is expected to use management practices on the rented land that are comparable to those employed on his own land, then the part owner would have more incentive to honor the agreement.

Finally, the foregoing suggestions for efficient lease arrangements are not suggested as substitutes for the understanding and the willingness to give and take that is required of both parties in order that they may operate efficiently under their lease agreement.

Primarily, the reluctance of landlords and tenants to accept lease adjustments and to incorporate new provisions into their lease arrangements lies in the resistance to change in existing customs, and in the lack of knowledge of more favorable alternative arrangements.

¹ Ibid., p. 553.

Some authorities are of the opinion that the adoption of improved lease arrangements is primarily a matter of education and recognition of the fact that the equitable sharing of inputs and outputs requires changes in the proportionate shares by the parties to the agreement.¹ If tenants and landlords recognize these changes are necessary because of differences in input requirements over time, there should be less resistance to the acceptance of lease improvements.

¹Lindsey, op. cit., p. 49.

SUMMARY

This study was conducted to determine the influence of the part ownership type of farm tenure upon the efficiency of farm operation and the security of occupancy of farm operators. Because of limited capital, farm operators are faced with the problem of how they can allocate resources to realize maximum efficiency in obtaining their desired goals.

The importance of having adequate capital for farm operation has increased in recent years because of the rapid substitution of capital for labor on American farms. In turn, the substitution of capital for labor has been conducive to significant increases in the size of farm businesses, and consequently, in the amount of capital required. Research has shown that on farms in the Southeast, the productivity of labor can be made comparable to that of other farming areas if more capital were available. Furthermore, it has been shown that both average and marginal productivity of capital is greater on farms in the Southeast than in other areas.

With advancements in farm technology, fewer farm operators are now needed than formerly. Thus, the number of young men entering farming is decreasing, with the result that the proportion of elderly operators is increasing. This condition, coupled with the increase in the life expectancy of man, has intensified the need for a farm tenure system that will permit elderly operators to retire gradually as their physical capabilities decline. Moreover, an increasing number of farm operators are beginning to accept the idea of some degree of retirement in old age.

Studies of the age of operator and size of farm business definitely have shown that as the age of the operator increases, farm size first increases, then reaches a maximum, and finally declines as the operator's physical ability decreases. This condition especially is true where there is no member of the family or other interested party to take over the farm business when the present operator is forced to withdraw from his work.

Data on size of commercial farms for 1950 and 1954, show that a larger proportion of part owners operate the larger classes of commercial farms than do either full owners or tenants. On the other hand, 43.9 percent of the small commercial farms (classes V and VI) were operated by full owners in 1954.

The acreage of crops grown on part-owner farms in Southampton county, Virginia, was considerably larger than full owners or tenants. Although full owners in Halifax county had, on the average, more crop acres than the other tenure groups, part owners had 0.6 acre more of tobacco which was the major cash crop in the area.

The existence of part ownership as a particular tenure type has been recognized since the early 1900's. However, the growth of part ownership has been more rapid since World War II. While the total number of farm operators has declined sharply in recent years, there has been a considerable increase in the number of part owners. The increase in the proportion of land controlled by part owners has been even greater. In 1954, part owners in the United States comprised 18.2 percent of the total number of operators but controlled 42 percent of all farm land.

Part owners in Southampton county not only had larger farms but also more adequate buildings and facilities than did the other tenure groups. In Halifax county, full owners had more adequate buildings and facilities, followed by part owners and tenants. Tenant operators in both counties may have had a definite disadvantage because of the large proportion which had small dwellings with inadequate facilities. Approximately 75 percent of the tenant operators indicated they needed repairs or improvements on their dwellings or farm buildings.

The shifting of operators from farm to farm traditionally has been associated with farm tenancy. The problem of shifting is more prevalent in the South because of the higher proportion of tenants in the area. The fact that part owners have resided on their present farms nearly as long as full owners indicates that part ownership affords operators a reasonable security of occupancy.

Farm lease agreements in Southampton and Halifax counties, Virginia, reflected strongly the customs and provisions of agreements in the past. It was evident in these counties (as it has been recognized in other areas) that changes in lease agreements do not keep pace with changes in the combinations and values of resource inputs of the landlord and tenant.

The length of lease in more than 90 percent of the lease agreements was for one year. However, the operators who were interviewed expressed the desire that more of their leases run for longer than one year. Nearly 90 percent of the operators who were interviewed in Southampton county had oral leases. Halifax county operators in the survey had an

even larger proportion of oral leases. However, the Halifax county operators who had oral leases expressed the desire that a considerably larger proportion of their leases be in writing. Although tenants realize their farm income solely from rented land, they expressed less concern over short-term lease agreements than did part owners.

The length of termination notice most common in Southampton county lease agreements was four months. Halifax county operators used a termination notice of six months much more frequently in their agreements than all other lengths of notice. In comparison with part owners, a larger proportion of the termination notices of tenants were both required and preferred to be four months or longer.

Only in Halifax county in a very few instances, was there a clause in the leases of the tenants that provided for compensation for the value of unexhausted improvements in the event the tenant moved to another farm.

Historically, the criticism of part ownership has been that part owners will apply first the optimum amounts of scarce factors of production on their own land before they give attention to the rented land. Furthermore, some authorities point out that a transfer of fertility from the rented land to the owned land will take place, especially if the part owner removes the crops from the rented land and feeds them to livestock on the owned portion. However, severe misallocation of resources need not take place if landlords and tenants are willing to incorporate into their lease agreements provisions for the proper allocation of inputs and returns from the rented land.

Through part ownership, an operator can acquire control of an efficient farm unit with less capital than if he becomes a full owner. How much less capital the part owner will need depends upon the value and proportion of the farm real estate rented, and upon the amount of non-real estate capital (livestock, fertilizer, operating costs, etc.) which the landlord may furnish. Based on the assumptions of the analysis of net worths required for commercial family-operated farms, capital requirements for part-owner farms ranged from approximately 50 percent, to 70 percent of the requirements for full ownership for the six farm types studied. Assuming the part owner rents only his real estate, the amount of net worth required in relation to total capital is greater on farms in the Southeastern United States than in other areas because real estate capital comprises a larger proportion of total capital used in the Southeastern area.

If the amount of equity required for full ownership is considered from the standpoint of the amount of indebtedness farm operators are actually willing to assume, the difference between capital requirements for part-owner and full-owner farms will be even greater than the amount required if the operator can borrow up to 50 percent of his total capital requirements.

Once capital requirements and the required operator equity have been established, data from the Census and from other published sources can be useful in estimating the length of time required to accumulate a given equity. In estimating the rate of capital accumulation, various factors were considered. Some of these factors were: (1) the relation of age of operators to net worth and to value of real estate, (2) the ages of full

owners and tenants, and (3) the rate of capital accumulation of a sample of farms in Culpeper and Orange counties, Virginia. These data provide only an indication of the time needed for capital accumulation, since there are many other factors, such as prices of farm products in relation to production costs, and favorable crop years, that influenced the rate of accumulation.

The relation of net worth to size of farm and to size of debt provides estimates of the equity of operators on the average, and of the amount of indebtedness they are willing to assume with a given net worth. Data on the amount of debt in relation to age of operators and to size of farms show that younger operators assume heavier debt loads and that larger commercial farm units require more capital and have more indebtedness than smaller commercial units.

An analysis of conservation practices on part-owner farms supports the hypothesis that part owners operating under the type of lease agreements commonly used in Southampton and Halifax counties in 1954 and 1955, will take better care of their own land than they will the land they rent.

On only one crop were the amounts of fertilizer applied under leasing systems that provided for proportionate sharing of the costs and returns significantly greater than the amounts applied under leasing systems that required disproportionate sharing of costs and returns. The impossibility of holding management constant probably accounts for the failure of the data to support the traditional theory that the party who supplies all of the fertilizer but receives only a share of the product

will apply less fertilizer than if he shared proportionately in the costs and returns. Although the average amounts of nutrients applied on the owned portion of part-owner farms were slightly higher than the applications on the rented portion, the difference was statistically significant only for nitrogen on corn.

As farm operators become willing to adjust their leases to changes around them, greater efficiency in resource use can be realized on rented land. The suggestions for lease improvements have significant implications for tenants as well as for part owners. However, in many instances, a landlord is unable to commit his real estate to a long-term lease agreement that will give a tenant reasonable security of occupancy for long-range planning. If an operator is willing to assume part ownership, he can establish a home for his family, and at the same time, avoid costly moves from farm to farm. As the family labor supply increases and the operator's managerial ability increases, he is able to rent additional land in order to utilize his resources and to gain increased benefits from them.

CONCLUSIONS

The results of this analysis show that part ownership is an effective means of altering farm size to meet the requirements of efficient resource use over the life cycle of the farm family. Part ownership permits an operator to increase farm size as additional resources become available and, at the same time, to realize the security of occupancy that is possible through full ownership. This type of farm tenure can be particularly effective in permitting efficient adjustments in size where there is no party interested in jointly operating the farm with the retiring operator.

Under periods of normal crop yields, and normal prices in relation to production costs, an operator who prefers full ownership may spend the most productive years of his life trying to accumulate the necessary capital for the down payment on a productive farm. This condition especially is significant because of the rapid increase in farm capital requirements in recent years. Low-equity financing of capable farm operators has not yet been made available on a large scale. Nor has the corporate method of financing become widespread in farming operations. Until these or similar methods of financing are more widely used, part ownership can enable an operator to have a reasonable security of occupancy in an earlier stage of his farming career than if he chooses to become a full owner and is required to remain a tenant for a longer period of time in order to accumulate the additional equity required for an efficient-size full-owner farm.

The improvement of lease agreements can aid still further in the optimum allocation of resources. If the criteria for perfect lease agreements are met, most of the theoretical objections to part ownership can be eliminated. Once landlords and tenants have more information on the basic principles of efficient lease agreements (such as compensation for the value of unexhausted improvements, proper incentive for the landlord to provide adequate buildings and facilities, and proportionate sharing of the costs and returns as far as it is possible) they should be more willing to initiate the proper adjustments in their leases.

Where a landlord is leasing his farm to a part owner, a "spelling out" of specific management practices and the timeliness of such practices aids each party in knowing what his obligations are.

The landlord should be at least as willing, if not more willing, to rent his farm to a part owner than he would to a tenant operator (assuming equal management and resources of the renter). The landlord should be willing to do so, because he is probably more familiar with the part owner (if he is established in the area) than he would be with the average tenant. Because the part owner has greater security of occupancy than the tenant, a lease agreement with a part owner should be more conducive to the investment in inputs that will be used for more than one production period.

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APPENDIX A

Trends Since 1930, in Size of Farms, Capital Requirements,
Substitution of Capital for Labor, Tenure and Ages of Operators;
Commercial Farms in the United States by Economic Class
and by Tenure of Operator Since 1950

Table 1. Number and Size of Farms in United States and Virginia for All Farms and Commercial Farms, 1930-1954

Year	United States				Virginia		
	All farms		Commercial farms		All farms	Acres	Commer- cial Acres
	Number	Acres	Family operated ^{1/}	All			
1930	6,288,648	157	274	2/	170,610	98	2/
1935	6,812,300	155	269	2/	197,032	89	2/
1940	6,096,799	174	262	220	174,385	94	2/
1945	5,859,169	198	266	255	173,051	94	2/
1950	5,382,162	216	281	300 ^{3/}	150,997	103	150
1954	4,783,021	242	291	336 ^{3/}	136,416	108	159

1/ See Table 4 for the 15 farming types and locations included in this average. Data through 1940 are not comparable with later periods. (See footnote 2, table 2). Adjusted for comparableness, number of acres for the latter four periods are 283, 306, 324, and 336 respectively. Acres for 1956 are 300, and 348 (adjusted for comparableness).

2/ Data not available.

3/ Average acreages reported in the U. S. Census of Agriculture are 276 and 310 for 1950 and 1954, respectively. Data in this table for commercial farms for the United States were adjusted to make them comparable for the given years.

Sources: All farms, number and acres, and commercial farms, Virginia U. S. Census of Agriculture; commercial farms, the United States, Jackson V. McFlveen, Family Farms in a Changing Economy, Agr. Info. Bul. 171, Agr. Res. Ser., U. S. Dept. of Agr.; commercial family-operated farms, compiled from the following: 1930-1951, Costs and Returns, Commercial Family-Operated farms by Type and Size 1930-1951, Stat. Bul. 197; 1952, Farm Costs and Returns, 1952, Commercial Family-Operated farms by Type and Location, Agr. Info. Bul. 158; 1953-1956, Farm Costs and Returns, 1956; Commercial Family-Operated farms by Type and Location, Agr. Info. Bul. 176, Agr. Res. Ser., U. S. Dept. of Agr., (Washington).

Table 2. Five-Year Averages per Farm, Capital and Labor Used, Gross Income and Farm Production for Fifteen Selected Major Farming Types, Commercial Family-Operated Farms, 1930-1956^{1/}

	1930-34 ^{2/}	1935-39 ^{2/}	1940-44 ^{2/}	1945-49	1950-54	1955-56
Labor used:						
Total hours	4,450	4,020	4,860	4,810	4,520	4,290
Index numbers	111	100	103	103	96	91
Capital used:						
Real estate:						
Actual dollars	10,694	9,487	10,198	17,087	24,399	27,222
Constant dollars	22,491	18,192	16,580	19,133	22,166	24,194
Pct. of total ^{3/}	79.3	77.2	70.0	67.8	67.9	70.8
Mach. and equip.:						
Actual dollars	1,083	1,043	1,331	2,538	4,644	5,303
Constant dollars	2,300	2,004	2,152	2,810	4,221	4,714
Pct. of total ^{3/}	8.0	8.5	9.1	10.1	12.9	13.8
Non-real estate:						
Actual dollars	2,798	2,802	4,365	8,099	11,558	11,234
Constant dollars	5,861	5,386	6,978	9,006	10,494	9,990
Pct. of total ^{3/}	20.7	22.8	30.0	32.2	32.1	29.2
Total all capital:^{4/}						
Actual dollars	13,492	12,289	14,563	25,186	35,957	38,456
Constant dollars	28,352	23,578	23,558	28,139	32,660	34,184
Gross Income:						
Actual dollars	1,271	1,944	4,342	7,668	8,796	8,248
Constant dollars	3,848	4,957	7,512	8,471	8,809	9,480
Production indexes:						
Net	65	63	88	100	106	116
Per man-hour	58	63	84	97	110	126

^{1/} For a list of farm types included, see table 5. 1947-1949- 100 for all indexes used.

^{2/} Data through 1944 are not entirely comparable with data for later years, since for 1930-1939, tobacco-cotton farms, tobacco farms (small) and tobacco-cotton farms (large), all from the Coastal Plain, North Carolina area are not available. In addition, data for tobacco farms (small), Coastal Plain, North Carolina, were not available until 1943. Including these farm types for the later periods somewhat raises average labor requirements and lowers average capital requirements, especially for value of machinery and equipment.

^{3/} "Constant dollars" are expressed in terms of 1947-1949 prices. Percentages are computed from "actual dollar" figures.

^{4/} Total farm capital, January 1.

Sources: See source note to table 1 (Commercial family-operated farms).

Table 3. Number of Commercial Farms by Economic Class, United States, Specified Years, 1929-1954

Economic Class	Value of sales (1954 prices)					Number of farms (thousand)					Percent of total				
	1929	1939	1944	1949	1954	1929	1939	1944	1949	1954	1929	1939	1944	1949	1954
Class I \$25,000 & over	47	60	91	103	134	1.0	1.0	1.4	2.3	3.0	1.4	1.4	2.3	3.0	4.3
Class II 10,000 - 24,999	205	252	347	381	449	4.3	4.3	5.9	8.8	11.0	4.3	5.9	8.8	11.0	14.5
Class III 5,000 - 9,999	560	585	723	721	707	11.9	11.9	13.7	18.3	20.8	11.9	13.7	18.3	20.8	22.8
Class IV 2,500 - 4,999	1,078	1,015	976	882	811	22.8	22.8	23.8	24.8	25.4	22.8	23.8	24.8	25.4	26.2
Class V ^{2/} 1,200 - 2,499	1,274	1,070	867	661	536	27.0	27.0	25.1	22.0	19.1	27.0	25.1	22.0	19.1	17.3
Class VI ^{2/} 250 - 1,199	1,559	1,283	937	717	463	33.0	33.0	30.1	23.8	20.7	33.0	30.1	23.8	20.7	14.9
Total ^{3/}	4,723	4,265	3,941	3,465	3,100	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

^{1/} Value intervals in early years deflated to 1954 level of prices received by farmers for farm products.

^{2/} With operator not working off the farm as much as 100 days and farm sales greater than income of farm operator and members of his family from off-farm sources.

^{3/} 4,000 farms classified as abnormal in 1949, and 2,000 so classified in 1954, are included in order to make the data comparable with earlier years. These farms, public and private, institutional, experiment stations, and so on, were not separated in earlier Censuses.

Sources: Table and footnotes partially reproduced from Jackson V. McFlveen, *Family Farms in a Changing Economy* (See source note to table 1).

Table 4. Man-Hours of Labor Used, Value of Physical Assets per Farm, and Farm Production for All Farms, United States, 1930-1956^{1/}

	1930 2/	1935 2/	1940	1945	1950	1955	1956
Total labor used:							
Million hours	22,921	21,052	20,445	19,127	15,259	14,505	14,177
Index numbers	134	123	119	112	89	85	83
Total physical assets:							
Real estate:							
Actual dollars	7,617	4,829	5,511	9,199	13,991	20,656	22,935
Constant dollars ^{3/}	13,602	9,287	10,806	13,332	13,583	18,609	20,121
Pct. of total	79.2	81.4	68.9	66.9	65.6	67.3	68.6
Mach. and equip.:							
Actual dollars	525	323	508	1,075	2,081	3,345	3,684
Constant dollars ^{3/}	938	621	996	1,558	2,020	3,014	3,238
Pct. of total	5.5	5.4	6.4	7.8	9.8	10.9	11.0
Non-real estate:							
Actual dollars	2,004	1,101	2,493	4,557	7,320	10,015	10,518
Constant dollars ^{3/}	3,579	2,117	4,888	6,604	7,107	9,023	9,216
Pct. of total	20.8	18.6	31.3	33.1	34.4	32.7	31.4
Total all capital:							
Actual dollars	9,620	5,930	8,004	13,756	21,311	30,671	33,453
Constant dollars ^{3/}	17,179	11,404	15,694	19,936	20,690	27,632	29,345
Production indexes:							
Total output	72	72	83	96	100	112	113
Per man-hour	54	59	70	86	112	132	136

^{1/} Number of farms, U. S. Census of Agriculture, 1954, was used in computing value of physical assets per farm for 1955. Number of farms for 1956 was adjusted from data in The Farm Income Situation, Agr. Mktg. Ser., U. S. Dept. of Agr., (Washington, July, 1957). 1947-1949= 100 for all indexes used.

^{2/} Data for 1930 and 1935 are not entirely comparable with data for later years. For example, household furnishings and equipment are excluded for these periods only.

^{3/} Constant dollars are expressed in terms of 1947-1949 dollars.

Sources: Man-hours of labor used, total output and farm production per man-hour, Changes in Farm Production and Efficiency, 1956 Summary, Agr. Res. Ser., U. S. Dept. of Agr., (Washington, 1957); value of physical assets for 1930-1935 compiled from Alvin S. Tostlebe, The Growth of Physical Capital in Agriculture, 1870-1950, Occasional Paper 44, National Bureau of Economic Research, Inc., New York (H. Wolff Book Mfg. Co., Inc., 1954), p. 36 (value of physical assets for 1940-1956 compiled from The Balance Sheet of Agriculture, 1957, Agr. Info. Bul. 177, Agr. Res. Ser., U. S. Dept. of Agr., (Washington, 1957)).

Table 5. Five-Year Averages for Capital Used per Farm by Type of Capital Use for Specified Major Farming Types and Locations, Commercial Family-Operated Farms, 1930-1956

Type of farm, location, and capital used	Actual dollars				
	1930-34	1935-39	1940-44	1945-49	1950-54
Dairy, Central Northeast, total capital	8,920	8,940	11,586	19,340	26,620
Land and buildings	5,280	5,220	6,080	10,020	12,840
Machinery and equipment	1,140	1,060	1,440	2,140	4,200
Livestock	1,900	2,020	3,120	5,620	7,160
Crops for sale, feed and seed	600	640	940	1,560	2,420
Dairy Western Wisconsin, total capital	9,442	8,494	9,642	16,332	22,434
Land and buildings	6,992	5,798	5,404	8,608	11,176
Machinery and equipment	752	720	1,092	2,202	4,296
Livestock	1,262	1,502	2,468	4,110	5,288
Crops for sale, feed and seed	436	474	678	1,412	1,674
Hog-beef raising, Corn Belt, total capital	11,997	10,100	14,212	23,426	34,242
Land and buildings	9,246	7,018	8,756	14,526	20,794
Machinery and equipment	880	930	1,334	2,132	3,762
Livestock	1,366	1,504	2,646	4,486	6,406
Crops for sale, feed and seed	598	668	1,320	2,282	3,280
Hog-beef fattening, Corn Belt, total capital	21,498	18,920	25,880	41,594	58,222
Land and buildings	16,578	13,626	15,880	24,398	34,742
Machinery and equipment	1,522	1,572	2,316	3,652	6,424
Livestock	2,282	2,398	4,410	8,338	10,858
Crops for sale, feed and seed	1,116	1,324	2,974	5,166	6,195
Cash grain, Corn Belt, total capital	27,092	27,188	37,468	57,444	81,646
Land and buildings	23,298	22,810	30,344	44,960	64,250
Machinery and equipment	1,548	1,592	2,362	3,770	6,642
Livestock	870	878	1,382	2,366	3,040
Crops for sale, feed and seed	1,376	1,908	3,380	6,328	7,714

Table 5. Five-Year Averages for Capital Used per Farm by Type of Capital Use for Specified Major Farming Types and Locations, Commercial Family-Operated Farms, 1930-1956 (continued)

Type of farm, location, and capital used	Actual dollars				
	1930-34	1935-39	1940-44	1945-49	1950-54
Tobacco-livestock, Kentucky Bluegrass					
total capital	8,198	8,528	11,740	17,364	23,454
Land and buildings	7,080	7,052	9,646	14,064	18,796
Machinery and equipment	344	388	548	875	1,578
Livestock	510	782	1,100	1,672	2,190
Crops for sale, feed and seed	264	306	446	750	890
Tobacco-cotton, Coastal Plain, North Carolina, total capital					
Land and buildings			7,846	14,516	19,890
Machinery and equipment			6,220	11,630	16,200
Livestock	✓	✓	568	1,168	2,202
Crops for sale, feed and seed			766	1,072	832
			292	596	656
Tobacco (small), Coastal Plain, North Carolina, total capital					
Land and buildings			5,085 ^{2/}	7,844	10,410
Machinery and equipment			3,775	6,100	8,400
Livestock	✓	✓	510	730	1,062
Crops for sale, feed and seed			575	670	558
			225	344	390
Tobacco-cotton (large), Coastal Plain, North Carolina, total capital					
Land and buildings			14,702	27,176	36,886
Machinery and equipment			12,002	21,544	29,546
Livestock	✓	✓	362	2,800	4,714
Crops for sale, feed and seed			1,328	1,776	1,494
			510	1,044	1,132
Cotton, Southern Piedmont, total capital					
Land and buildings	3,866	4,482	5,852	10,158	14,192
Machinery and equipment	3,016	3,446	4,438	7,962	11,424
Livestock	246	256	378	762	1,378
Crops for sale, feed and seed	410	566	720	904	886
	194	214	316	530	504

Table 5. Five-Year Averages for Capital Used per Farm by Type of Capital Use for Specified Major Farming Types and Locations, Commercial Family-Operated Farms, 1930-1956 (continued)

Type of farm, location, and capital used	Actual dollars					
	1930-34	1935-39	1940-44	1945-49	1950-54 1955-56	
Cotton, Black Prairie, Texas, total capital	8,156	8,530	9,858	15,374	23,848	27,900
Land and buildings	7,100	7,544	7,760	12,090	18,970	23,320
Machinery and equipment	382	514	1,006	1,616	2,726	3,015
Livestock	438	608	738	1,096	1,566	1,055
Crops for sale, feed and seed	236	312	354	572	586	510
Wheat-small grain-livestock, Northern Great Plains, total capital	13,968	11,844	14,044	27,158	40,392	43,375
Land and buildings	10,850	8,806	8,132	14,954	22,970	25,790
Machinery and equipment	1,500	1,472	2,146	4,534	8,442	9,380
Livestock	924	936	1,570	2,312	3,252	2,605
Crops for sale, feed and seed	694	630	2,196	5,358	5,728	5,600
Wheat-corn-livestock, Northern Great Plains, total capital	14,074	12,198	14,406	26,888	39,690	41,900
Land and buildings	11,032	9,444	8,796	15,148	21,944	24,215
Machinery and equipment	1,118	1,110	1,678	3,740	7,698	8,425
Livestock	1,296	1,176	2,154	3,830	5,928	4,855
Crops for sale, feed and seed	628	468	1,778	4,050	4,120	4,405
Wheat-roughage-livestock, Northern Great Plains, total capital	12,144	9,010	11,602	24,144	37,060	40,115
Land and buildings	9,282	7,012	6,818	12,996	20,186	22,705
Machinery and equipment	1,298	968	1,494	3,434	6,906	7,960
Livestock	890	730	1,438	3,308	5,150	4,310
Crops for sale, feed and seed	674	300	1,852	4,406	4,810	5,140

Table 5. Five-Year Averages for Capital Used per Farm by Type of Capital Use for Specified Major Farming Types and Locations, Commercial Family-Operated Farms, 1930-1956 (continued)

Type of farm, location, and capital used	Actual dollars					
	1930-34	1935-39	1940-44	1945-49	1950-54	1955-56
Winter wheat, Southern Plains, total capital	22,543	19,239	24,932	49,076	70,367	75,975
Land and buildings	18,572	16,067	16,925	37,253	53,753	60,590
Machinery and equipment	2,262	1,931	2,235	4,519	7,628	8,695
Livestock	844	784	1,785	3,379	5,218	3,490
Crops for sale, feed and seed	864	457	1,886	3,925	3,767	3,200
	Constant dollars ^{2/}					
Dairy, Central Northeast, total capital	18,762	17,156	18,901	21,671	24,188	25,816
Land and buildings	11,139	10,016	9,921	11,247	11,574	14,128
Machinery and equipment	2,415	2,032	2,344	2,393	3,518	4,578
Livestock	3,957	3,880	5,009	6,267	6,493	4,798
Crops for sale, feed and seed	1,271	1,224	1,533	1,763	2,199	2,312
Dairy, Western Wisconsin, total capital	19,826	16,287	15,680	18,227	20,375	19,840
Land and buildings	14,704	11,112	8,866	9,625	10,150	10,667
Machinery and equipment	1,593	1,384	1,762	2,423	3,905	4,640
Livestock	2,615	2,884	3,963	4,587	4,799	3,604
Crops for sale, feed and seed	915	908	1,089	1,587	1,522	1,530
Hog-beef raising, Corn Belt, total capital	25,243	19,385	22,504	26,255	31,050	31,596
Land and buildings	19,476	13,466	14,215	16,343	18,685	20,814
Machinery and equipment	1,873	1,786	2,169	2,363	3,421	3,614
Livestock	2,840	2,885	4,196	4,591	5,804	4,619
Crops for sale, feed and seed	1,253	1,234	2,111	2,537	2,981	2,549
Hog-beef fattening, Corn Belt, total capital	44,981	36,226	41,612	46,362	52,878	53,977
Land and buildings	34,721	26,147	25,935	27,337	31,557	34,126
Machinery and equipment	3,237	3,023	3,768	4,083	5,842	6,418
Livestock	4,726	4,612	7,066	9,213	9,850	8,310
Crops for sale, feed and seed	2,298	2,544	4,744	5,749	5,630	5,124

Table 5. Five-Year Averages for Capital Used per Farm by Type of Capital Use for Specified Major Farming Types and Locations, Commercial Family-Operated Farms, 1930-1936 (continued)

Type of farm, location, and capital used	Constant dollars ^{3/}				
	1930-34	1935-39	1940-44	1945-49	1950-54
Cash grain, Corn Belt, total capital	56,909	52,177	60,869	64,528	74,153
Land and buildings	48,964	43,772	49,418	50,675	58,350
Machinery and equipment	3,294	3,062	3,841	4,215	6,040
Livestock	1,811	1,685	2,210	2,647	2,757
Crops for sale, feed and seed	2,940	3,657	5,400	6,591	7,007
Tobacco-livestock, Kentucky Bluegrass, total capital	17,242	16,385	19,105	19,497	21,312
Land and buildings	14,894	13,551	15,734	15,000	17,083
Machinery and equipment	730	745	891	926	1,433
Livestock	1,064	1,502	1,772	1,857	1,987
Crops for sale, feed and seed	504	587	707	854	809
Tobacco-cotton, Coastal Plain, North Carolina, total capital			12,763	16,243	18,078
Land and buildings			10,137	13,070	14,724
Machinery and equipment		✓	919	1,292	2,001
Livestock	✓		1,240	1,217	757
Crops for sale, feed and seed			467	663	596
Tobacco (small) Coastal Plain, North Carolina, total capital			7,529 ^{2/}	8,793	9,463
Land and buildings			5,590	6,832	7,635
Machinery and equipment		✓	755	815	965
Livestock	✓		331	762	508
Crops for sale, feed and seed			333	353	334

Table 5. Five-Year Averages for Capital Used per Farm by Type of Capital Use for Specified Major Farming Types and Locations, Commercial Family-Operated Farms, 1930-1956 (continued)

Type of farm, location, and capital used	Constant dollars ^{3/}					
	1930-34	1935-39	1940-44	1945-49	1950-54	1955-56
Tobacco-cotton (large), Coastal Plain, North Carolina, total capital			23,921	30,367	33,528	33,718
Land and buildings			19,550	24,150	26,854	27,428
Machinery and equipment	✓	✓	1,401	3,007	4,288	4,506
Livestock			2,156	2,026	1,359	890
Crops for sale, feed and seed			814	1,166	1,027	894
Cotton, Southern Piedmont			9,491	11,381	12,893	14,131
Land and buildings	8,080	8,599	7,208	8,904	10,378	11,709
Machinery and equipment	6,297	6,614	611	841	1,252	1,475
Livestock	521	492	1,167	1,034	805	547
Crops for sale, feed and seed	859	1,085	504	601	458	400
Cotton, Black Prairie, Texas, total capital			17,036	17,169	21,651	24,791
Land and buildings	14,822	14,405	12,702	13,494	17,224	20,720
Machinery and equipment	813	990	1,626	1,796	2,478	2,680
Livestock	915	1,165	1,195	1,230	1,418	936
Crops for sale, feed and seed	487	595	568	650	531	454
Wheat-small grain-livestock, Northern Great Plains, total capital			22,712	30,175	36,682	38,540
Land and buildings	29,404	22,874	16,881	16,633	20,869	22,921
Machinery and equipment	3,184	2,830	3,475	4,991	7,673	8,336
Livestock	1,928	1,795	2,510	2,583	2,948	2,318
Crops for sale, feed and seed	1,418	1,207	3,422	5,967	5,193	4,966
Wheat-corn-livestock, Northern Great Plains, total capital			23,388	29,929	36,037	37,253
Land and buildings	29,652	23,286	18,095	16,882	19,941	21,522
Machinery and equipment	2,379	2,132	2,703	4,112	6,996	7,491
Livestock	2,684	2,257	3,435	4,262	5,364	4,319
Crops for sale, feed and seed	1,303	904	2,818	4,499	3,735	3,920

Table 5. Five-Year Averages for Capital Used per Farm by Type of Capital Use for Specified Major Farming Types and Locations, Commercial Family-Operated Farms, 1930-1956 (continued)

Type of farm, location and capital used	Constant dollars ^{3/}					
	1930-34	1935-39	1940-44	1945-49	1950-54	1955-56
Wheat-roughage-livestock, Northern Great Plains, total capital	25,538	17,269	18,634	26,846	33,650	35,658
Land and buildings	19,550	13,431	11,078	14,486	18,337	20,180
Machinery and equipment	2,751	1,860	2,407	3,797	6,275	7,075
Livestock	1,848	1,400	2,283	3,636	4,676	3,834
Crops for sale, feed and seed	1,389	578	2,867	4,927	4,362	4,568
Winter wheat, Southern Plains, total capital	47,533	36,901	40,034	54,618	63,916	67,538
Land and buildings	39,164	30,820	30,740	41,513	48,833	53,852
Machinery and equipment	4,805	3,702	3,605	5,015	6,935	7,728
Livestock	1,756	1,502	2,800	3,777	4,722	3,105
Crops for sale, feed and seed	1,809	876	2,889	4,315	3,426	2,854

1/ Not available.

2/ Data for this farm type for the period 1940-1944 are available only for 1943-1944.

3/ Expressed in terms of 1947-1949 dollars. Because of rounded data, the sum of the "capital used" figures will not equal total capital in all cases.

Sources: See source note to table 1 (commercial family-operated farms).

Table 6. Number of Farms and Percent Distribution by Tenure of Operator for the United States, 1930-1954 and for Commercial Farms, 1950-1954

	Tenure class			
	All operators ^{1/}	Full owners	Part owners	Tenants
	Number			
1930	6,288,648	2,911,644	656,750	2,664,365
1935	6,812,350	3,210,224	688,867	2,865,155
1940	6,096,799	3,084,138	615,039	2,361,271
1945	5,859,169	3,301,361	660,502	1,858,421
1950:				
All farms ^{2/}	5,362,162	3,089,583	824,923	1,444,129
Commercial farms	3,706,412	1,812,999	729,275	1,144,433
1954:				
All farms ^{2/}	4,783,021	2,744,708	868,180	1,149,239
Commercial farms	3,327,617	1,594,192	756,233	959,608
	Percent			
1930	100.0	46.3	10.4	42.4
1935	100.0	47.1	10.1	42.1
1940	100.0	50.6	10.1	38.7
1945	100.0	56.3	11.3	31.7
1950:				
All farms ^{2/}	100.0	57.4	15.3	26.8
Commercial farms	68.9	33.7	13.6	21.3
1954:				
All farms ^{2/}	100.0	57.4	18.2	24.0
Commercial farms	69.6	33.3	15.8	20.1

^{1/} Includes managers.

^{2/} Percent of all farms by tenure.

Source: U. S. Census of Agriculture, 1954.

Table 7. Number of Farms and Percent Distribution by Tenure of Operator for Virginia, 1930-1954 and for Commercial Farms, 1950-1954

	Tenure class			
	All operators ^{1/}	Full owners	Part owners	Tenants
	Number			
1930	170,610	104,956	16,148	47,970
1935	197,632	121,490	16,649	58,386
1940	174,885	113,510	13,164	47,107
1945	173,051	124,383	12,219	36,176
1950:				
All farms	150,997	108,338	16,209	25,879
Commercial farms ^{2/}	78,103	47,411	11,825	18,329
1954:				
All farms	136,370	94,431	19,185	22,159
Commercial farms ^{2/}	71,401	39,890	14,071	16,936
	Percent			
1930	100.0	61.5	9.5	28.1
1935	100.0	61.5	8.4	29.5
1940	100.0	64.9	7.5	26.9
1945	100.0	71.9	7.1	20.3
1950:				
All farms	100.0	71.7	10.7	17.1
Commercial farms ^{2/}	51.8	31.4	7.8	12.1
1954:				
All farms	100.0	69.2	14.1	16.2
Commercial farms ^{2/}	52.4	29.3	10.3	12.4

^{1/} Includes managers.

^{2/} Percent of all farms by tenure.

Source: U. S. Census of Agriculture, 1954.

Table 8. Number and Percent of Operators by Age, United States, 1910-1954

Year	Total operators re-						65 or older
	porting age	Under 25	25-34	35-44	45-54	55-64	
	Number						
1910	6,339,476	419,330	1,413,876	1,571,469	1,432,707	947,524	554,570
1920	6,364,163	383,680	1,333,020	1,587,519	1,482,494	993,771	583,679
1930	6,073,523	371,679	1,049,052	1,452,425	1,459,959	1,064,034	676,374
1940	5,835,950	233,355	949,350	1,250,893	1,427,561	1,146,540	828,251
1945	5,797,635	147,296	854,058	1,323,786	1,432,434	1,173,014	867,047
1950	5,043,996	163,726	791,323	1,186,918	1,157,085	1,000,350	744,594
1954	4,695,569	90,856	619,984	1,100,458	1,153,679	951,310	779,282
				Percent			
1910	100.0	6.6	22.3	24.8	22.6	14.9	8.7
1920	100.0	6.0	20.9	24.9	23.3	15.6	9.2
1930	100.0	6.1	17.3	23.9	24.0	17.5	11.1
1940	100.0	4.0	16.3	21.4	24.5	19.6	14.2
1945	100.0	2.5	14.7	22.8	24.7	20.2	15.0
1950	100.0	3.2	15.7	23.5	22.9	19.8	14.8
1954	100.0	1.9	13.2	23.4	24.6	20.3	16.6

Source: U. S. Census of Agriculture.

Table 9. Number and Percentage of Operators by Age, Virginia, 1910-1954

Year	Total operators reporting						65 or older
	Under 25	25-34	35-44	45-54	55-64	65 or older	
	Number						
1910	183,702	34,669	45,295	43,193	31,981	20,559	
1920	184,022	30,120	45,055	46,183	31,785	23,108	
1930	165,603	21,826	37,022	42,406	33,168	24,140	
1940	167,704	22,480	32,896	40,145	35,615	30,729	
1945	172,287	20,429	35,871	42,282	36,625	33,514	
1950	140,351	16,386	30,112	32,707	29,576	28,786	
1954	132,979	14,118	28,351	32,391	28,943	28,081	
							Percent
1910	100.0	18.9	24.7	23.5	17.4	11.2	
1920	100.0	16.4	24.5	25.1	17.3	12.6	
1930	100.0	13.2	22.4	25.6	20.0	14.6	
1940	100.0	13.4	19.6	23.9	21.2	18.3	
1945	100.0	11.9	20.8	24.5	21.3	19.5	
1950	100.0	11.7	21.5	23.3	21.1	20.5	
1954	100.0	10.5	21.2	24.2	21.6	21.0	

Source: U. S. Census of Agriculture.

Table 10. Changes in Production Expenses at Constant Prices for Selected Groups of Cash-Cost Items in Production, per Farm, U. S., 1935-1955

Production expense per farm	Average			
	1935-39	1940-44	1945-49	1950-54
Feed	100	196	272	318
Livestock	100	156	178	249
Seed	100	169	181	239
Fertilizer and lime	100	169	258	377
Buildings, repairs and maintenance	100	110	135	203
Depreciation of capital items	100	145	161	247
Petroleum fuel and oil	100	146	240	352
Miscellaneous supplies and services	100	114	138	190
Hired Labor	100	111	99	95

Sources: R. P. Christensen and H. J. Muck, "More Capital Goods Used in Farm Production", *The Farm Cost Situation*, Agr. Res. Ser., U.S. Dept. of Agr., May, 1957, pp. 27-33.

Table 11. Number and Percent Distribution of Farms by Economic Class and by Tenure of Operator, United States, 1950-1954

Economic class	Total commercial		Full owners		Part owners		All tenants	
	1950	1954	1950	1954	1950	1954	1950	1954
Total all classes	3,706,412	3,327,617	1,812,999	1,594,192	729,275	756,233	1,144,433	959,608
I	103,231	134,003	37,548	47,195	40,211	51,206	18,853	29,770
II	381,151	448,945	143,601	158,191	122,508	149,427	109,414	136,759
III	721,211	706,929	313,727	296,721	188,401	199,043	214,202	207,780
IV	882,302	811,965	441,516	391,879	174,428	177,593	264,883	240,475
V	901,316	763,348	476,197	406,222	128,284	125,886	296,121	230,071
VI	717,201	462,427	400,410	293,984	75,443	53,078	240,960	114,753
Total V and VI	1,618,517	1,225,775	876,607	700,206	203,727	178,964	537,081	344,824

Total all classes	Percent	
	1950	1954
Total all classes	100.0	100.0
I	2.8	4.0
II	10.3	13.5
III	19.5	21.3
IV	23.8	24.4
V	24.3	22.9
VI	19.3	13.9
Total V and VI ^{2/}	43.7	36.8

Total all classes	Percent	
	1950	1954
Total all classes	100.0	100.0
I	2.1	3.0
II	7.9	9.9
III	17.3	18.6
IV	24.3	24.6
V	26.3	25.5
VI	22.1	18.4
Total V and VI ^{2/}	48.3	43.9

1/ For criteria for the economic classifications, see appendix B, table 1.

2/ Separate classes (V and VI) may not add to the total for V and VI because of rounding.

Source: U. S. Census of Agriculture, 1954.

APPENDIX B

**Criteria for the Economic Classes of Farms
for the United States**

Table 1. Criteria for the Economic Classes of Farms for the United States, Censuses of 1934 and 1950

Class	Criteria		Farms excluded
	Value of farm products sold	Other	
Class I	\$25,000 or more	None	Abnormal ✓
Class II	\$10,000 to \$24,999	None	Abnormal
Class III	\$5,000 to \$9,999	None	Abnormal
Class IV	\$2,500 to \$4,999	None	Abnormal
Class V	\$1,200 to \$2,499	None	Abnormal
Class VI	\$250 to \$1,199	Less than 100 days of off-farm work by operator, and income of operator and members of his family from nonfarm sources less than value of all farm products sold	Abnormal

✓ Includes institutional farms, experimental farms, grazing associations, community-project farms, etc.

Source: U. S. Census of Agriculture, 1954.

APPENDIX C

Resources Needed for Specified Levels of
Income by Type of Investment and for Specified Farm
Types in 60 Selected Areas

Table 1. Investment, Assumed Maximum Loans, and Minimum Net Worth Needed to Acquire Full Ownership and Part Ownership of Specified Types of Farms with Budgeted \$2,500 and \$3,500 Operator Earnings, Selected Areas

Farm type, investment and loans	Farms with operator earnings of \$2,500/				
	Full owner	Operator class			
		Part owner		Part owner	
		One third of real estate rented		One half of real estate rented	
		Owned	Rented	Owned	Rented
Cotton-beef, Piedmont, South Carolina:					
Investment (total)	\$30,510	\$25,643	\$4,865	\$23,213	\$7,297
Land and service bldgs.	14,595	9,730	4,865	7,298	7,297
Dwelling	3,600	3,600		3,600	
Non-real estate	12,315	12,315		12,315	
Amount borrowable (total)	17,756	15,323		14,107	
Land and service bldgs.	7,298	4,865		3,649	
Dwelling	1,800	1,800		1,800	
Non-real estate	6,158	6,158		6,158	
Operating	2,500	2,500		2,500	
Required net worth	12,754	10,322		9,106	
Dairy-cotton, Western Tennessee:					
Investment (total)	31,050	25,990	5,060	23,460	7,590
Land and service bldgs.	15,180	10,120	5,060	7,590	7,590
Dwelling	7,000	7,000		7,000	
Non-real estate	8,870	8,870		8,870	
Amount borrowable (total)	17,850	15,320		14,055	
Land and service bldgs.	7,590	5,060		3,795	
Dwelling	3,500	3,500		3,500	
Non-real estate	3,835	3,835		3,835	
Operating	2,925	2,925		2,925	
Required net worth	13,200	10,670		9,405	

Table 1. Investment, Assumed Maximum Loans, and Minimum Net Worth Needed to Acquire Full Ownership and Part Ownership of Specified Types of Farms with Budgeted \$2,500 and \$3,500 Operator Earnings, Selected Areas (continued)

Farm type, investment and loans	Farms with operator earnings of \$2,500 ✓				
	Full owner	Operator class			
		Part owner		Part owner	
		One third of real estate rented		One half of real estate rented	
	Owned	Rented	Owned	Rented	
Cotton, Eastern Oklahoma:					
Investment (total)	\$20,120	\$16,533	\$3,587	\$14,740	\$5,380
Land and service bldgs.	10,760	7,173	3,587	5,380	5,380
Dwelling	5,800	5,800		5,800	
Non-real estate	3,560	3,560		3,560	
Amount borrowable (total)	13,185	11,392		10,495	
Land and service bldgs.	5,380	3,587		2,690	
Dwelling	2,900	2,900		2,900	
Non-real estate	1,780	1,780		1,780	
Operating	3,125	3,125		3,125	
Required net worth	6,935	5,141		4,245	
Dairy, Eastern Wisconsin:					
Investment (total)	49,660	42,407	7,253	38,760	10,880
Land and service bldgs.	21,760	14,507	7,253	10,880	10,880
Dwelling	12,000	12,000		12,000	
Non-real estate	15,900	15,900		15,900	
Amount borrowable (total)	26,080	22,454		20,640	
Land and service bldgs.	10,880	7,254		5,440	
Dwelling	6,000	6,000		6,000	
Non-real estate	7,200	7,200		7,200	
Operating	2,000	2,000		2,000	
Required net worth	23,530	19,953		18,140	

Table 1. Investment, Assumed Maximum Loans, and Minimum Net Worth Needed to Acquire Full Ownership and Part Ownership of Specified Types of Farms with Budgeted \$2,500 and \$3,500 Operator Earnings, Selected Areas (continued)

Farms with operator earnings of \$2,500/					
Farm type, investment and loans	Full owner	Operator class			
		Part owner		One half of real estate rented	
		One third of real estate rented	Owned	Rented	Rented
Wheat-beef, Central-Plains, Kansas:					
Investment (total)	\$87,560	\$66,182	\$21,378	\$55,493	\$32,067
Land and service bldgs.	64,135	42,757	21,378	32,068	32,067
Dwelling	7,200	7,200		7,200	
Non-real estate	16,225	16,225		16,225	
Amount borrowable (total)	45,340	34,650		29,306	
Land and service bldgs.	32,068	21,378		16,034	
Dwelling	3,600	3,600		3,600	
Non-real estate	4,542	4,542		4,542	
Operating	5,130	5,130		5,130	
Required net worth	42,220	31,532		26,187	
Wheat, Judith-Basin, Montana:					
Investment (total)	97,950	71,527	26,423	58,315	39,635
Land and service bldgs.	79,270	52,847	26,423	39,635	39,635
Dwelling	8,800	8,800		8,800	
Non-real estate	9,880	9,880		9,880	
Amount borrowable (total)	50,125	36,914		30,308	
Land and service bldgs.	39,635	26,424		19,818	
Dwelling	4,400	4,400		4,400	
Non-real estate	4,940	4,940		4,940	
Operating	1,150	1,150		1,150	
Required net worth	47,825	34,613		28,007	

Table 1. Investment, Assumed Maximum Loans, and Minimum Net Worth Needed to Acquire Full Ownership and Part Ownership of Specified Types of Farms with Budgeted \$2,500 and \$3,500 Operator Earnings, Selected Areas (continued)

Farm type, investment and loans	Farms with operator earnings of \$3,500/				
	Full owner	Operator class			
		Part owner		One half of real estate rented	
		One third of real estate rented	Owned	Rented	Owned
Cotton-beef, Piedmont, South Carolina:					
Investment (total)	\$38,030	\$32,192	\$5,838	\$29,273	\$8,757
Land and service bldgs.	17,515	11,677	5,838	8,758	8,757
Dwelling	3,600	3,600		3,600	
Non-real estate	16,915	16,915		16,915	
Amount borrowable (total)	21,941	19,021		17,562	
Land and service bldgs.	8,758	5,838		4,379	
Dwelling	1,800	1,800		1,800	
Non-real estate	8,458	8,458		8,458	
Operating	2,925	2,925		2,925	
Required net worth	16,089	13,171		11,711	
Dairy-cotton, Western Tennessee:					
Investment (total)	32,050	26,798	5,252	24,173	7,877
Land and service bldgs.	15,755	10,503	5,252	7,878	7,877
Dwelling	7,000	7,000		7,000	
Non-real estate	9,295	9,295		9,295	
Amount borrowable (total)	18,445	15,819		14,506	
Land and service bldgs.	7,878	5,252		3,939	
Dwelling	3,500	3,500		3,500	
Non-real estate	4,047	4,047		4,047	
Operating	3,020	3,020		3,020	
Required net worth	13,605	10,979		9,667	

Table 1. Investment, Assumed Maximum Loans, and Minimum Net Worth Needed to Acquire Full Ownership and Part Ownership of Specified Types of Farms with Budgeted \$2,500 and \$3,500 Operator Earnings, Selected Areas (continued)

Farms with operator earnings of \$3,500/					
Farm type, investment and loans	Operator class				
	Full owner	Part owner			
		One third of real estate rented		One half of real estate rented	
		Owned	Rented	Owned	Rented
Cotton, Eastern					
Oklahoma:					
Investment (total)	\$22,930	\$18,427	\$4,503	\$16,175	\$6,755
Land and service bldgs.	13,510	9,007	4,503	6,755	6,755
Dwelling	5,800	5,800		5,800	
Non-real estate	3,620	3,620		3,620	
Amount borrowable (total)	14,890	12,639		11,513	
Land and service bldgs.	6,755	4,504		3,378	
Dwelling	2,900	2,900		2,900	
Non-real estate	1,810	1,810		1,810	
Operating	3,425	3,425		3,425	
Required net worth	8,040	5,788		4,662	
Dairy, Eastern					
Wisconsin:					
Investment (total)	57,390	48,454	8,936	43,985	13,405
Land and service bldgs.	26,810	17,874	8,936	13,405	13,405
Dwelling	12,000	12,000		12,000	
Non-real estate	18,580	18,580		18,580	
Amount borrowable (total)	30,685	26,217		23,982	
Land and service bldgs.	13,405	8,937		6,702	
Dwelling	6,000	6,000		6,000	
Non-real estate	8,540	8,540		8,540	
Operating	2,740	2,740		2,740	
Required net worth	26,705	22,237		20,003	

Table 1. Investment, Assumed Maximum Loans, and Minimum Net Worth Needed to Acquire Full Ownership and Part Ownership of Specified Types of Farms with Budgeted \$2,500 and \$3,500 Operator Earnings, Selected Areas (continued)

Farms with operator earnings of \$3,500 ^{1/}					
Farm type, investment and loans	Operator class				
	Full owner	One third of real estate rented		One half of real estate rented	
		Owned	Rented	Owned	Rented
Wheat-beef, Central Plains, Kansas:					
Investment (total)	\$110,020	\$82,720	\$27,300	\$69,070	\$40,950
Land and service bldgs.	81,900	54,600	27,300	40,950	40,950
Dwelling	7,200	7,200		7,200	
Non-real estate	20,920	20,920		20,920	
Amount borrowable (total)	57,075	43,425		36,600	
Land and service bldgs.	40,950	27,300		20,475	
Dwelling	3,600	3,600		3,600	
Non-real estate	5,325	5,325		5,325	
Operating	7,200	7,200		7,200	
Required net worth	52,945	39,295		32,470	
Wheat, Judith-Basin, Montana:					
Investment (total)	130,760	94,358	36,402	76,158	54,602
Land and service bldgs.	109,205	72,803	36,402	54,603	54,602
Dwelling	8,800	8,800		8,800	
Non-real estate	12,755	12,755		12,755	
Amount borrowable (total)	66,980	48,780		39,680	
Land and service bldgs.	54,602	36,402		27,302	
Dwelling	4,400	4,400		4,400	
Non-real estate	6,378	6,378		6,378	
Operating	1,600	1,600		1,600	
Required net worth	63,780	45,578		36,478	

^{1/} Operator earnings equal gross farm income (including the value of production for household use) minus (1) total farm expenses, (2) interest on total investment and (3) an allowance for unpaid family labor. Long-Term "normal price and cost rates", 1935 land values, and a four and one-half percent capital charge on investment was used in the study.

Sources: Compiled from John M. Browster, Farm Resources Needed for Specified Income Levels, Agr. Info. Bul. 180, Agr. Res. Ser., U. S. Dept. of Agr., (December, 1957). See page 41 n. 1-6 for a more detailed description of the method of obtaining the maximum loan or amount borrowable.

Table 2. Capital Used by Type of Investment, Assumed Amounts Borrowable, and Net Worth Needed to Acquire Control of Specified Types of Commercial Farms, by Full Owners, and by Part Owners by Renting One Third or One Half of the Real Estate

Farm type, investment and loans	Operator class				
	Full owners	Part owners			
		One third of real estate rented	One half of real estate rented		
		Owned	Rented	Owned	Rented
Dairy, Central Northeast:					
Investment (total) ^{1/}	\$29,050	\$23,750	\$5,300	\$21,100	\$7,950
Land and buildings	15,900	10,600	5,300	7,950	7,950
Non-real estate ^{2/}	13,150	13,150		13,150	
Amount borrowable (total)	16,177	13,527		12,202	
Land and buildings	7,950	5,300		3,975	
Non-real estate ^{2/}	5,275	5,275		5,275	
Operating	2,952	2,952		2,952	
Required net worth	12,873	10,223		8,898	
Hog-beef raising, Corn Belt:					
Investment (total) ^{1/}	35,550	27,742	7,808	23,838	11,712
Land and buildings	23,425	15,617	7,808	11,713	11,712
Non-real estate ^{2/}	12,125	12,125		12,125	
Amount borrowable (total)	18,052	14,148		12,196	
Land and buildings	11,712	7,808		5,856	
Non-real estate ^{2/}	4,628	4,628		4,628	
Operating	1,712	1,712		1,712	
Required net worth	17,498	13,594		11,642	

Table 2. Capital Used by Type of Investment, Assumed Amounts Borrowable, and Net Worth Needed to Acquire Control of Specified Types of Commercial Farms, by Full Owners, and by Part Owners by Renting One Third or One Half of the Real Estate (continued)

Farm type, investment and loans	Operator class				
	Full owners	Part owners			
		One third of real estate rented Owned	One third of real estate rented Rented		One half of real estate rented Owned
Hog-beef fattening, Corn Belt:					
Investment (total) ^{1/}	\$60,710	\$47,912	\$12,798	\$41,513	\$19,197
Land and buildings	38,395	25,597	12,798	19,198	19,197
Non-real estate ^{2/}	22,315	22,315		22,315	
Amount borrowable (total)	33,357	26,957		23,757	
Land and buildings	19,198	12,798		9,598	
Non-real estate ^{2/}	8,280	8,280		8,280	
Operating	5,879	5,879		5,879	
Required net worth	27,353	20,955		17,756	
Tobacco-livestock, Kentucky Bluegrass:					
Investment (total) ^{1/}	23,665	17,302	6,363	14,120	9,545
Land and buildings	19,090	12,727	6,363	9,545	9,545
Non-real estate ^{2/}	4,565	4,565			
Amount borrowable (total)	12,777	9,596		8,004	
Land and buildings	9,545	6,364		4,772	
Non-real estate ^{2/}	1,880	1,880		1,880	
Operating	1,352	1,352		1,352	
Required net worth	10,888	7,706		6,116	

Table 2. Capital Used by Type of Investment, Assumed Amounts Borrowable, and Net Worth Needed to Acquire Control of Specified Types of Commercial Farms, by Full Owners, and by Part Owners by Renting One Third or One Half of the Real Estate (continued)

Farm type, investment and loans	Operator class				
	Full owners	Part owners		One half of real estate rented	
		One third of real estate rented			
		Owned	Rented		
Tobacco-cotton (large), Coastal Plain, N. C.:					
Investment (total) ^{1/}	\$37,930	\$27,645	\$10,285	\$22,503	\$15,427
Land and buildings	30,855	20,570	10,285	15,428	15,427
Non-real estate ^{2/}	7,075	7,075		7,075	
Amount borrowable (total)	22,582	17,439		14,868	
Land and buildings	15,428	10,285		7,714	
Non-real estate ^{2/}	3,035	3,035		3,035	
Operating	4,119	4,119		4,119	
Required net worth	15,348	10,206		7,635	
Peanut-cotton, Southern Coastal Plains:					
Investment (total) ^{1/}	9,570	7,328	2,242	6,208	3,362
Land and buildings	6,725	4,483	2,242	3,363	3,362
Non-real estate ^{2/}	2,845	2,845		2,845	
Amount borrowable (total)	5,822	4,701		4,141	
Land and buildings	3,363	2,242		1,682	
Non-real estate ^{2/}	1,205	1,205		1,205	
Operating	1,254	1,254		1,254	
Required net worth	3,748	2,627		2,067	

^{1/} Farm investment computed as the average investment (actual dollars) for 1955-1956.

^{2/} Crops for sale, feed, and seed are included in non-real estate under total investment but are excluded in determining the amount borrowable.

Sources: See source note to table 1 (commercial family-operated farms).

APPENDIX D

Acres of Specified Crops Grown and Proportion
of Operators Growing Specified Crops, by Tenure
of Operator, for Southampton and Halifax Counties

Table 1. Average Number Acres of Important Crops per Farm, and Percentage of Farmers Growing the Specified Crops by Tenure of Operator, Southampton County, Virginia, 1954

	Farm tenure					
	Full owners	Part owners			Tenants	
		Owner's land	Rented land	Total	1/4 and 1/3 share	1/2 share
Number of farms	33	44	44	44	19	42
Land use	Average acres of crops per farm					
Peanuts	24.1	19.9	19.8	39.7	20.3	28.5
Cotton	3.8	3.0	2.0	5.0	1.5	4.5
Corn for grain	35.1	33.6	27.0	60.6	34.3	47.7
Soybeans in corn ^{1/}	25.6	22.6	12.3	34.9	16.1	33.9
Soybeans alone	4.7	3.0	7.4	10.4	3.0	13.1
Small grains	2.7	0.7	1.2	1.9	0.6	21.3
All crops ^{2/}	72.4	60.6	58.2	118.8	62.7	89.5
Pasture	11.0	15.5	2.2	17.7	10.3	11.4
	Percent of farmers growing the specified crops					
Peanuts	100.0	100.0	95.5		100.0	100.0
Cotton	55.3	56.8	47.7		15.8	50.0
Corn for grain	100.0	100.0	100.0		100.0	100.0
Soybeans in corn	84.2	75.0	47.7		73.7	85.7
Soybeans alone	42.1	34.1	56.8		47.4	45.2
Small grains	18.4	11.4	11.4		5.3	21.4
All crops	100.0	100.0	100.0		100.0	100.0
Pasture	97.4	97.7	20.5		89.5	90.5

1/ Grown in corn for grain.

2/ The sum of the crops listed will not equal the all crops total because (1) some of the crops of minor importance are omitted from this table and (2) it was necessary to count a small portion of the crop acreage twice because of double-cropping.

Table 2. Average Number Acres of Important Crops per Farm, and Percentage of Farmers Growing the Specified Crops, by Tenure of Operator, Halifax County, Virginia, 1955

	Farm tenure				1/4 share tenants
	Full owners	owner's land	rented land	Total	
Number of farms	48	62	62	62	135
<u>Land use</u>	<u>Average acres of crops per farm</u>				
Tobacco	9.5	5.9	4.2	10.1	6.2
Corn for grain	12.0	6.7	4.6	11.3	7.5
Wheat	5.4	3.4	1.6	5.0	2.3
Other small grains	5.6	3.0	1.2	4.2	2.1
Hay	19.6	9.2	4.5	13.7	6.7
All crops ^{1/}	52.4	28.6	16.1	44.7	25.5
Pasture	23.4	12.0	7.9	19.9	11.4
	<u>Percent of farmers growing the specified crops</u>				
Tobacco	100.0	96.8	93.5		100.0
Corn for grain	100.0	88.7	69.4		99.3
Wheat	50.0	41.9	25.8		31.9
Other small grains	70.8	62.9	29.0		53.3
Hay	91.7	85.5	53.2		82.2
All crops	100.0	100.0	100.0		100.0
Pasture	100.0	90.3	45.2		96.3

^{1/} The sum of the crops listed will not equal the all crops total because some of the crops of minor importance are omitted from this table. In addition, it was necessary to count a small portion of the crops acreage twice because of double-cropping.