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SOME RESEARCH PROBLEMS IN FARM FINANCE

by

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In inviting me to conclude the formal discussion on farm credit and land values with a statement on research, the chairman admonished me to devote most of my time, or possibly all of it, to a discussion of additional research needed to solve the farm valuation and farm credit problems which still confront us.

I shall try to follow his suggestion, but I can't refrain entirely from mentioning some of the work already done in the fields of land value and farm credit, because research is an evolving process calling for continued expansion, refinement and analysis of data, the re-examination of findings, and the realignment of policies to new conditions and changed objectives.

The field of farm credit research is broad. At the 1945 meetings of the American Farm Economic Association, Dr. F. F. Hill presented a comprehensive outline of the field and reviewed recent and prospective research developments. 1/ I shall limit my discussion to the consideration of a few value and credit problems which I feel are of particular importance to the development of new lands in the western states.

The value of land constitutes not only the foundation of long-time farm credit, but also the focal point of much discussion among economists, appraisers, and bankers. There are various shades of opinion regarding the most suitable basis and procedures for determining land values. Some of these are attributable to differences in the purpose for which the valuation is made, but differences of opinion exist even when the valuation is made for a common purpose.

Sales Prices vs Net Income as a Basis of Land Valuation

Probably the most important point of controversy is whether chief reliance should be placed on sales price or on net income experience. One college publication, for example, states that "land sale prices are the best basis for an appraisal policy" and consequently, that "no reputable scientific method of appraisal can be based on productivity." 2/ An Iowa publication taking a different point of view states that the

> "Value of farm land depends, in the main, on farm income, which in turn depends on crop yields and farm prices. Crop yields, to go back still another step, rest largely on soil and climate. Consequently, a careful measurement of soil productivity, as determined by

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1/ Research Developments in Farm Finance, Journal of Farm Economics, February, 1946.

2/ G. C. Haas, Sale Prices as a Basis for Farm Land Appraisals, University of Minnesota Technical Bulletin 9, pages 3 and 4.

crop yields, is a fundamental aspect of farm valuation." 1/

The paper presented by Mr. West stressed the need for and use of more adequate data on the sale prices of land. The need for additional detailed data for those approaching land valuation through productivity as reflected in net income is, in my opinion, even greater and the analytical problems to be overcome more difficult.

In approaching land valuation the Iowa investigators began by seeking accurate measures of difference in the productivity of soils. They selected fields having more than one soil condition on which one crop was planted and handled in a uniform manner. The effect of soil on yield was determined by taking yield samples from each soil condition. By this procedure they sought to eliminate the effect of management and all other factors except soil, on yield. Productivity is, of course, influenced by the relative suitability of the soil for various crops as well as by yield. Relative suitability of land for various crops is a particularly important factor in irrigated areas of the West, where many different crops may be grown on a given soil, but with varying differentials in yield and in dollar net returns.

Data on the relative yields are, of course, highly useful in determining which crops are best adapted to a particular situation, but they do not give the entire story because economic as well as physical factors determine the relative suitability of soil for various crops.

Differences in physical productivity may be converted to economic terms by use of the farm budget. Those of us who have used this approach to analyze the relative economic suitability of crops and to forecast probable income or repayment capacity of farms under various soil and climatic conditions know that inadequacies of crop yield and crop suitability data frequently are among the greatest limitations to the reliability of such forecasts.

A large amount of painstaking detailed research is needed to provide adequate measures of differences in physical productivity among existing soil situations, to explain why these differences occur, and to translate differences in physical productivity into differences in net income.

In contrast with the Iowa researchers, who began by observing differences in corn yield for various soil situations in a particular field and proceeded from yields, to income, to land value, a group of researchers in the State of Washington began by observing differences in farm buildings, machinery, and other evidences of capital accumulation and proceeded from capital accumulation, to income, to the physical factors associated with various levels of income. 2/

The approach was to place areas producing comparable levels of income per farm over a period of years in the same class regardless of type of farm, size of farm, or other factors and then by more detailed analysis,

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1/ William G. Murray, A. J. Englehorn, and R. A. Griffin, Yield Tests and Land Valuation, Iowa Agricultural Experiment Station Bulletin 252, p. 53

2/ See papers by B. D. Parrish, Arthur W. Peterson, and Orlo H. Maughan, Proceedings of Western Farm Economics Association, 1946.

to account for the observed differences in net incomes. This classification has proved very useful to farm loan agencies.

I have referred to these approaches to land valuation not because I propose to resolve any differences of opinion which they might indicate, but because they have a bearing on some research problems I shall discuss.

Speculation in Undeveloped Land

The first of these is speculation in land values. One weakness of sale prices for some purposes is that, in the short run, they frequently are unduly influenced by speculative pressures. This is particularly so for undeveloped land on prospective irrigation projects. That speculation can do amazing things to sale prices was amply demonstrated by experience on early Reclamation projects. The Reclamation Act was passed in 1902. By 1913 the Reclamation Service had become so alarmed by land speculation on the twenty-five projects which it had initiated, that a survey of increased land values was undertaken. The average value of unimproved land on these projects in 1913 was found to be 759 percent greater than it had been before construction was begun. 1/ (Value per acre of all farm land in Western States had about doubled between 1905 and 1913).

The survey disclosed many instances where unimproved sagebrush land had been sold at higher prices than improved land under irrigation would support. Speculators prospered before water reached the land. Some of the first settlers on the land became burdened with unbearable debts arising in large part from excessive market prices of land. Many settlers went broke. Sometimes the second and even the third settler on the farm failed before excessive values were squeezed out of land. Many irrigation projects petitioned Congress for relief from irrigation construction obligations or reduction of such charges. These experiences turned attention to the establishment of land-value policies on irrigation projects.

Since 1926, Reclamation laws have contained various provisions designed to control or prevent speculation on lands of Federal irrigation projects. These provisions resulted in marked improvement over the situation prevailing earlier, but the baleful influence of the opportunist speculator has not been entirely removed. There still is need for further strengthening and improving of anti-speculation regulations relating to irrigation projects.

Additional facts and analyses are needed to improve the controls on speculation. An analysis of the effects, both good and bad, of various anti-speculation provisions of the Federal Reclamation Laws on land values and settlers' success, an explanation of why these particular effects occured, an evaluation of their economic and social consequences, and suggestions for improving the acts and their administration would make an excellent and much-needed research project.

Relation of Sale Price to Productive Value by Land Class

Another intriguing problem in which I would like to solicit greater

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1/ Statement by William E. Warne, Assistant Commissioner, Bureau of Reclamation, before the Irrigation and Reclamation Subcommittee, Senate Public Lands Committee, May 7, 1947, on Senate Bill 912.

interest revolves around the relation of sale price to the productive value of various classes of land.

A considerable amount of work has been done on differences in income and value by classes of land. I have mentioned the Iowa and Washington studies. Numerous studies have indicated that within a given type of land use, the farmer, the assessor, and even the banker over-value poor land in relation to good land. 1/ This seems to be an old story. One of my earliest recollections concerning economics is a street-corner declaration of one of the village fathers to the effect that "the high-priced land is the cheapest land." A recent Oregon bulletin advises prospective farm purchasers that good soils are cheapest in the long run. 2/

Why are there such wide discrepancies between market prices of various classes of land and their relative economic value as reported by various studies? The answer to this question might involve an examination of procedures used in determining the net income attributable to land and the rate used in capitalizing income into land value. The usual practice has been to use uniform rates for the operator's labor and management wage and for interest on farm capital in determining net return to land and a uniform rate for capitalizing income into value. If these rates were varied with land class, the return to land and the capitalized income value of land would differ from that obtained by use of uniform rates. Use of varying rates would raise the problem of explaining and defending differential rates.

There is some evidence which indicates that the tendency for the market to over-value the poorer grades of land relative to the better grades of land in a given land-use category stems from failure to appreciate fully the significance of net productivity and net income as contrasted with gross productivity and gross income.

Crop suitability and yield data provide the basis for determining gross productivity and, consequently, also of gross income from crops. Many buyers of land apparently have been content to stop at this point rather than proceed to net productivity and net income.

The Idaho Experiment Station, for example, found that in the wheat area of Northern Idaho the sale prices of wheat land correlated well with wheat yields but not with net income to operators. 3/

This tendency for differences in sale prices of land to reflect differences in gross income rather than differences in net income was explained in terms of the customary crop rental of one-third of the crop, the conclusion being that sale prices of wheat land in Northern Idaho were gauged to the income of landlords who received approximately the

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1/ See Iowa Agr.Exp.Sta. Bulletin 252, pages 56 and 57, for a list of studies relating to concentration of foreclosures on low-value land and inequalities in assessment of farm land.

2/ E. L. Potter, Buying a Farm in Western Oregon, Oregon Agr. Ext. Bulletin 635, page 13.

3/ A. Norman Nybroten, Land Values, Mortgages, Rents, and Wheat Yields of Northern Idaho Wheat Lands, Idaho Agricultural Experiment Station, Bulletin 248.

same return on their investment regardless of the yield class of their land. Share rents based on a fixed percentage of the crop, regardless of yield, are common to many localities. The correlation between wheat yield, and market value of wheat land is not considered to be a complete explanation of the phenomenon for, as the author points out, the return to the owner-operator was about 8.7 percent of his investment in 45-bushel land, and only 1.4 percent on 22.5-bushel land. There still remains the problem of explaining why owner-operators invest in the over-valued 22.5-bushel land.

Marked differences in loan experience by class of land were reported by Dr. Maughan of Washington State College at our meetings last year. He noted that the Federal Land Bank of Spokane had made a small profit on lands which it had acquired in No. 1 net income areas but sustained large losses on those acquired in No. 5 net income areas. The suggested solution to this situation was simple and probably effective---lend up to 75 percent of the appraised value in No. 1 areas but only to 44 percent in No. 5 areas. 1/ This is a satisfactory solution for the bank whose principal objective is to make secure loans. It is, however, a defensive adaptation to the lower credit capacity of poorer lands rather than a corrective measure.

Most of us would agree that the poorer lands which are put to any particular use usually give rise to more perplexing problems than do the better lands. Some persons, however, may be convinced that low income per farm and concomitant low wages, inadequate housing, and generally poor conditions are inevitably associated with the farming of land of low productive capacity. Others are less pessimistic concerning the future possibilities of such lands. Farm managment researchers particularly have pointed out that generally poor economic conditions may stem from such things as over-valuation of land, unsuitable land use, incompatible combination of farm enterprises, inefficient farm organization, and uneconomic size of unit.

I stress again the importance of having more adequate detailed data regarding factors affecting net farm income. To some, research oriented in this direction may appear to lie wholly outside the field of farm finance, but I am confident that none of us would accept so narrow a view. Adequate understanding of the causes of financial difficulties of farmers is a first requisite to coping with these difficulties.

Importance of Net as Distinguished from Gross Income

Failure to take complete cognizance of the significance of the difference between gross productivity and net productivity---between gross income and net income---is a root stock from which many economic inequities, misconceptions, and difficulties sprout. I know of instances where differences of $5 or more per acre in the annual cost of water on lands of equal productivity were given no consideration in assessing land for taxing purposes. These differences likewise had little effect on land value.

1/ Proceedings of the Western Farm Economics Association, 1946, page 68.

The assumption that intensive crops such as fruits and vegetables can carry larger water charges than less intensive crops, simply because they produce larger gross incomes per acre, has led to ill-advised land-use and settlement policies on some irrigation projects.

The fact that large irrigation construction costs, on which payment had not yet begun, were outstanding against land in the Owyhee Irrigation Project apparently had little influence on the market price of land on this project in 1944. Some purchasers didn't even take the trouble to inquire about such charges against the land.

The tendency for all the net income to land to become capitalized into land values before irrigation bonds or Federal construction costs are paid is a matter of concern to Federal, state, and private investors. My limited observations tend to confirm the opinion, widely held by officials of title companies, realtors, and others, that purchasers of farms generally ignore or insufficiently discount the economic importance of outstanding bonded indebtedness or construction charges.

Some preliminary findings of Professor Nybroten of the University of Idaho, however, indicate that in Canyon County Idaho, "the majority of the people on the market have discounted these liens at their full face value even though many of them bear no interest." 1/

How widespread is the tendency to disregard such liens in the farm land market? What are the reasons back of such disregard?---economic illiteracy of buyers?---a belief that payment will not be forced? or what? What might be done to remove this disregard? Should anything be done about it?

Insufficient appreciation of the economic consequences of differences in net farm income as contrasted with differences in gross income is, in my opinion, one of the most difficult and pervasive obstacles to be overcome in preparing for sound economic development of Reclamation projects.

On the Columbia Basin Project, for example, the Bureau of Reclamation through the irrigation districts is responsible for collecting around 85 million dollars of construction costs from the incomes of future water users. It, therefore, is concerned with farm financing as well as with the construction of irrigation works. The Bureau is interested in having farmers on all classes of land obtain sufficient large net incomes so that they will be able and willing to pay construction charges. The Columbia Basin Act stipulates that project lands shall be divided into farm units of sufficient size to support an average farm family at a suitable level of living. It also contains anti-speculation provisions. The contract with the Irrigation Districts provides for graduated allocation of construction charges according to the repayment capacity of the farms and permits graduated water rental charges during the development period and graduated operation and maintenance charges thereafter.

Among the questions policy makers should know more about are: How may these controls be best used to promote the economic welfare of settlers, the communities, and the Nation? How will size of unit, types of enterprises, and class of land affect net farm income? What measures can be taken to give the settler on the poorer land an even break with the settler

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1/ Letter to writer dated June 3, 1947.

on the better land? How much differential in water charges between land of high income capacity and low income capacity is it equitable and practicable to impose? How can the owner of the better land be convinced that his land should carry substantially heavier water charges per acre than the man on the poorer land? How can resistance to differential treatment by land classes be effectively overcome?

Adequate Development Credit Not Available

I turn now to what I consider to be a major deficiency in the settlement programs on new irrigation projects. It is the absence of adequate provision for financing settlers during the lean years before farms are brought to full production. Relatively little progress has been made on this aspect of irrigation project settlement even though the need for adequate credit has long been recognized.

Various investigators have stressed the need for special development credit for settlers on the new lands of irrigation projects. Provision for such credit was urged by the Fact Finders Committee in 1924. The recent report on financial aid for settlers on the Columbia Basin Project points out that "basic reclamation policy always has recognized and emphasized the need for financial assistance but adequate means to provide it have never been developed." 1/

The experience of various states with settlement projects after World War I and the more recent experience of the Resettlement Administration didn't increase the enthusiasm of conservative credit agencies for such loans. Some of the Farm Security Administration experience has been more favorable. There probably has been too little direct experience with this type of loan to provide an entirely satisfactory basis on which to extend credit, but the experience should at least give an indication of some errors which should be avoided in extending credit to settlers.

Setting up programs for adequate financial assistance to settlers involves questions of fact and of policy on which additional research is needed. Among these are:

What are the minimum adequate financial requirements for developing farms of various types and sizes under specific conditions?

When, for what purposes, and in what amounts can development credit be most safely and advantageously extended?

How much and what kind of supervision should be given the loan?

Through what agency or agencies could development credit be most effectively extended?

As already indicated, the Farm Security Administration (now the Farm Home Administration) has had some experience in this field. The Farm Credit Administration, the only Federal agency which has access to sufficient funds to finance large numbers of settlers, is presently

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1/ Columbia Basin Joint Investigations, Financial Aid to Settlers, Problem 14, Bureau of Reclamation. (Government Printing Office)

not inclined to make loans for the development of raw land, nor on developed land, until the amount of construction charges against the land has been definitely determined. For example, loans are not being made in the Vale-Owyhee area in Oregon, where lands have been under irrigation for more than ten years and where, according to a Bureau of Agricultural Economics study, the average capital accumulation of settlers from time of settlement to 1944 was $6,500 at 1938 prices--an average of approximately $650 a year. 1/

The financial progress made by settlers on this and other irrigation projects indicates that a basis for credit exists. Many settlers on the Vale-Owyhee project reported that lack of sufficient credit retarded their financial progress particularly during the first few years, when no credit from the Farm Security Administration was available. Many families made financial progress only at great sacrifice to their level of living.

Mechanization in agriculture made marked advances during World War II. This progres may have far-reaching effects on the financial requirements for subjugation of wild lands to irrigation and on the time necessary to bring a farm to full productive capacity. In formulating a credit program for settlers, additional analysis is needed on such problems as the effect of increased mechanization on the settlers' need for credit on various sizes and types of farms; the effect of mechanization on the amount of and the fluctuations in net farm incomes; on the ability of settlers to repay loans; and on the most convenient terms for repayment of loans.

General Conclusions

I have mentioned a few points relating largely to long-time credit for settlers om irrigation projects. There are, of course, many problems in other fields of finance which this group might wish to discuss, but I shall refrain from mentioning any of them.

It seems to me that research in farm finance generally has had and should have a utilitarian orientation. Lending agencies are interested in factors affecting farmers' capacity to repay loans. Farmers are interested in ways of increasing net income through the use of credit. Various agencies and persons are interested in promoting the economic well-being of rural communities through extension of various kinds of credit.

There are still needs for much painstaking collection of factual data and continued analysis along conventional lines to add to our store of knowledge and to keep our statistical information current. There is also need for surveys and broad areal classifications but I should like to encourage some of the more competent analysists to give greater attention to basic casual relations---to an explanation of the "why" as contrasted with a description of the "what" in farm credit and land value investigations.

I should also like to see some of the more imaginative synthesists, who have a well-developed sense of political propriety, give attention to needed adjustments in Federal credit policies with the objective of indicating how the legitimate credit needs of settlers on irrigation projects and other farmers can be met more adequately, safely, and efficiently.

1/ Settlers' Progress, Vale-Owyhee Project, Oregon, processed by Bureau of Agricultural Economics, 1946, page 43.