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LAND VALUATION AND CREDIT IN THE UNITED STATES

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IMPROVEMENT in land valuation and credit lies chiefly in better forecasting of land values and in better classification of soil resources. In this paper the so-called normal value method of forecasting is criticized as being less satisfactory than a more realistic approach called simply appraisal value estimates. For better land classification, more emphasis is proposed for soil productivity grades, aerial maps, and bench-mark farms.

Before discussing specific land value forecasts, the importance of making forecasts as accurate as possible may well be stressed. The welfare of countless farm owners depends on the judgement of lenders as to future land values. Billions of dollars, for example, were borrowed by U.S. farmers in the 1919–29 period, giving their land as security. At the end of this period in 1929, when our first International Conference was being held at Dartington, agricultural economists were giving little thought to the relation of the debt load to the value of land, yet these same values were recognized a few years later as far too high when roughly 1 million U.S. farm owners were dispossessed of their farms through foreclosure and related defaults. During the 1933–5 depression a large portion of the remaining debt was refinanced by the Farm Credit Administration on a lower land value level, but a level which then seemed high in comparison with farm product prices. Prices, however, went up, and the liberal loans of the thirties now seem conservative. But prices may decline in the future. We may be reaching a position similar in some respects to 1929. Hence it is reasonable to ask ourselves if the loans being made to-day are high in relation to the farm income of the years ahead.

Three forecasts of the land market merit attention. First is the present market price paid for land; second is the so-called normal or basic value set by appraisers and farm lenders; and third is a proposed modification of the normal value concept called appraisal value estimate.

The market price for land reflects the estimate of the future made by the land-selling and land-buying public. When the future looks

dark sale prices of farms are low, and when the future appears bright land prices are high. At any given time, such as the present, the sale price of farm land equates effective buyers and sellers, including optimists at one extreme, pessimists at the other, and all shades between.

This view of sale price as a forecast of the future is based on the assumption that buyers in the main are buying in anticipation of a certain pattern of income from the farm in the years ahead. They are willing to part with present funds and borrow on the prospect of receiving sufficient income from the farm in question to pay loan interest and a satisfactory return on funds invested. On the other hand, sellers are motivated by opposite reasons. They are willing to part with their farms because the funds they obtain are preferred to the income from the farm.

Since the land market is not a purely competitive one, a qualification needs to be made at this point. Some sellers are motivated by non-economic reasons such as death in the family, old age, and the like. And some buyers are in the market because farming is the only occupation they wish to follow and they cannot find a suitable farm to rent. Other buyers may be buying solely to raise their social position. In so far as these non-economic reasons affect sale prices, the resulting prices are not an accurate balancing of present funds against future income from land.

Various attempts have been made to forecast the movement of the market price for land. Outstanding among the studies in the United States are those of Clyde R. Chambers, F. L. Thomsen, and Louis H. Bean. Chambers in his bulletin *Relation of Land Income to Land Value* in 1924 proposed the formula $V = \frac{a}{r} + \frac{i}{r^2}$ to explain the behaviour of the land market in the 1900–20 period.[1] In this formula $\frac{a}{r}$ is the familiar annual net return divided by the capitalization rate, while $\frac{i}{r^2}$ is the annual anticipated increase in income divided by the square of the capitalization rate. Although the results did coincide with market values during the 1900–20 period, this formula has not provided a realistic explanation in the years since 1920. The assumption by Chambers of a constant rate of increase (or even of decrease) has not been in accord with the forces operating in the market.

Thomsen and Bean based their studies on the tendency for land

[1] Chambers, Clyde R., *Relation of Land Income to Land Value*, Dept. Bull. 1224, U.S.D.A., Washington, D.C., 1924.

prices to lag behind changes in the prices of farm products. Thomsen in an article in the *Journal of Farm Economics* in 1935 proposed the use of farm product prices and taxes on land to predict the movement of land values. For product prices he used a weight of 10 for the current year, 9 for the preceding, and so on to the tenth year with a weight of 1. This approach provided a close approximation to the land value movements from 1910 through 1930 but did not work well in the years that followed.

Bean in an article in the *Journal of Farm Economics* in 1938 suggested a modification of the Thomsen approach, in which he gave a weight of 52 per cent. to the current year's product prices, 25 to the previous year, and weights of 8, 6, 7, 3, 1 to the preceding years in that order. With this method Bean obtained a remarkably close fit through 1935. Since that time, however, the land market has behaved differently, responding much less to the 1940–8 rise in product prices than in the 1915–20 period. We may conclude, therefore, that there is a relationship between farm product prices and land values, but that this relationship is not fixed; quite the contrary, it is highly variable.

The market price of land as a forecast has not been regarded with favour by farm mortgage lenders in the past twenty years. Their view is that the fluctuations are too wide, that prices of land go too high during periods of prosperity and too low during periods of depression. Their answer is the setting up of a 'normal' value, an average around which they assume land prices will fluctuate.

'Normal' value, our second forecast, was given legal status in 1933 when the U.S. Congress authorized the Farm Credit Administration to make loans based on 'normal' value. At this time land was selling at an abnormally low price compared to the preceding 20 years. The F.C.A. used the 1909–14 level of farm product prices as a base in establishing their normal value. With this normal the F.C.A. made loans as high as the selling price of the land at that time. By 1939 land prices had risen to the normal set in 1933. By 1949 land prices were double those of 1939, and the F.C.A. was faced with a difficult problem of holding to their normal and at the same time getting a share of the loan business.

Two types of normal have been used, the fixed base and the moving average. Use of the 1909–14 level by the F.C.A. is an example of the first type. Difficulty with the fixed base normal develops, as the F.C.A. has found, when the general price level or other factors change, thus throwing the fixed base out of line with the estimates of the future made by well-informed appraisers, lenders, and economists.

Some lenders prefer a moving average of farm product prices as the base for their normal. Their argument rests more on the hope than on the fact that a moving average of a certain number of years will provide an accurate forecast. The moving average, regardless of the number of years included, gives peculiar and unreasonable results at times. For example, those lenders using a fifteen-year moving average of corn prices have been embarrassed to find the average to be used in 1949 is higher than the one for 1948 even though corn prices in 1949 were lower than in 1948. It happened that the 1949 price added was higher than the 1934 price which was dropped at the other end of the moving average. One lender met this situation by shifting to a moving average of a different length, which gave him a figure which appeared more reasonable.

This business of what is reasonable strikes at the heart of our problem. In one instance a lending agency followed a complex mathematical procedure of calculating normal prices of farm products. For most products the calculated price was accepted and used in establishing normal land value. For one product, however, the formula was considered too high; it was rejected, and one which appeared reasonable was arbitrarily substituted.

Is there any objective basis for a normal land price? Unfortunately the answer is no in terms of our present techniques and knowledge. The concept of normal as it is commonly used implies a level to which land prices will return if they deviate in either direction. But we are not able to isolate measurable forces which act in this way. In addition to such swings as we have from prosperity to depression and back to prosperity, there are also a variety of forces which are shaping the general price level and the income which the farm owner receives as a return on his land investment. All that we can fall back on is the tendency for human nature to exaggerate the present, a tendency which is more pronounced at certain times, as in the height of a boom, than at other times.

A more realistic forecast than either market price or normal is an estimate or judgement of the future. This estimate may or may not coincide with the market price. If depressed conditions prevail, the estimate will probably be higher; if prosperity exists, the estimate will no doubt be lower. No claim is made, however, that the estimate is normal or basic. Although such an estimate suffers from being less pretentious than a normal, it does have the virtue of being in line with the ability of appraisers, lenders, and economists to evaluate future price levels.

A land value estimate should be made on the basis of all available

information bearing on the subject. Production trends, technological changes, business cycles, governmental farm policies, population forecasts, and monetary and fiscal policies are examples of data to be analysed and evaluated.

From fifteen to twenty-five years should be the period covered by the forecast. These are the important years usually for the payment of a sizable portion of the mortgage principal, and important years also as one looks into the future. Each year in the future is less important than the one which precedes it, a fact which is conveniently reduced to figures by the discount process. On the basis of 5 per cent., for example, 62 per cent. of the land value in 1949 is represented by the anticipated income of the 20 years, 1949–69.

The relationship between the three forecasts may be illustrated by land values in Iowa since 1933. At the bottom of the depression in 1933 Iowa land was selling for an average of $70 an acre. At that time the F.C.A. normal value for this same land approximated $90 an acre. An appraisal estimate of the future would probably have been about the same amount. In 1939 the market price of Iowa land had risen to $90 an acre, the normal value was still $90, and an appraisal estimate would probably have been $90. In 1949 the market price is $180, the normal value when it is still being based on the fixed 1909–14 base is only $90, and appraisal estimates average around $135 to $145. A poll by the writer of 200 appraisers and loan officials during the last year and a half showed a heavy concentration of estimates of a figure 20 to 25 per cent. below the 1949 market price. These estimates were for the average land value during the future period ending in 1960.

Thus far we have been discussing the time variable. Now let us turn to the geographic variable—the classification of farm land.

More possibility of improvement exists in dealing with geographic differences than in forecasting. However, here, as with time, too much accuracy has been claimed. Appraisers in some instances have gone so far as to value one farm at, say, $58.43 an acre, and another at $56.67 an acre. In the present state of appraisal knowledge this apparent accuracy cannot be supported.

Improvement in geographic classification is likely to come through more precise information on the yielding ability of soils and through the use of aerial maps and bench-mark farms. A major task of the soil scientist is to develop more detailed measurements of the yield variability between soil classes and within any soil class. Some agricultural economists are inclined to assume uniformity within a given soil class. This can lead to serious error. One soil often shades

almost imperceptibly into another. Moreover, it needs to be recognized that no two tracts or units of land, even though small, are exactly the same.

Various rating systems of soil productivity are being used in the United States, but none is receiving widespread acceptance in appraisal. R. E. Storie has designed a system of soil rating based on his experience in evaluating California soils. His system, which bears his name, provides an excellent breakdown of the factors which determine productivity, but the rigid multiplication of the factor percentages has not proved entirely satisfactory in other areas because of the subjective estimating involved in determining the factor percentages. The United States Department of Agriculture ratings are more generalized than the Storie ratings and as such are the best estimates available over wide areas. These, too, however, are subjective determinations which leave much to be desired.

A new approach based on the gathering of objective data is making headway. A. R. Aandall in Iowa and R. T. Odell in Illinois are collecting yield data on different soil types to obtain the necessary foundation for a new system of soil ratings. Yield comparisons of different soils within the same field were initiated in Iowa and comparisons between fields were started first in Illinois.

Sampling procedure deserves special emphasis in this new approach to soil productivity. Samples have to be selected in such a way that the results are representative of the different soils. In addition to the variability of the soil a troublesome factor is the extreme variations in management found within the same soil class. Our experience in tackling these complex questions has been that the working together of the agricultural economist, the soil scientist, and the statistician is highly essential.

Aerial maps and bench-mark farms are proving to be useful tools in more accurate appraising both for assessment and for loans. Aerial maps are excellent for detailed measurement of irregular areas. They serve especially well as base maps on which soil and other data can be added. A comparison of the old method of plotting a farm of irregular field and outside boundaries with the use of an aerial map reveals a large saving of time and greater accuracy with the aerial picture. The use of the aerial map should eventually become standard procedure in the appraisal of farms in many areas.

Bench-mark standard, or key farms, are becoming more common as a means of keeping loan appraisals and tax assessment values in line with each other. Such farms may be particularly useful if continuous yield and income data are recorded on their operations. In

the course of time bench-mark farms can well be the measuring sticks used to evaluate neighbouring farms. In a complete reassessment of 350,000 acres of Story county land in Iowa this year, both aerial maps and bench-mark farms were used to great advantage. It would have been even more successful if reliable data had been available on the operations of the bench-mark farms. These farms, of which there were about fifty representing different sizes and types, were appraised in great detail. An important bit of progress will be made when we begin collecting yield and income data from such farms.

In summary, the future appears bright for progress in land valuation. It will be especially bright if claims of accuracy both in forecasting and in classification are in accord with the facts. Rigorous scientific analysis should be applied along with all available technical knowledge. Yet appraisers, lenders, and economists should never fail to recognize that valuation still contains an important element of human judgement.

K. Skovgaard

Dr. Murray has given us an excellent outline of the American land-appraisal system, following that of Dr. Boerendonk on the Netherlands. I should like to ask Dr. Murray, how the sale prices of farms and land compare with the appraisal values in his country? In Denmark the assessment values of farms are by law subject to the appraised sale values and the goal is to bring the assessment values into line with the appraised sale values. How do the assessment values in Iowa, for example, compare with the sale values and the appraisal values?

W. G. Murray

One of the results which our research has revealed is that tax assessment values and a good many appraised values are too close to the average. Sale values show much more spread. Consequently, low-valued farms are frequently taxed at a much higher value than they would sell for, whereas the unusually good farm is taxed much lower than its sale value. It is one of the jobs of the appraiser to make his geographical classification more accurate, by getting additional spreads. He is not getting that now in many cases. I am speaking, of course, mainly from United States experience.

A. Date

The speaker gave a figure of land values in Iowa in which he said they had risen in 1939–49 from 90 to 190, while appraisal values were

around 140, roughly a difference of about 45 per cent. That figure is interesting because it compares very closely with the discrepancy in Australia between what has been estimated as actual sales transactions and official appraisal values. What factors account for the discrepancy of approximately 45 per cent.?

W. G. MURRAY

The discrepancy is accounted for by our forecast of the future. As I emphasized, it would be dangerous for us to make our appraisals follow exactly current sale prices, because of their wide fluctuations. On this point, however, I would like to add one comment, and that is this: we have noticed a very much more conservative land-market fluctuation in the United States in recent years as contrasted with earlier years. The explanation may be partly that people are taking a longer view. And secondly that they may be listening to some of our extension service reports. We have a feeling that buyers, particularly young men who take on the purchase of a farm which includes a very large capital expenditure, and in doing so sign a mortgage for a considerable portion of the purchase price, do so in the knowledge that the income over the next twenty-five years is going to be very important in the success which they have in paying for and staying on their farms. So this discrepancy is merely an indication that lenders, appraisers, agricultural economists (not all of them, but in the majority) at the present time consider that the present market value of land is somewhat higher than will prevail on the average during the next twenty to twenty-five years.

D. PAARLBERG, *Purdue University, Lafayette, Indiana, U.S.A.*

There are several different purposes of appraisal. There is appraisal which tries to determine the agricultural productivity or the earning value of the farm; there is appraisal for the purpose of determining how much can safely be loaned on the farm; appraisal for the purpose of determining what might be a fair price to ask in case of a sale; and appraisal for the purpose of assessment of tax revenue. What Mr. Murray has essentially described is the agricultural productivity of the farm. I wonder what modifications would be made in his system for the purpose of determining the other values of the farm. Are other techniques used or are there some modifications made of the technique which he has described?

W. G. MURRAY

I am glad Dr. Paarlberg has brought up this point because it gives me an opportunity to say something about the many uses of appraisal

which are very important, but which had to be left out of my paper. We need to make progress on these other lines. The Germans and the Italians have done a great deal along some of these other lines. In fact, we are right now in the process of what we consider reverse Marshall Aid in terms of getting some of the Italian appraisal literature translated into English. I feel very definitely that more study needs to be made of special problems in appraising, particularly the home value which has not been sufficiently analysed. In our country, we note that more and more attention is being paid to the home, the landscaping, and features which we call the amenities of the farm.

JOHN LEWIS

In England, which is a very small country, as I expect you all realize, there is a new factor which has occurred, and I have not heard any previous speakers allude to it. In the value of land, one takes, or did take, all its potentialities into account, and in a small country heavily built on there was always the possibility that some part of it, the frontage particularly, would be wanted for building development. It was for that reason I think that a good many landowners continued to let their farms at totally unremunerative rents hoping that at some time in the progress of development a builder's eye would light on it and a new building development would take place.

The British Government has just passed an Act which takes away from the landowner all the development value. It is a very very revolutionary change. It is almost on a par with the project of land nationalization which some people think would be a good thing. It does not go the whole way, but it does take away from the owner any possibility of acquiring extra value by reason of development. For the first time valuers in England have had to turn their attention to what is the value of agricultural land as agricultural land without an element of speculation for development. The use value (what it is worth to-day) is now the only value of land in England. So that as time goes on we shall find out what up to now we have never known, namely, the real use value of land for agricultural purposes. Speaking personally as a farmer I would be sorry to see land nationalized, because every farmer knows that what one really wants on the land is a 'good' landlord. A 'good' landlord is one who will spend all the rent you pay him and a bit more in keeping the place in order. We think that is a very good condition of things, and we should be sorry to see it abolished.

H. E. GARRETT

I have listened to Professor Murray with great interest and have one question I would like to ask him. I understand that in the United States there are quite a large number of methods used in conjunction with one another for determining the valuation of land for loan purposes. I refer to methods incorporating levels of farm prices, relationship with bench-mark farms, use of the soil survey and so on. In New Zealand these and other methods are used officially, but in fact valuers frequently refer to sale price. They compare the farm in question with the sale price of a number of other farms which are similar and believed to be just above or below the farm in question. They add to that some consideration of the changes in general level of prices. But in effect, while making a book reference to these other methods, the real yard-stick of value is, I think, in the mind of the valuer himself, always the sale price, plus some proportion of the sale price depending on changes in general level of prices. I would like to ask Professor Murray if, in the United States, valuers when making a report for loan purposes, do not inevitably seem to regard the sale price of the land as their real yard-stick, while paying token reference to these other methods.

W. G. MURRAY

Mr. Garrett has raised a fundamental point. Appraisers are conscious of sale values. And as far as I am concerned, it makes little difference whether one makes alterations in the value by appraisal or varies the percentage of the amount to be loaned on the appraisal value. The main point is not to saddle the purchaser with an unusually large loan during periods of very high prices. The other comment that I wish to make is that we who are working on appraisal are trying to emphasize, not just one figure, whether it be sale price or loan value. What we are trying to emphasize is the break-down of the appraisal into what we call the earning value of the land and the part which is represented by the so-called amenities or intangible features. For example, one farm which has very few features might be valued at, say, $100 an acre, of which $90 would be called earning value with only $10 of additional intangible features. Another farm has in addition to earning values some very fine amenities, features which are not strictly earnings. This farm might be valued at $100 an acre, but the earning value might be only $50. The amenities would account for the other $50. The point we want to emphasize is that, in terms of interest-paying ability, one farm has

much more than the other. The two major things are: one, keeping farms from being over-valued during high periods and, the other, preventing the over-valuation of farms with attractive non-income features.

W. J. ANDERSON

It has been my observation that for tax assessment purposes this normal loan or normal value concept is considerably more satisfactory for that particular purpose—because of the fact that one is interested mostly in relative values rather than in the absolute value which is the more important for loan value purposes.

W. G. MURRAY

I agree with Dr. Anderson. The main problem in tax assessment is not so much the absolute amount in dollars as it is to get each farm properly classified in relation to the other farms.

G. MEDICI

I should like to express my deep satisfaction for the paper of Professor Murray because I realize that the general idea supported by the German and Italian schools of appraisal is making way. Appraisal is not only a technique, but a branch of economics. If we bear it in mind, the greatest errors of the past will be avoided. It is with this hope that I express my best wishes for a close collaboration among the different schools of appraisal in different parts of the world.

L. H. BEAN

The study which Mr. Murray referred to was made fully ten years ago. I have not paid much attention to it so that I am not even in a position to criticize his reference to the statement that, since the study was published, land values in relation to prices of farm products have behaved somewhat differently. My impression, however, is that the relationship between farm product prices and land values, such as Mr. Thomsen and I developed, probably still holds by and large. What I mean is that the current value of land is to a large extent determined by the current and the recent levels of farm product prices.

These studies illustrate certain problems of forecasting. Historical studies of economic relationships call for a rather close and continuous attention if they are to be used for forecasting purposes. You cannot leave them for ten years and expect them to continue to function in spite of war and other developments. They need to be followed currently; and improvements made. You may need to

restate your formula and rework the assumptions, and in that way you have a current flow of relationships formulated in statistical or mathematical forms. So much then for the use of analyses which are essentially explanations of past relationships and may be of some use in making short-time forecasts.

They are not likely to be very useful for long-time forecasts covering a period of, say, fifteen years, in which land appraisers are interested. The list of considerations that Mr. Murray gave us, including even fiscal policy considerations that must be taken into account in expectations over a fifteen-year period, indicate how difficult the task of long-range forecasting is.

On the use of moving averages may I record that I have never resorted to them for my own studies. I have found that they sometimes mislead and conceal more than they reveal. I will, therefore, conclude by saying that, first, if you have occasion to use or examine studies that were made ten to fifteen years ago, please be aware of the fact that authors of such studies, assuming they have brought those studies up to date, may have found certain revisions to be necessary; and, second, with regard to long-range forecasts of land values, I do not believe that it is possible to project the course of agricultural prices, if that is the key to land values, in sufficiently accurate forms to be practically useful. Forecasts are, to a very large degree, based on judgements and assumptions and in this area perhaps judgements are better than forecasts.

J. J. MacGregor, *School of Forestry, University of Oxford, England*

I hope I do not strike a sombre note by referring to death-duties. In England a different principle is adopted in the appraisal of land values for that purpose. The distinction is made between selling the property *as a whole* and selling it *most favourably*. The 'most favourable' way of selling the property is taken to mean selling it in small parcels. The property is not necessarily divided in fact, but the value is assessed as though it were. I was wondering if there was a similar principle for land valuation in other countries?

W. G. Murray

I do not know of any such work being done in the United States along that line. I do know that in different countries, particularly as regards taxes, land valuation does call for different techniques in appraisal. For example, we have been endeavouring in the United States to assess the amount of effect which our income tax is having on the land-value structure.