FARM FIRMS - A DISCUSSION

by Dale O. Anderson*

The timing of this Conference is quite appropriate. Throughout the agricultural sector of the American economy, the dissatisfaction among farm groups over low product prices and rising input prices is exposed in several ways. For example, dairymen are conducting a milk withholding program in an effort to force processors to sign contracts for milk at a price level felt necessary by the dairymen, other groups are concentrating on the input side by advocating a boycott of machinery dealers, drought in much of the winter wheat producing areas is casting doubt on whether the 1967 wheat production will meet the domestic and foreign demands, and small groups are organizing to encourage farmers in the spring wheat producing areas to forego the planting of the expanded wheat allotment for 1967. These are all signs which have strong implications for future research in the producing and marketing of agricultural products and the structure which the producing units and factor and product marketing firms will take.

The three papers contained in this section do an excellent job of pointing out future direction of research in the production and marketing areas of agricultural economics. The purpose of this paper is to highlight some of the key points of the three papers in this section which are particularly important to the development of future research plans.

The paper by Neil Harl considers the organization and structure of the farm firm of the future. Harl sees this firm as being vastly different from its present form. There will be a trend toward multi-member firms, more bargaining power, and more contract buying and selling. He further asserts that the family farm concept should be redefined in terms of the goals that can be accomplished by retaining a system of family farm, particularly as it applies to the future structure of farm firms. The researcher is presented with the challenge to

*Associate Professor of Agricultural Economics, North Dakota State University.
identify the essential characteristics of the family farm as a concept, and to evaluate and relate the importance of these characteristics to emerging problems of firm organization. To this end, Harl challenges the social science researcher to meet the dynamic future by including the law as a variable in analyzing the broad objectives of society. That is, the law as a variable should be one of the important model specifications as the researcher develops his program.

Much of the previous research regarding firm analysis has been a static appraisal assuming profit maximization. More recently there has been a shift toward the development of a dynamic analysis of the farm firm. This research has considered the survival and growth of the farm firm. Particular attention was directed to this area of research at the 1966 annual meeting of the American Farm Economic Association held at the University of Maryland. In addition, at least one regional research project, GP-2, has oriented its major research undertaking to an analysis of firm survival and growth.

The collection and development of the types of data necessary to successfully develop much of our research is not available. It is our obligation as researchers to make known the types of data that are needed to test hypotheses concerning various economic problems. These requests should be directed to the appropriate agency personnel as a guide to useful revision of enumeration procedures and data.

Harl feels that the corporate farm or some derivative of it will be the most rapidly growing form of farm firm organization in the next several decades. He does not mention other structures that will likely grow and develop. I think that farm partnerships, in particular, have considerable potential as the predominant farm firm structure of the future. However, I do agree that the farm firm of the future will be multi-membered. However, the farm partnership


2/GP-2 Regional Technical Committee, "Economics of Establishment, Survival, and Growth of Dryland Farms in the Great Plains Environment".
appears to have the same necessary prerequisites for growth and
development as the corporation farm possesses. It seems that the
major factor favoring the corporation form of ownership is the
intergeneration transfer of ownership.

Research analyzing the corporate structure in agriculture is very
limited. In particular, research is needed to determine the net
effect of the corporate form of organization upon the decision maker's
planning horizon. This information, along with research results
analyzing the effects of other farm firm organizational structures, will
make it possible to make evaluations and recommendations about
specific organizational structure consistent with goals and planning
horizons of the decision maker of the future.

The growth and survival of a viable farm unit is dependent upon
a reliable and adequate source of credit to finance the unit. Harl
concludes that the corporation appears to have many elements in
its favor concerning the ability to obtain credit. However, he feels
that external capital rationing may be increased due to incorporation,
particularly in the case of a shareholder's limited liability. Research
is clearly needed to analyze the limited liability problem of share­
holders in reducing credit availability, and to develop an equitable
and workable policy regarding external capital rationing due to limited
liability of one or more shareholders.

Harl indicates that conceptual work is needed to develop research
models which will adequately analyze various forms of organizational
structure of farm firms. He suggests three models which provide
adequate models for analyzing different types of problems. The three
are: (1) recursive programming, (2) simulation, and (3) behavioral
simulation.

Earl O. Heady and Gordon Ball discuss research implications
which are apparent in response to wage rate changes and increased
demands. The authors indicate that there will be a distinct change
in the resource structure of the farm firm brought about by technology,
increased investment in the human resource through formal education
and vocational training, and the present age distribution of farmers.
The extent and types of agricultural policies needed for the future will
depend upon the organizational structure of farm firms. In like manner,
the size and number will explain rural America and the resulting
"Main Street" business complex which serves it.
How many farms will there be in the United States in 1980 or 2000, or at what level of farm numbers will stability tend to exist? This question formulated in one way or another is of prime concern among agricultural leaders and all people associated with agriculture in the United States today. Some projections have predicted that farm numbers will eventually drop to 50,000. Others have indicated that farm numbers in the United States will stabilize at 1.5 to 2.0 million farms. Whatever the eventual number becomes, substantial adjustments are forthcoming in the farm and nonfarm communities of rural America. In other words, fewer farms support fewer towns, schools, and services of county government. This means further consolidation of farms, services of local businesses and services of city and county government, including secondary education.

The increased farm size and decreased farm numbers, increased investment in the human resource, greater occupational mobility and minimum wage laws will continue to force the future price of labor and other resources upward. Heady and Ball expect a continued substitution of capital for labor, and as a result feel that additional research is needed to more accurately analyze this substitution process. They cite two reasons for such a need: (1) to guide individual farmers on profitable substitutions that are profitable on their farms, and (2) to determine the rate at which social and economic problems will face rural communities.

Heady and Ball indicate that the number of farms in the United States in the future is dependent solely upon the nature of cost or scale economies of the farm firm. In short, research results are not available in the following areas:

1. Nature of short run and long run cost functions in technologies related to highly mechanized and large volume feeding or dairying operations, or environmentally controlled livestock production.

2. There are no data or research results available to indicate whether important cost economies relating to prospective and upcoming technology are more prevalent in the farm producing firm or the input supply firm.
Heady and Ball argue that area 2 above is particularly important concerning future structure of the farm firm as well as the input supply firm. They conclude that (1) if the largest cost economies are present at the farm producing level, then the present structure of farm machinery ownership will prevail, however (2) if the major cost economies are located within the input supply firm rather than the farm producing firm, the authors visualize a shift in machine ownership whereby the supply firms will furnish the machinery on a custom basis and the farmer will become a sophisticated landlord. Thus, the researcher should be challenged to determine the extent to which cost economies that favor larger farm units unfold from advantageous price position or the resulting production functions. This area of research could include: (1) a measurement of the cost functions for farms employing alternative complements of fixed resources, and (2) a measurement of cost economies for farms that represent factor input and output producing units under the same management. In addition, additional knowledge is needed to accurately assess the importance of alternative institutional arrangements of land ownership on the resulting cost economies as firms grow.

Another important element contributing to increased output from land is the capital-land substitution. In general, capital substitutes reduce the per acre requirement to produce a unit of product as opposed to the capital-labor substitution. Capital replacing land to produce the same level of output implies that land must be taken out of production. Research is therefore needed which analyzes the process of capital substitution for land and pinpoints the regions in the United States in which major adjustments in land use for individual firms must take place. The result of this research proposal carries strong implications for public policy development in this area.

Firm growth and capital accumulation would occur at a very rapid rate and in extremely large quantities if the 50,000-100,000 projection of farm numbers ever became reality. Heretofore research efforts in the area of firm growth have been extremely limited. Mention was made earlier in this paper of the firm growth emphasis at the 1966 AFEA meeting and the GP-2 regional project directed toward firm growth. Heady and Ball feel that research in this general area should be directed at an exploration of relationships on farms between current income, consumption, investments and net worth. In addition, they feel the following questions also deserve attention: (1) how farmers contend
with estate taxes, (2) what are the prospects of obtaining capital by selling shares to the public, and (3) the possibility of obtaining long term loans at prime rates.

The growing farm firm will pose problems concerning risk and uncertainty which previously did not exist. Heady and Ball suggest that strategies required of the farm firm of the future might very likely be developed from many of the strategies employed by some of the large industrial firms which are a part of our present day economy. In this regard, research must be initiated which further develops the analysis of problems regarding uncertainty. For example, the authors cite: (1) what are the outcomes resulting from existing game and other decision models, (2) further adaptation, development, and extension of subjective models, and (3) further development and application of simulation.

It is very likely that management will be the most limiting factor to the maximum size of farm firms. Harl suggests that future farm firms are likely to be multi-member units. As such there will be a separation of management and supervisors. The training and experience of these individuals will be extremely crucial to a growing viable farm unit. Research must be directed at a specific analysis of the management function in agriculture. What factors contribute to a successful manager? What management qualities are needed to successfully coordinate four or five supervisors? In this regard, Heady and Ball suggest that various operations research models must be researched more deeply to determine their relevance to investments and managerial decisions of large scale specialized farms. The North Central Region previously conducted research on a regional basis to identify the managerial function in agriculture. However, a recent revision of the research project for continued work in this area was not approved. However, individual states should continue to support this research endeavor.

Glenn Johnson considers the overcommitment of resources as applied to the production of agricultural products. Johnson first traces the history of resource commitment in the production of farm products. The historical analysis is stratified into six periods,

3/ NC-59 Regional Technical Committee, "The Management Resource in Farming".
beginning with World War I and concluding with the so-called International Food Gap. During the first five periods, concluding at the end of the Korean Conflict, Johnson argues that we have turned to some "whipping boy" without asking the fundamental question of whether inherent characteristics of American agriculture were responsible for the overcommitment of resources regardless of the existence of World War I, The Great Depression, World War II, or Government commodity programs. The sixth period includes the period of time from the Korean War to the International Food Gap and takes us from large surplus stock of agricultural products to the end of excessive government stocks for everything except cotton. Johnson concludes that it appears we no longer have culprits to blame. Many contend that we have reached a new era in which we are through overcommitting resources.

A brief analysis of the inputs employed in the production process provides additional insights into the overcommitment of resources. Johnson contends that labor has been continually overcommitted to the production of agricultural products. In addition, future projections indicate that this trend will continue.

According to Johnson's analysis, there have been few periods in which new forms of capital which substitute for labor and land have not been profitable. In fact, about the only classes of capital in which overcommitment has occurred and losses have been incurred are specialized farm or nonfarm produced durable capital and storable expenditures. In general, Johnson feels that there has been very little overcommitment of capital of all other forms employed in agriculture.

Johnson argues that land is a resource having a high acquisition price and a very low salvage value. He feels that the characteristics of land make it easier to pay too much for it rather than to over-use it physically. There continues to be a strong demand for land, particularly to minimize losses from overcommitment of labor and then large machinery to minimize losses on labor.

Johnson concludes from the historical summary that (1) World War I and II, the Korean War, the Great Depression, and government programs tended to aggravate the overcommitment of resources to the agriculture sector of the U. S. economy, and (2) that this
overcommitment existed because of a fundamental characteristic of American agriculture, independent and not explainable by such variables as changing technology, improvements in human agent, inflation, or risk and uncertainty.

The second section of Johnson's paper considers some refinements and developments in theory which are necessary to a complete explanation for agriculture to possess a tendency to overcommit resources to the production of agricultural products. The theoretical developments made by Johnson are based on two explicit assumptions: (1) concerned with imperfectly informed managers capable of learning, and (2) acquisition prices less than or equal to infinity but greater than or equal to salvage prices which are in turn greater than or equal to zero. Although this modified theory leads to an overcommitment of resources through time, the following conclusions are derived: (1) no mistake of overcommitting an input whose acquisition cost exceeds its salvage value is completely correctable, (2) some mistakes of overcommitment of resources can be partially corrected by loss, and (3) some mistakes of undercommitment of production can be completely corrected by moving to the optimum level of resource use.

Johnson considers the characteristics of American agriculture and identifies those components which make it unique from other automatically organized firms. These factors include (1) an excess supply of labor, (2) U. S. farmers a part of an economy where real per capita incomes and wage rates are increasing rapidly, (3) occupy a large geographical area, (4) managers are not particularly well informed about macro consequences of individual decisions, and (5) they operate in a continually changing environment with imperfect knowledge of changes forthcoming. Thus, Johnson concludes that the combination of theory and fact implies that the tendency to overcommit resources has been inherent in the agricultural economy of the United States.

Johnson discusses some of the structural changes which are occurring in American agriculture to reduce the problem of overcommitment of resources to the production of agricultural products. These changes include (1) better trained managers, supervisors, and labor, (2) creation and innovation of new technologies, and (3) changes in public and private institutions which control resource use. In addition, the author feels that possibly vertical integration, but no contracts might help to reduce the overcommitment of resources.
Johnson goes on to suggest the kinds of structural changes which are needed in order to more completely control the overcommitment of resources in a sector of the economy which is characteristically destined to do so. The main structural change would include a reduction of imperfect knowledge. That is, more research must be directed toward the development of decision making strategies which would help to reduce the imperfect knowledge problem of resource allocation. This research would include such variables as technological changes, human resource, income elasticity, foreign demand, and the International Food Gap.

Johnson further challenges researchers in agricultural economics with the following areas which need further research. These areas include (1) the determination of the quantities of resources which can profitably be committed to agriculture without causing an overcommitment problem, (2) can the present information programs of disseminating research results and implications impress the need for necessary adjustments in resource use and be fully distributed to all farmers, (3) considerable attention must be directed toward the possibility of creating new control mechanisms owned and managed by agricultural producers.

Summary

The three stimulating papers in this section have outlined many areas of future research needs. They should provide an excellent set of guideposts from which important research projects will be formulated to provide answers to the question forthcoming in the years ahead.

There are several questions to which all the papers have alluded somewhere in their discussions. For example, it appears that research must be continued to search out more explicitly the cost economies that are present in agriculture by type of farm and method of operation. There was considerable emphasis placed on the need for research to develop models of firm growth and associated problems. Research results must be forthcoming analyzing the managerial resource in farming including, a reduction of imperfect knowledge which continually faces decision makers. More of our research should be developed with institutional factors as a variable component. This is particularly true for considerations of the corporate form of resources ownership and implications for firm growth, development, and intergeneration transfer of ownership.